

Sec D1020 5/22/86  
TO: Jeff Pohle  
Williams & Associates

GWTT/DUP9

DRAFT GENERIC TECHNICAL POSITION ON  
GROUNDWATER TRAVEL TIME (GWTT)  
by Richard Codell, Hydrology Section,  
Geotechnical Branch, DWM, NMSS  
May 14, 1986

TABLE OF CONTENTS

- 1. Introduction
  - 1.1 What is Groundwater Travel Time
- 2. Interpretation of pre-waste-emplacment groundwater travel time
  - 2.1 Pre-waste-emplacment environment
  - 2.2 Identification of fastest path of likely radionuclide travel
  - 2.3 Groundwater Travel Time along the Fastest Path
  - 2.4 Rationale for the choice of the percentile of the cumulative distribution function of GWTT
  - 2.5 Special Considerations for Unsaturated Media
- 3. Summary and Statement of Regulatory Position
  - 3.1 Summary
  - 3.2 Statement of Regulatory Position

8606200252 860522  
PDR WMRES EECWILA  
D-1020 PDR

Appendix A - Calculation of GWTT

- A.1 Travel time distributions
- A.2 Mathematical representation of the repository and its environment
  - A.2.1 Deterministic models
  - A.2.2 Stochastic models
- A.3 Site characterization from field data
  - A.3.1 Treatment of uncertainty in site characterization
  - A.3.2 Determination of input for the model
- A.4 Estimating GWTT from deterministic models
  - A.4.1 Treatment of spatial variability
- A.5 Simplified analysis

Appendix B - Definition of Paths

- B.0 Introduction
- B.1 Repositories in saturated media
- B.2 Repositories in unsaturated media

References

Figures

- 1. Disturbed Zone, Path and Accessible Environment
- 2. Three-compartment Model
- 3. Groundwater travel time distribution
- 4. Breakthrough curves
- 5. Variance of groundwater travel time Distribution
- B1. Paths of likely radionuclide transport - saturated media
- B2. Paths of likely radionuclide transport - unsaturated media

DWM TECHNICAL POSITION  
ON GROUNDWATER TRAVEL TIME

1.0 Introduction

One of the NRC performance objectives for High Level Waste repositories, commonly referred to as the "groundwater travel time (GWTT) objective", is stated in 10 CFR 60.113 (a)(2) as:

"The geologic repository shall be located so that pre-waste-emplacment groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment shall be at least 1000 years or such other time as may be approved or specified by the Commission."

The "disturbed zone" is defined in 10 CFR 60.2 as:

"...that portion of the controlled area the physical or chemical properties of which have changed as a result of underground facility construction or as a result of heat generated by the emplaced radioactive wastes such that the resultant change of properties may have a significant effect on the performance of the geologic repository."

The "accessible environment" is defined in 10 CFR 60.2 as the atmosphere, land surface, surface water, oceans and the portion of the lithosphere that is outside of the controlled area. For purposes of this GTP, the "controlled area" is defined (consistent with the Final EPA high level waste rule 40 CFR 191) as extending no more than 5 kilometers from the original emplacement of the waste in the disposal system, with a maximum surface area of no more than 100 square kilometers. The disturbed zone, path and accessible environment are illustrated in Fig. 1.

The Disturbed Zone definition and groundwater travel time (GWTT) objective were established as part of a multiple barrier approach to high level waste isolation. The Disturbed Zone criterion is intended to prevent the reliance on only the zone directly adjacent to the engineered facility for the major portion of the geologic barrier protection, and to avoid the complication of consideration of coupled processes close to the emplaced High Level Waste when demonstrating compliance with the GWTT performance objective. The Disturbed Zone is being addressed by the NRC staff's Generic Technical Position which is presently under review. As the Commission stated when it proposed its technical criteria for licensing activities at geologic repositories (46 FR 35280, July

8, 1981), the GWTT objective should be viewed as a conceptually simple measure of the overall quality of the geologic setting.

It is generally agreed that groundwater is the most likely means by which significant quantities of radionuclides could escape a High Level Waste (HLW) repository. Transport of radionuclides to the biosphere then depend on factors which are directly related to the travel time of groundwater from the engineered facility to the environment. The 1000 year GWTT objective helps to assure that groundwater conditions are favorable, since a repository in compliance with the GWTT performance objective will be influenced by regional hydrogeologic processes (which are characterized by long travel times), rather than any local, relatively fast-moving groundwater.

The apparent conflict between the terms "pre-waste-emplacment" and "path of likely radionuclide travel" is recognized. The staff intended that the concept of pre-waste-emplacment groundwater travel time and "path of likely radionuclide travel" be interpreted to mean the paths which radionuclides would be likely to take if they were released from the disturbed zone under pre-waste-emplacment conditions.

Releases of radionuclides through groundwater pathways is limited by the three primary barriers:

- (1) the integrity of the waste package and overpack;
- (2) the ability of the groundwater to transport radionuclides, irrespective of geochemical effects; and
- (3) the geochemical interaction of the radionuclide with the rock along the path of groundwater movement.

The present Position deals only with the second barrier.

### 1.1 What is Groundwater Travel Time?

Groundwater travel time was envisioned to be the time that it would take inert tracer particles released at the disturbed zone to reach the accessible environment under pre-waste-emplacment conditions. This travel time is often considered to be synonymous with the travel time  $T$  calculated by the average seepage velocity along the path  $s$ :

$$T = \int_{\text{D.Z.}}^{\text{A.E.}} \frac{U}{n_e} ds \quad (1)$$

where A.E. = accessible environment,  
 D.Z. = disturbed zone,  
 $U$  = the Darcy velocity along the path, and  
 $n_e$  = the effective porosity

The term  $U/n_e$  is generally known as the seepage velocity, and is the apparent speed of the water in the open spaces in the rock. The travel time expressed by Eq. 1 however, may not be the same as the travel time based on the transport of an inert tracer, particularly in a fractured system. The bases for the differences are described below.

Transport of a non-decaying dissolved tracer in the groundwater can be expressed by a three-compartment model as shown in Fig. 2. The three compartments are; a) the mobile liquid phase (e.g., flow through connected pores and fractures), b) the immobile liquid phase (e.g., dead end pores) and c) the solid phase associated with the rock. This model can be succinctly represented by a material balance for the case of a dissolved tracer (Codell 1982):

$$n_e \frac{\partial C}{\partial t} + (n - n_e) \frac{\partial G}{\partial t} + (1 - n) \frac{\partial Q}{\partial t} = n_e \operatorname{div} (\underline{D} \operatorname{grad} C - \underline{U} C) \quad (2)$$

$$+ n_e \lambda C + (n - n_e) \lambda G + (1 - n) \lambda Q$$

where  $C$  = the concentration in the mobile liquid phase,  
 $Q$  = the concentration in the solid phase,  
 $G$  = the concentration in the immobile liquid phase,  
 $n$  = the total porosity of the rock,  
 $n_e$  = the porosity of the rock in which the mobile water flows,  
 $\underline{D}^e$  = the dispersivity tensor representing molecular diffusion and mechanical dispersion in the liquid phase,  
 $\underline{U}$  = the seepage velocity vector  
 $\lambda$  = the decay rate

Diffusion in the liquid phase is caused by the random motion of the water and solute molecules. Dispersion in the liquid phase is caused by deviations from the mean velocity vector  $\underline{U}$ . Diffusion and dispersion alone cause a spread in the travel time predicted from Eq. 1.

Another, potentially more important mechanism which could lead to the spread in predicted travel time is the partitioning of the tracer between the three compartments. The mobile liquid phase occupies a portion of the rock,  $n_e$ , usually known as the "effective porosity" (although this term is somewhat ambiguous). The immobile phase occupies the fraction  $(n - n_e)$  of the rock. The solid phase occupies the fraction  $(1 - n)$  of the rock. The relationship between the three compartments is key to understanding the movement of the tracer through the groundwater. An often-used simplification of the equation is to assume that the concentration of the constituent in all three compartments is in equilibrium, and that the solid phase concentration is related to the liquid phase concentration by a constant:

↑  
 should spell out which constant  
 in the following equation.

$$Q = KC \quad (3)$$

$$\text{where } K = \frac{n - n_e}{1 - n_e} + \frac{1 - n}{1 - n_e} K_d R_s \quad (4)$$

$K_d$  = the distribution coefficient, ml/gm, and  
 $R_s$  = the real specific gravity, gm/ml.

In this case, a commonly used form of the transport equation can be derived

$$R_d \frac{\partial C}{\partial t} = \text{Div} ( \underline{D} \text{ Grad } \underline{C} - \underline{UC} ) + R_d \lambda C \quad (5)$$

Where  $R_d$  is the retardation coefficient, which expresses the velocity at which the tracer is being transported relative to the average seepage velocity:

$$R_d = \frac{n}{n_e} + \frac{n}{n_e} K_d \quad (6)$$

For a non-sorbing dissolved tracer,  $K_d$  would be zero. Note that the retardation coefficient for this case  $R_d$  is not equal to unity, as is often considered to be the case, but is always equal to or greater than unity. This deduction reflects the assumption stated above that the mobile and immobile phases are in equilibrium. Actually, the concentration of an inert tracer in the immobile phase can only approach and not reach equilibrium with the mobile water. This equilibrium is limited by the rate of transport between the phases, and depends on a number of factors, including the conditions under which the tracer is moving and the diffusion coefficient of the tracer in the water. In other words, if GWTT is supposed to represent the travel time of inert tracer molecules from their points of release along the disturbed zone to the accessible environment, then the diffusive properties of the tracer are important. Processes controlling the transport of tracer between the mobile and immobile water phases are usually called "matrix diffusion" (Blencoe and Grisak, 1984).

If transport between the mobile and immobile phases is insignificant,  $R_d$  would approach unity and the GWTT could be based on the average seepage velocity of groundwater along the path,  $T$ , determined from Eq. 1. Conversely, if transport between the immobile and mobile phases is relatively fast, then the retardation factor  $R_d$  would approach  $n/n_e$ , and the GWTT would be greater than  $T$ .

*Dirk - I think this paragraph spells out very well the concept you were getting at in the ~~last~~ previous version of your paper.*

Tracer particles considerably larger than molecules will not exhibit the same diffusive behavior as molecular tracers, and will be transported at a speed more typical of the average groundwater seepage velocity. The difference between the apparent velocity of a diffusive tracer and the apparent velocity of a non-diffusive tracer can be dramatic. For example, Cathles (1974) described a dual tracer experiment in a fractured granitic rock, where the GWTT for a non-diffusive tracer (0.5 micron silica spheres) was up to three orders of magnitude greater than that for a non-reactive diffusive tracer (salt water). The effect of matrix diffusion is probably most significant in media with high matrix permeability, especially where groundwater movement is very slow (Blencoe and Grisak, 1984).

*ick - We should come up with another term here. Diffusivity has in the ground water literature. Diffusion coefficient.*

It should be noted that the tracer does not cause matrix diffusion. The process proceeds because of Brownian motion of the molecules. Both the tracer and water molecules are diffusing. The magnitude of the diffusive flux in the matrix is proportional to the diffusivity of the molecule raised to a power less than 1. Diffusivity is an intrinsic property of the solute molecule in the solvent (e.g., water). The self-diffusivity of water is estimated to be  $2.7E-5 \text{ cm}^2/\text{sec}$ . The diffusivity of nearly any molecular or ionic solute is well within an order of magnitude of this value. Many common electrolytes such as chloride are within a factor of 2. Therefore, the effect of diffusivity on water must be fairly close to that of most common dissolved tracers. This is an important point, because in a situation where matrix diffusion is an important factor in the transport of a tracer, it would also be important in the transport of the water. In other words, the GWTT based on Eq. 1 does not necessarily account for the fact that the water arriving at the accessible environment is not all the same water leaving the disturbed zone, but may contain an amount of water exchanged with the immobile water along the pathway. This fact tends to support the notion that diffusion can rightfully be included into the concept of GWTT, *even though the inclusion of diffusion effects may preclude the isolation of the absolute "fastest path" groundwater travel time.*

*ick  
Can we add this? Or in it too please*

Molecular diffusivity decreases with the <sup>increasing</sup> size of the <sup>tracer</sup> particle. In the case of the 0.5 micron silica spheres in the tracer experiment of Cathles (1974), diffusivity can be estimated to be roughly  $1.0E-8 \text{ cm}^2/\text{sec}$  (CRC 1986), which is three orders of magnitude less than the diffusivity of molecular tracers. It is not therefore surprising that this tracer was not affected by diffusion into the matrix.

It can be argued that the effect of diffusion into the matrix is taken into account in Eq. 1 through the effective porosity term, since  $n_e$  is usually determined by means of a tracer experiments. Measurements of the effective porosity are difficult, however, and dependent on the experimental procedures and tracers used. For example, the effective porosity determined by a tracer test in a well <sup>might</sup> be sensitive to the rate at which the groundwater is

moving. If the test is being conducted under conditions where the velocity has been increased, such as in a two well test, the tracer might not diffuse into the matrix to the same extent that it would under unpumped conditions, thereby underestimating the effective porosity. Although usually represented as a scalar quantity, effective porosity appears to be a tensor (i.e., directed) quantity in some geologic media (Endo and Long, 1984).

*Very good point!!*

The radically different behavior of diffusing and non-diffusing tracers in some media makes interpretation of the GWTT position somewhat of a dilemma. While the staff intended the definition of GWTT to be the travel time for non-reactive tracers, the effect of tracer diffusion was not widely recognized.

The consensus in the hydrogeologic community is that GWTT should be based on the average seepage velocity and should not consider matrix diffusion. There are several factors which tend to support this point of view:

- o The apparent retardation <sup>of a tracer</sup> caused by matrix diffusion is conservatively neglected if it is assumed that the tracer particles travel with the mean seepage velocity, except to the extent that tracer diffusion was a factor in the determination of the effective porosity.
- o Transport of particulate or colloidal radionuclides would not be affected significantly by matrix diffusion. These larger particles would travel *at a velocity* close to the average seepage velocity, if not affected by mechanisms such as sorption. In addition, phenomena such as anion exclusion can reduce the ability of certain dissolved species to diffuse into small pore spaces, thereby reducing the importance of matrix diffusion.
- o The mechanisms of matrix diffusion are difficult to <sup>evaluate</sup> measure in the field. Without direct measurements of <sup>the appropriate coefficients</sup> this phenomenon, estimates of the effect of matrix diffusion would have to be based on mathematical models which are largely untested, using parameters which are difficult or impossible to substantiate.

On the basis of the above points, and in keeping with the Commission's stated position that GWTT should be a simple measure of the overall quality of the repository, the staff will proceed with the understanding that GWTT is based on the travel time of non-diffusive, inert tracer particles which move with the average seepage velocity, and encourages the applicant to follow this approach. Groundwater travel time could also be interpreted to consider the exchange of flowing and immobile water by diffusion. The staff would entertain arguments for travel times based on inert, diffusing tracers if ample justification is provided. Alternatively, such arguments for matrix diffusion might be used to

support the satisfaction of the GWTT performance objective in the case where the GWTT based on the average seepage velocity is calculated to be less than 1000 years.

*Disch  
New job!!  
Roy*

The staff has endeavored to present in this Technical Position a workable definition of the pre-waste-emplacment groundwater travel time objective to be used for HLW repository licensing. The definition will assist the staff in evaluating compliance of a specific site with the performance objectives of 10 CFR 60. This Technical Position is (however) intended to be guidance only. It reflects the Staff's interpretation of the GWTT objective, but does not prevent the Applicant or others from advancing alternative interpretations. This GTP is not intended to be a prescriptive guide to conducting field tests. Such guidance is beyond the scope of this document. It is instead a guide to defining the GWTT objective, and presenting the results in a defensible manner.

## 2.0 Interpretation of GWTT Objective

Compliance with the GWTT objective in 10 CFR 60.113 (a) (2) requires carrying out the following steps:

- Properly identifying and considering the pre-waste-emplacment environment and its potential spatial and short-term temporal variabilities;
- Identifying the fastest path of likely radionuclide travel; and
- Calculating the appropriate travel time along this path.

## 2.1 Pre-Waste-Emplacement Environment

Pre-waste-emplacment pertains to conditions which exist prior to significant disturbance of the geological or hydrological setting by construction or major testing activities capable of seriously disturbing the geologic setting. Restriction of the GWTT requirement to pre-disturbance conditions is in accord with the original intent of 10 CFR 60 to establish a straightforward criterion which is easily defined and determined. The present position does not deny the importance of post-waste-emplacment effects. Evaluation of groundwater and radionuclide movement under post-waste-emplacment conditions will be required as part of the demonstration of overall compliance of the repository with the EPA standards (40 CFR 191) as implemented by NRC.

The site must be characterized and understood to the extent that the fastest path of radionuclide travel (Section 2.2) can be identified and the ground water travel time (Section 2.3) can be determined. The determination of GWTT will be for present day environmental conditions only. Short-term changes to

the environment, (e.g., tens of years) which can be reasonably inferred from records in the vicinity of the site, such as cycles of wet and dry years, local flooding, changes in groundwater and surface water use and irrigation practices, and any other factors that may alter hydraulic heads should be factored into the conceptual model for determining GWTT. Groundwater systems which have been demonstrated to exhibit significant transient behavior for the period of record may have to be modeled in a time-dependent rather than a steady-state manner to demonstrate compliance with the GWTT requirement. The determinations do not have to take into account the long-term projections (e.g., thousands of years) of changes to the physical setting of the repository, such as earthquakes, changes to global climate, major changes to surface morphology or use of groundwater and land. If present-day conditions have varied markedly over the period of record, the investigator must question whether inappropriate credit is being taken for excessive groundwater travel times caused by these variations. For example, if a cone of depression has formed as a result of large groundwater withdrawals, it could reduce or even reverse the direction of an unfavorable hydraulic gradient. In this case, it would be prudent to consider the effects of an otherwise-likely hydraulic gradient corrected for the effect of the cone of depression. The rationale behind this philosophy is to avoid the appearance of taking credit for processes for which there could be no assurances of long-term reliability, e.g., continued groundwater withdrawals maintaining the favorable gradient.

## 2.2 Identification of fastest path of likely radionuclide travel

The paths from the disturbed zone to the accessible environment are to be described in a macroscopic sense; e.g., aquifers. In crystalline rocks, paths *probably will* may consist of fractured, weathered or brecciated zones. In porous media, paths will generally consist of layers of permeable rock. Paths may also consist of fractured zones in consolidated non-crystalline rocks. Several examples of paths for generic repositories are covered in Appendix B.

There ~~may be~~ <sup>5</sup> several alternative conceptual models for <sup>a</sup> the repository, <sup>site may be proposed,</sup> each of which might determine a different path for radionuclide transport. For example, borehole information in a saturated zone might indicate the presence of permeable zones, but <sup>investigator</sup> may be unable to determine whether or not these zones were connected in such a way that they constitute a path. Such information could only be gathered by <sup>multiple well</sup> cross-hole tests on the length scale of the order of the dimensions of concern (e.g., hundreds to thousands of meters). The analysis of GWTT therefore should consider all paths for radionuclide transport defined by alternative conceptual models, unless they can clearly be demonstrated to be unlikely, preferably through direct measurements of hydrogeologic properties of the site. Data collection must be focused on identifying and quantifying paths so that there ~~is~~ a high degree of confidence *is provided*

*with -  
cross hole tests  
has another  
meaning.  
RD*

that potentially faster paths have not been overlooked. Selection of the proper drill and test program for the conceptual model is a key element in the process.

### 2.3 Groundwater Travel Time along the Fastest Path

Groundwater travel time <sup>as envisioned</sup> in this position <sup>paper (?)</sup> is a distributed variable rather than a fixed quantity. It ~~will~~ be quantified as a cumulative probability distribution of the times of travel for inert tracer particles from the disturbed zone to the accessible environment along the <sup>macroscopic</sup> paths. There are several reasons for the distributed nature of the groundwater travel times:

- o Uncertainty - Measurement error or sparseness of data necessary to characterize the site adds uncertainty to the travel time estimates for the tracer particles. Site data must always be collected and interpreted in terms of a conceptual model. An invalid conceptual model will lead to an incorrect interpretation of the data. Drilling a well to an improper depth relative to a valid conceptual model or performing an inappropriate test are typical of common errors in measuring and interpreting field data. *Such errors enhance uncertainty in groundwater travel time.*
- o Distributed source - The disturbed zone and accessible environment are defined as surfaces rather than points. Tracer particles released at different points along the disturbed zone ~~will~~ reach the accessible environment at different times.
- o Spatial variability of the properties of the medium (e.g., <sup>non-constant</sup> thickness of <sup>hydrostratigraphic</sup> units, hydraulic conductivity <sup>or</sup> porosity). *inhomogeneous*
- o Temporal variability - Hydrologic and hydrogeologic data within recorded history of the site might indicate that the groundwater velocities are fluctuating. Temporal variations over the time period of concern are not expected to be an important consideration on the regional scale for saturated flows. These variations might be important at sites built in unsaturated media, however. For example, it is conceivable that a period of unusually heavy precipitation for several years (unrelated to a global climatic change) could increase hydraulic heads, decreasing travel times along a normally slow pathway. A transient GWTT should be weighted according to its frequency and duration. In addition, a path which changes direction or length over time as a result of variable fluxes of groundwater should be considered to be a single path for the purposes of GWTT calculations. This allows the low probability, fast GWTT's to be fairly weighed with the high probability, slow GWTT's.

*Disc - Shouldn't we say cumulative frequency distribution? Can we really be sure it is a probability distribution? The curves are the same.*

The estimation of GWTT must accommodate spatial variability, temporal variability and uncertainty. GWTT can be presented as a distribution for each of the paths in terms of a Cumulative Distribution Function (CDF), an example of which is shown in Fig. 3. This CDF will combine all spatial variability, temporal variability and uncertainty of the GWTT into a single curve for each of the paths. The CDF itself however is assumed to contain no uncertainty. It is important to note that the CDF does not deny the existence of uncertainty, but that all uncertainty is incorporated into the CDF. Spatial and temporal variability and uncertainty can theoretically be treated separately, but grouping them both into a single CDF has the advantage of simplicity. Compliance with the 1000 year objective would be demonstrated if it could be shown that any tracer particle leaving the disturbed zone has a (100-X)% or greater probability of arriving at the accessible environment in a time greater than 1000 years, where X is a small number. The basis for choice of X% is presented in Section 2.4. The 15th percentile is shown in the figures for illustrative purposes only.

Overall, the identification of likely paths and reliable estimation of GWTT is strongly dependent on the adequate characterization of the hydrogeologic conditions between the disturbed zone and the accessible environment. Conceptualizations of paths will likely be simple during the early reconnaissance phase of site characterization. Continued characterization activities will produce more detailed and realistic conceptualizations of *hydro* stratigraphy and geologic structure, which will lead to improved estimates of GWTT. One of the goals of field experiments is to narrow the GWTT distribution by eliminating as much of the uncertainty as possible; i.e., increase the steepness of the CDF. The criterion discussed in section 2.4 is sensitive to the steepness of the GWTT distribution, thereby providing an incentive to reduce uncertainty. Further discussion of the concept of GWTT and procedures for its calculation are presented in Appendix A.

#### 2.4 Rationale for Choice of the Percentile of the Cumulative Distribution Function (CDF)

In applying 10 CFR 60.113(a)(2), the staff recognizes that groundwater travel time along the paths defined for each conceptual model can be represented by the Cumulative Distribution Function (CDF) rather than a single value, because of uncertainty in understanding the hydrogeology of the site, measurement errors, temporal variations in flow, multiple particle trajectories and a spatially-distributed source. (A single-valued GWTT determined from conservative models and coefficients would also be acceptable to demonstrate compliance with the GWTT objective). Uncertainties in estimating these phenomena are expected to cause the GWTT distribution to span as much as

several orders of magnitude. Phenomena leading to the distributed nature of the predicted GWTT are elaborated in Appendix A.

It is difficult to deal directly in terms of a distribution when stating performance criteria. It is often useful instead to specify a scalar norm of the distribution; e.g., the mean, median, or some percentile of the CDF. The "first particle" approach is a norm based on the zeroth percentile of the CDF. This <sup>approach</sup> has a certain appeal because the travel time of the first particle is obviously the "fastest". There are some serious shortcomings to this approach, however. Consider for example the two curves shown in Fig. 4 which represent the cumulative distribution of GWTT for two sites. In this example, further consider <sup>that</sup> both sites are perfectly characterized, and that any variations in travel time are due to spatial variability of the medium or the distributed nature of the accessible environment and disturbed zone. These curves could represent breakthrough curves from tracer experiments at the sites. In Case 1, the distribution indicates a single groundwater travel time,  $t'$ . In case 2, there is a distribution of travel times with a minimum of  $t'$ . A zero percentile criterion would <sup>not</sup> treat both cases as equals, whereas case 2 is obviously superior in terms of <sup>repository</sup> performance, if all other things are considered equal. The choice of a higher percentile would distinguish between Cases 1 and 2 and give credit to case 2.

A choice for the percentile which is too high, say the median, would be undesirable because it may be insensitive to the variance of the GWTT distribution. This <sup>can</sup> be demonstrated for the hypothetical example depicted in Fig. 5. The two CDF curves of GWTT in this figure have the same median of 1000 years, but different variances. They may, for example, represent different sites. The curves may also represent a single site for which the data have no experimental bias, but at different points in the site characterization process. Under the median GWTT criterion, sites which exhibit a wide variance of the travel time distribution for reasons such as great spatial variability, an inadequate conceptual model, inadequate drill and test plan, or measurement uncertainty, would be treated as equals. A smaller percentile justifiably favors the site which has the smaller variance in the GWTT distribution. If the wider variance is due to quantifiable uncertainty (e.g., lack of data), the smaller percentile would serve as an incentive to further characterize the site. A smaller percentile favors the site which has the smaller variance in the GWTT distribution.

The percentile for the CDF as the criterion for GWTT is presently unspecified, but the rationale from the above two examples suggests that a value greater than a few percent and considerably less than 50% would be desirable. The determination of the percentile for the GWTT criterion should also be based on considerations of "reasonable assurance". Licensing considerations to be made

*Dick - 2  
Reading that  
"repository  
Performance"  
definition mean  
Post employment  
by but I think  
we ought to add  
it to make sure  
the reader  
doesn't become  
confused.  
-R*

in connection with GWTT involve substantial uncertainties, <sup>some</sup> many of which are unquantifiable (e.g., those pertaining to the correctness of the models used to evaluate GWTT). Such uncertainties can be accommodated within the licensing process only if a qualitative test such as reasonable assurance is applied for the level of confidence that the numerical performance objective is expected to achieve. Both the quantifiable uncertainties incorporated in the GWTT distribution and the unquantifiable uncertainties which are not included must be considered together in reaching a finding of reasonable assurance. It might, for example, be proper to select a different percentile criterion for a relatively well-understood, easily modeled site, where unquantifiable uncertainties are small, than would be appropriate for a site with larger unquantifiable uncertainties. Stated another way, selection of the percentile criterion is a qualitative judgement, <sup>and</sup> is part of a larger set of judgements necessary to reach a finding of reasonable assurance that the performance objectives will be achieved.

Note that <sup>T</sup> the applicant is not required to generate a detailed CDF of the GWTT distribution. A simplified approach would be acceptable, provided that achievement of the 1000 year GWTT objective could be demonstrated with reasonable assurance. Such a simplified approach could for example, define a conservatively short path along which the travel time of a single particle could be calculated using Darcy's law <sup>in one dimension</sup> with conservatively chosen coefficients of hydraulic conductivity, gradient and effective porosity.

## 2.5 Special Considerations for Unsaturated Media

Groundwater movement through unsaturated media for pre-waste-emplacment conditions differs from that of saturated media in a number of important ways:

1. In a medium unaffected by boundaries, the gradient and therefore the direction of unsaturated flow is predominantly vertical <sup>and</sup> (confining features such as aquicludes, faults and dikes <sup>complicate</sup> this general picture). Saturated flow is primarily horizontal, except in areas of recharge or discharge.
2. Unsaturated flow tends to be more responsive to episodes of recharge than <sup>the</sup> saturated flow.
3. Unsaturated flow parameters are highly nonlinear, and depend on the degree of saturation of the medium. This nonlinear dependence could also lead to changes in the flow trajectories for differing levels of saturation, e.g., saturation of fractures or creation of a perched water table.

Dick -  
 Could be over a  
 period of days

The transient nature of flow in the unsaturated zone causes a certain difficulty in defining groundwater travel time. There ~~is~~ <sup>is</sup> a conceptually important distinction <sup>must be made</sup> between an episodic recharge event in an unsaturated medium and nearly-steady groundwater flow in a saturated medium. Even though ~~there may normally be little downward flow through an unsaturated medium,~~ <sup>may occur normally</sup> it is conceivable that unusually heavy precipitation <sup>along a reach</sup> over a ~~period of years~~ <sup>short</sup> could lead to short travel times during that period, at least through the unsaturated portion of the medium. The definition of GWTT as a cumulative distribution function allows the low probability, short travel time events to be fairly weighted with more-typical travel times.

Travel times would be weighted according to the intensity, frequency and duration of the event. The travel time distribution could be estimated, for example, from a transient groundwater flow analysis, coupled with the transport of hypothetical tracer particles released at constant, time intervals at points along the disturbed zone. The cumulative <sup>requirements of product of GWTT</sup> distribution in this case would incorporate time variability of recharge, as well as the spatial and temporal variability in path lengths. It should be noted however, that the estimation <sup>measurement</sup> of parameters for unsaturated systems is considerably more difficult than for saturated flow, <sup>which</sup> and may impose increased conservatism on the uncertainty analysis.

### 3.0 Summary and Statement of Regulatory Position

#### 3.1 Summary

Groundwater travel time is a measure of the merit of the geologic setting of a high level waste repository. The Staff recognizes that ~~there may be~~ <sup>may be</sup> alternative conceptual models of the ~~site~~ <sup>site</sup> because of the inability to completely characterize it with the available data. This inability may lead to a multiplicity <sup>of</sup> potential paths for likely radionuclide travel. The groundwater travel time along the paths will be a distributed quantity because of spatial variability, temporal variability, the distributed nature of the disturbed zone and accessible environment, and model or data uncertainty. Groundwater travel time should therefore be represented as a cumulative <sup>to frequency</sup> probability distribution, although a single-valued GWTT would be acceptable if it were derived from appropriately conservative models and coefficients. The "pre-waste-emplacment groundwater travel time along the fastest path of likely radionuclide travel" should be represented as a percentile of all travel times contained in the Cumulative Distribution Function for each of the potential paths identified. Pre-waste-emplacment pertains to conditions at the site prior to any significant disturbance of the hydrological or geological setting such as construction activities or the effects of radioactive waste, and whose spatial and temporal variability can be reasonably inferred from historical

records at or near the site. Testing activities capable of altering the pre-waste-emplacment environment should be taken into consideration. The analysis must take into account any information pertaining to preferential points of release from the Disturbed Zone, and consider reasonably likely conceptual models which might lead to transport through other paths.

### 3.2 Statement of Position

It is the staff's position that in demonstrating compliance with groundwater travel time performance objective of 10 CFR 60.113, DOE should ~~do the~~ *proceed as* following:

1. Determine the paths of likely radionuclide travel for the site as described in Section 2.2 and Appendix B.
2. For each of the paths, determine the pre-emplacment groundwater travel time as described in Section 2.3 and Appendix A.
3. Select the fastest such travel time so determined.

Appendix A - Calculation of the Groundwater Travel Time (GWTT)

A.0 Introduction

This section <sup>reminds</sup> gives guidance on how to calculate the GWTT distributions for each of the identified macroscopic paths defined by conceptual models considered. Section A.1 describes the utility of hypothetical tracer particles and uses the concept to illustrate why there would be a distribution of travel times rather than a single value.

Section A.2 describes several mathematical modeling schemes which could be used to calculate the GWTT distribution. Section A.3 discusses the various methods for estimating parameters, quantifying their uncertainties, and choosing the input for the mathematical models on the basis of the available data. Section A.4 discusses a particular approach to calculating the GWTT distribution by applying a Monte Carlo sampling scheme to a deterministic mathematical model.

Finally, Section A.5 describes how simplified analyses may be used in some cases to satisfy the GWTT performance objective without having to resort to complicated analyses.

A.1 Travel Time Distributions

It is useful in subsequent discussions to think of the <sup>released</sup> radionuclides as consisting of discrete particles, although it should be recognized that these are figurative rather than real. A single "particle" leaving the disturbed zone would generally follow the path traced by the moving groundwater, except for phenomena such as molecular diffusion and chemical interaction. Molecular diffusion would cause random motion to be added to the trajectory of the particle, allowing it to move into areas such as pores with little or no net flow. Chemical interaction with the surrounding rock would cause the radionuclide particle to leave the groundwater and become fixed temporarily or permanently in or on the surface of the rock. Because of a consensus in the geohydrologic community that the GWTT should be calculated using the average pore velocity, we restrict all subsequent discussion in this Technical Position to transport of the tracer by this velocity, without considerations of molecular diffusion or geochemical effects. Geochemical effects are covered in another regulatory position (Bradbury et.al., 1985).

Along any "path" as defined in Section 2.2 and Appendix B, ~~there will be~~ natural spatial variability in the properties of the medium; <sup>with</sup> e.g. porosity, hydraulic conductivity. The tracer particles moving in the groundwater will follow trajectories governed by the hydraulic properties of the medium and the driving forces at their location. The more uniform the medium, the more

*This term is about out near hydrologic*

*Dist - Don't you want to say tracers? (pre emplacement)*

?

parallel will be the trajectory of the tracer particles. Conversely, the tracer particles in a heterogeneous medium may diverge from their neighbors for certain types of heterogeneity, following trajectories of least resistance which are not necessarily the shortest trajectories. Travel time distribution caused by non-uniformity of the medium is generally known as mechanical dispersion.

Unsaturated media are somewhat more complicated than saturated media. Not only the speed but the trajectory of tracer particles could change with time as a result of a change in boundary conditions or flow parameters in the unsaturated case. For example, in a fractured porous medium, conditions of high infiltration could cause certain fractures to fill with water and establish paths not present during periods of lower infiltration.

#### A.2 Mathematical Representation of the Repository and its Environment

Analysis of the GWTT for any real repository must depend on observations of hydrogeologic data at the site. These data must be collected with the appropriate drill and test program, based on a valid conceptual model for the site. Artificial tracers are useful in some cases (e.g., determining the effective porosity and thickness), but the time and distance scales are too great for direct characterization of the GWTT by such methods. Naturally occurring isotopes and those produced from atmospheric weapons testing and nuclear reactors can be used for groundwater dating to support estimates of travel time distributions for real sites. Such techniques should be used whenever possible. Investigations must usually resort to mathematical models of the repository for predictions of performance.

Once conceptual models and drill and test plan programs have produced the appropriate data, values of travel time from the disturbed zone to the accessible environment are usually obtained from mathematical models consisting of the equations governing the hydraulic potential, flow of groundwater, and transport of a tracer. There are many models for groundwater flow in various media which are based on the equations at steady state or transient conditions in one, two or three dimensions.

Deterministic models consist of equations whose solution is based on the assumption that hydrogeologic properties, initial conditions and system geometries are known. Uncertainty and variability of the data are sometimes taken into account by obtaining many <sup>deterministic</sup> solutions, each one based on a different ~~statistical~~ realization of the hydrologic properties. Such techniques are generally known as "Monte Carlo" simulations. The results obtained by applying many random realizations (but chosen from a data base collected in a well-conceived and carefully executed experimental program) of the parameter

sets to the mathematical model can then be (statistically) analysed in order to estimate the travel time distribution (Smith and Schwartz, 1980, Smith and Schwartz, 1981, Clifton, 1984). Alternatively, the model may be used with conservative values of the input parameters in order to obtain conservative estimates of the GWTT.

<sup>M</sup> *that are exclusively stochastic*  
 - Stochastic models deal with the variability and uncertainty of the data in a more direct way. The coefficients and variables of the equations are treated as random processes rather than deterministic quantities. The PDE's are solved indirectly in terms of the moments of the dependent variables (e.g., mean and variance). This technique has the advantage of requiring only one solution rather than the numerous Monte-Carlo solutions required for the deterministic approach. Stochastic approaches to modeling are at a much less developed state than Monte Carlo techniques, although it is an area of rapid development. The stochastic approaches have been used to estimate means and variances of fields such as head (Mizell et al., 1982) and concentration (Gelhar and Axness, 1983). They have, apparently not yet been used to calculate directly such spatially integrated properties as GWTT. *I would agree on J.*

### A.3 Site Characterization from Field Data

Four levels of parameter quantification for site characterization <sup>are:</sup> can be stated (ONWI, 1983):

- Bounding value estimates - the range of possible values of the parameter.   
 ? [ This is usually an extreme values of a range of parameters which does not take into account the correlation of the parameter with other parameters.
- Best estimate values - a single value of the parameter which is based on field measurements, laws of physics, expert opinion, or combinations of the above.
- Interval estimates - a bounding estimate which has been tempered by field data, laws of physics, expert opinion or combination of the above. Correlations of the parameter may be taken into account, e.g., relationships between porosity and hydraulic conductivity.
- Probability density functions (PDF's). A function in which the probability that the parameter exceeds a certain value is known.

The PDF is of course the most informative quantification of the parameter, but requires the most knowledge of the site. In those cases where the data are too sparse for direct inference, rough estimates of the variability of parameters in the field may be inferred during early phases of the site characterization from expert opinion and observations of the distributions of the parameter in similar rock masses. For example, parameters such as hydraulic conductivity are often observed to follow a log-normal distribution, and conform to certain models of the spatial covariance function (Neuman, 1982). Expert opinion is not a substitute for field data, however.

Both data gathering and modeling depend on the establishment of a good <sup>valid</sup> conceptual model for the site. The conventional quantification of aquifer hydrogeologic parameters (i.e., transmissivity, storativity, hydraulic conductivity, effective thickness, etc.) is based on a framework of established assumptions. Significant departures from the conceptual model will yield nonrepresentative values of the quantities sought.

Errors may be introduced because the collected data are misinterpreted. For example, water levels determined by a steel tape may be interpreted incorrectly because of temperature or salinity differences in the wells (ONWI, 1983). Another example might be the misinterpretation of transmissivities (hydraulic conductivities) from a drawdown test caused by phenomena such as leakage from another aquifer or a boundary of low permeability (e.g., fault or dike) within the cone of depression. In these cases, the principal cause of error is once again the inadequacy of the conceptual model.

The scale over which the data are collected is an important factor. For example, ~~hydrologic~~ <sup>geohydrologic</sup> properties determined from point tests (e.g., slug test) might only be valid for characterizing the medium a few meters from the borehole. The continuity of the medium between boreholes could be determined in some cases by spatial correlation such as variogram analysis, but it may be difficult or impossible to ~~determine~~ <sup>substantiate</sup> the hydraulic ~~connections~~ <sup>connections</sup> between the boreholes which determines the paths of groundwater flow without cross-hole ~~tests~~ <sup>multiple well</sup> on a scale similar to the dimensions of interest. Lacking cross-hole ~~tests~~ <sup>multiple well</sup>, conservative assumptions about the connectivity of boreholes must be used. The fallibility of ~~cross-hole~~ <sup>multiple well</sup> tests must be recognized, however. The gradient in the medium may be highly distorted by pumping in order to complete the measurements in a reasonable length of time. Furthermore, ~~cross-hole~~ <sup>multiple well</sup> tests do not appear to be a viable procedure in situations such as unsaturated flow, ~~so analyses must therefore~~ <sup>multiple well</sup> be based on point measurements.

Overall discussions of parameter estimation should include the reasonableness, within the known hydrogeologic regime, of all key assumptions. The likely effects of erroneous assumptions on parameter estimation and GWT calculations

should be stated. The staff recognizes the importance of expert opinion in providing defensible interpretations of all types of aquifer field testing.

### A.3.1 Treatment of Uncertainties in Site Characterization

~~There are~~<sup>m</sup> many possible sources of uncertainty in the ~~estimation of the~~ characterization of the site for determining GWTT. Among the most likely sources are:

- o Measurement Errors in Data. These errors may be procedural (e.g. human) errors or systematic errors caused by faulty or improperly calibrated instruments. The staff recommends that these types of errors be minimized and quantified by standard techniques such as calibration, redundancy, and by using several independent ways of obtaining the same data (e.g., using ~~more than both a neutron probe and tensiometer for moisture content~~ *more than one method for measuring*).
- o Validity of Analytical Assumptions (Conceptual Model) for Site Simulation. The simulation of flow and transport may not be representative of the physical system because of a poor understanding of the basic physical phenomena or oversimplification because of computational expediency. For example, the equivalent porous media (EPM) approach is often used to represent a fractured medium as a porous medium. The EPM approximation may be useful only for large scale transport, and not valid at scales in which the effects of individual fractures are important (Long et.al., 1982). Some investigators question the validity of the EPM approximation for properly modeling transport along the direction of fracture orientation regardless of scale (Endo, et.al., 1984). The validity of the conceptual model for simulating the site is closely coupled to the conceptual model used to interpret site data.

The staff recommends that alternative conceptual models be proposed and tested in order to determine the sensitivity of the results to the choice of the conceptual models which can reasonably be constructed from the available data.
- o Interpretation of Sparse Data. The temporal and spatial distribution of hydrogeologic field data are always less dense than desired. In the case of point measurements, conditions between points must be inferred, either by fitting a surface through the data points, or <sup>or</sup> using a physically realistic interpolation model. Sophisticated interpolation methods such as Kriging (e.g., Matheron, 1971) yield an estimate of the variance as well as the mean of spatially varying data. Mathematical models may be adjusted manually in order to produce a best fit to the available data

(e.g., Fogg, 1978, Mercer and Faust, 1980). In some cases, the fitted parameter may be determined automatically without the need for manual adjustment. Statistical inverse methods are available for fitting the hydraulic conductivity to head data in saturated media, and also calculate the variance of the hydraulic conductivity (e.g., Neuman and Yakowitz, 1979, Hoeksema and Kitanidis, 1984).

- ° Computational Errors. Since computer codes must be used extensively, errors may be introduced because of mathematic approximations (e.g., element size, step size) and intrinsic errors such as round-off and truncation. Computer codes should be verified with analytical solutions, validated with real field data, and compared or benchmarked with other similar computer codes (Silling, 1983). The sensitivity of the results to node size, time steps, grid orientation, or other parameters and assumptions should be tested by computational experiments.

#### A.3.2 Determination of the Input to the Model.

Once the conceptual model has been coded into a computer program, the computations must be performed with parameters inferred from the available data in order to generate the GWTT distribution. The types and quality of data available will determine how the computations are to be performed. For example, if only a few data points are available for a particular parameter, a conservative estimate of that parameter may have to be made and carried through the calculations. With more data, a mean and variance of the parameters can be calculated and used with a simple sampling approach (ONWI, 1983). If the site is correctly characterized with sufficient data, spatially varying properties of the parameters can be generated, permitting conditional simulations or stochastic models to be applied.

The GWTT computed using this general guidance will be sensitive to the degree of characterization of the site. That is, investigators of poorly-characterized sites will be forced to use conservative or at least overly-wide estimates to represent the distribution of the input parameters. Sites that have been tested with valid drill and test programs based on defensible conceptual models will facilitate the development of a more defensible GWTT distribution function. The GWTT distribution with smaller variance is preferable for the reasons stated in Section 2.4 of the Position.

#### A.4 Estimating GWTT from Deterministic Models with Randomly-Generated Input

The GWTT distribution can be calculated from multiple runs of deterministic models, with each run made for a realization of the data which can be inferred for the site. In the steady-state saturated flow example, each realization of

the data requires the solution of the hydraulic head and velocity field. This <sup>solution</sup> ~~is generally~~ accomplished by solving the partial differential equations (PDE's) using techniques such as finite differences or finite elements. Once the velocity field is known, travel time distributions can be calculated by simulating the release of tracer particles from single or multiple locations along the Disturbed Zone and count <sup>them</sup> their arrival times as they reach the accessible environment.

#### A.4.1 Treatment of Spatial Variability

A large part of the variability of GWTT is caused by spatial <sup>inhomogeneity</sup> non-uniformity of the parameters which determine groundwater movement, particularly hydraulic conductivity and effective porosity. The motion of hypothetical tracer particles leaving the disturbed zone will be determined by the gradient, ~~the~~ hydraulic conductivity and effective porosity encountered along the path. This variability alone will cause the paths of the particle leaving different parts of the disturbed zone to diverge. ~~Added to this phenomenon is the~~ incompleteness of the data which determine flow paths within the hydrological regime and <sup>uncertainty</sup> due to measurement errors in field data <sup>add to the sources of variability.</sup>

At least one method, conditional (or unconditional) simulation, has been applied to account for the spatial distribution and uncertainty of field data in the determination of GWTT. This method has been applied to 2-dimensional steady state, saturated flow models for equivalent porous media (e.g., Delhomme, 1979, Clifton and Neuman, 1982), but <sup>it</sup> could be adapted to three dimensions (Mantoglou and Gelhar, 1985). The procedure is outlined below for the 2-dimensional, steady state case (Clifton, 1984):

##### a. Determine Spatial Variability and Uncertainty of Data

Field data for hydraulic conductivity and porosity are collected, and evaluated by methods of statistical inference in order to determine their spatial covariance and drift, which are measures of the variability of the property in space, and the "nugget effect," which is an indication of the measurement error or uncertainty. Expert judgement based on prior knowledge of the properties of rocks in similar formations may be useful in estimating the proper covariance models to apply to these data in this step (Mantoglou and Gelhar, 1985).

##### b. Generate Realizations of Data

Random fields of the model parameters are re-generated from the spatial covariances, drift, and uncertainties determined in Step a, so that the spatial covariances and auto-covariances of the new field or "realization"

are identical to those determined for the original data. It is usually necessary to treat the random variable and boundary conditions as "ergodic", for which the principles of first and second order stationarity apply. Cross correlation of the data, e.g., correlation between effective porosity and hydraulic conductivity, may be taken into account in this step. Two widely-used procedures for generating these random fields are the "nearest neighbor" method (Smith and Freeze, 1979) and the "turning band" method (Mantoglou and Gelhar, 1985). The random fields can be forced to comply with the original data by a process known as "conditioning;" otherwise, the parameter fields are "unconditional". Conditional simulations reduce the variance considerably, but are generally worthwhile only if there are sufficient high-quality data (Clifton, 1984).

c. Run Deterministic Model for Heads

The random fields are used with a finite difference or finite element model to generate a steady state head and groundwater flow field under the influence of either fixed or random boundary conditions.

d. Calculate Travel Times of Particles

The trajectory of tracer particles is tracked from one or multiple locations on the disturbed zone along the postulated paths, to the plane representing the accessible environment. The travel time of the particles from their starting position to the accessible environment is recorded.

e. Generate Multiple Realizations

Steps b through d are repeated numerous times in order to generate a large number of travel times for multiple tracer particles so that their cumulative distribution can be drawn. The probability of each realization is taken to be equal to any other realization for the purpose of constructing the CDF. If more than one particle is released per realization, each particle is given equal weight.

## A.5 Simplified Analysis

The user is not required to generate a detailed CDF of the GWTT distribution. A simplified approach would be acceptable, provided that the 1000 year GWTT objective could be ~~met~~<sup>demonstrated</sup> and the results could be demonstrated to be conservative. Alternatively, it has been shown that in the (conditional or unconditional) simulations outlined in Section A.4.1, high spatial covariance of hydraulic conductivity correlates with wider travel time distributions

GWTT/DUP9

*Do you want to say has the greatest variance rather than is the widest?*

- 25 -

(Clifton, 1984). If the medium is assumed to be spatially uniform (i.e., infinite spatial covariance), then it must be assumed that all variations of the parameters are caused by measurement error. The GWTT <sup>assumes a frequency</sup> distribution is widest under these circumstances, which gives a conservative indication of the small-percentile criterion for GWTT as discussed in Section 2.4 of the Position (but not necessarily the median of the distribution).

## Appendix B - Choosing paths of radionuclide travel

### B.0 Introduction

The paths which radionuclides will follow from the disturbed zone to the accessible environment are to be described in a macroscopic sense. In crystalline rocks, paths may consist of fractured, weathered or brecciated zones. In porous media, paths will generally consist of layers of permeable rocks. Paths may also consist of fractured zones in consolidated non-crystalline rocks.

There may be several alternative conceptual models for the repository, <sup>may be desirable</sup> each of which might determine a different path for radionuclide transport. The analysis of GWTT ~~therefore~~ should consider all paths for radionuclide transport defined by alternative conceptual models, unless they can clearly be demonstrated to be unlikely. Collection of data at the site must be directed to identifying these paths, establishing the validity of the conceptual models, for interpreting and simulating the hydrogeology, and making a reasoned determination that potentially faster paths have not been overlooked.

Examples for several generic types of repository media are given in the sections below.

### B.1 Repositories in saturated media

High Level Waste underground facilities located in saturated media will usually be emplaced in a rock unit of low permeability. <sup>More permeable units may underlie and overlie the repository.</sup> ~~However,~~ as shown in Fig. B.1, <sup>along with some</sup> several possible <sup>such</sup> pathways (note, however that it is not likely that both vertically upward and downward flows could occur at the same time). Some of these <sup>more permeable</sup> hydrostratigraphic units may intersect the disturbed zone. While there may be little movement of groundwater <sup>may occur</sup> in the host rock, there may be factors <sup>may be present</sup> which could cause the movement of radionuclides from the disturbed zone to these more permeable hydrostratigraphic units. Transport between hydrostratigraphic units could <sup>occur through</sup> be by fracture or porous <sup>media</sup> flow under the driving force of natural hydraulic gradients. ~~The fastest paths should therefore~~ follow the hydrostratigraphic units which have the highest groundwater velocities.

The choice of the path need not be mechanistic; e.g., it is not necessary to propose or calculate the mechanisms by which transport from the hydrostratigraphic units intersected by the disturbed zone to the faster hydrostratigraphic units can occur (unless credit will be taken for the travel time from the disturbed zone to the hydrostratigraphic units). It may be

necessary, however, to determine whether such paths are "likely", or can be excluded from consideration. For example, an analysis could determine that the driving force would be inadequate to allow transport to other hydrostratigraphic units above a certain elevation, even if the necessary interconnections existed. Therefore, these hydrostratigraphic units will not be on "likely" paths and could be ignored. Even for "likely" paths, such analyses might allow quantification of travel times along the portion of the path between the disturbed zone and the assumed hydrostratigraphic unit.

## B.2 Unsaturated media

Definition of paths for repository sites in unsaturated media will differ from those in saturated media. <sup>of unsaturated conditions</sup> The direction of flow is likely to be vertically downward until the water table is reached. <sup>vertical</sup> In some cases, the path may be defined in terms of the direction of the gradient, unless there are barriers to flow such as contrasts in hydraulic conductivity leading to perched water <sup>and</sup> tables. The possibility of perched water under reasonably conceivable conditions (e.g., a <sup>series</sup> of wet years which are not a major climatic change, but could occur under present climatic conditions) should be explored, even if such conditions currently do not exist at the site. Paths should also consider the possible connections of perched water to fractures or other structural features of the site which would allow short-circuiting of the unsaturated material in which the repository would be placed. Phenomena peculiar to unsaturated flow such as "fingering" should also be considered. Examples of such paths are illustrated in Fig. B.2.

REFERENCES

Blencoe, J.G., and G.E. Grisak, 1984, "Topical Review: Matrix Diffusion of Radionuclides in Rock - Groundwater Systems," ORNL/TM-9155, Oak Ridge National Laboratory, Oak Ridge, TN, Feb. 1984 (Draft)

Bradbury, 1985, "Determination of Radionuclide Sorption for Assessment of High-level Waste Isolation", Geochemistry Section, Geotechnical Branch, DWM, USNRC, May 1985 (Draft)

Cathles, L.M., H.R. Spedden, and E.E. Malouf, 1974, "A Tracer Technique to Measure the Diffusional Accessibility of Matrix Block Mineralization", in Solution Mining Symposium 1974, Editors F.F. Aplan, Society of Mining Engineers, American Institute of Mining, Metallurgical and Petroleum Engineers, New York

Clifton, P.M., and S.P. Newman, 1982, "Effects of Kriging and Inverse Modeling on Conditional Simulation of the Avra Valley Aquifer in Southern Arizona," Water Resources Research, Vol. 18, no. 4, pp. 1215-1234

Codell, R.B., K.T. Key, and G. Whelan, 1982, "A Collection of Mathematical Models for Dispersion in Surface Water and Groundwater", NUREG-0868, USNRC, Washington, DC

CRC, 1986, Handbook of Chemistry and Physics, Chemical Rubber Corporation

Clifton, P.M., 1984, "Groundwater Travel Time Uncertainty Analysis - Sensitivity of Results to Model Geometry, and Correlations and Cross Correlations among Input Parameters," Report no. BWI-TI-256, Rockwell Hanford Operations, Hanford WA

Delhomme, J.P., 1979, "Spatial Variability and Uncertainty in Groundwater Flow Parameters: "A Geostatistical Approach," Water Resources Research, Vol. 15, no. 2, pp. 269-280

Endo, H.K., J.C.S. Long, C.R. Wilson, P.A. Witherspoon, 1984, "A Model for Investigating Mechanical Transport in Fracture Networks," Water Resources Research, Vol. 20, no. 10, pp. 1390-1400

Faust, C.R. and J.W. Mercer, 1980, "Groundwater Modeling: Numerical Models", Groundwater, Vol. 18, p. 395

Fogg, G.E., 1978, "A Groundwater Modelling Study in the Tuscon Basin", M.S. Thesis, University of Arizona, Tuscon Arizona

Gelhar, W. and C.L. Axness, 1983, "Three-Dimensional Analysis of Macrodispersion in Aquifers", Water Resources Research, Vol.18, no. 1, pp. 161-180

Gordon, M., N. Taniou, J. Bradbury, L. Kovach, and R. Codell, 1986, "Draft Generic Technical Position: Interpretation and Identification of the Extent of the Disturbed Zone in the High-Level Waste Rule (10 CFR 60)" (Draft)

Grisak, G.E. and J.F. Picketts, 1980, "Solute Transport through Fractured Media: 1. The Effect of Matrix Diffusion, " Water Resources Research, Vol. 16, no. 4, pp. 719-730

Hoeksema, R.J. and P.K. Kitanidis, 1984, "An Application of the Geostatistical Inverse Problem in Two-dimensional Groundwater Modeling," Water Resources Research, Vol. 20, no. 7, pp. 1003-1020

Long, J.C.S., J.S. Remer, C.R. Wilson, and P.D. Witherspoon, 1982, "Porous Media Equivalents for Network of Discontinuous Fractures, " Water Resource Research, Vol. 18, no. 3, pp. 645-658

Mantoglou, A., and L. W. Gelhar, 1985, "Large-scale Models of Transient Unsaturated Flow and Contaminant Transport using Stochastic Methods," Report no. 287, Ralph M. Parsons Laboratory, Massachusetts Institute of Technology, Cambridge, MA

Matheron, G. 1971, The Theory of Regionalized Variables and Its Applications, Ecole des Mines, Fontainbleau, France

Mercer, J.W., and C.R. Faust, 1980, "Groundwater Modeling: An Overview", Groundwater, Vol. 18, p. 108

Mizell, S.A., L.W. Gelhar, and A.L. Gutjahr, 1982, "Stochastic Analysis of Spatial Variability in Two-Dimensional Steady Groundwater Flow Assuming Stationary and Nonstationary Heads." Water Resources Research, Vol.18, no. 4, pp. 1053-1068

Nelson, R.W., 1978, "Evaluating the Environmental Consequences of Ground water Contamination Parts I-IV, " Water Resources Research, Vol. 19, no.3 pp. 409-450

Neuman, S.P., and S. Yakowitz, 1979, "A Statistical Approach to the Inverse Problem of Aquifer Hydrology: 1- Theory", Water Resources Research, Vol.15, no. 4, pp. 845-860.

Neuman, S.P., 1982, "Statistical Characterization of Aquifer Heterogeneities: An Overview," in Recent Trends in Hydrogeology, T.N. Narasimhan, editor, Geological Societies of America Special paper 189, pp. 81-102

ONWI, 1983, "A Proposed Approach to Uncertainty Analysis," ONWI-488, Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, OH

Silling, S., 1983, "Final Technical Position on Documentation of Computer Codes for High-level Waste Management", NUREG-0856, U.S. Nuclear Regulatory Commission

Smith, L. and R.A. Freeze, 1979, "Stochastic Analysis of Steady State Groundwater Flow in a Bounded Domain - 2: Two-Dimensional Simulations," Water Resources Research, Vol. 15, pp. 1543-1559

Smith, L., F. Schwartz, 1980, "Mass Transport: 1. A Stochastic Analysis of Macroscopic Dispersion", Water Resources Research, Vol. 16, no. 2, pp. 303-313

Smith, L. and F. Schwartz, 1981, "Mass Transport: 2. Analysis of Uncertainty in Prediction", Water Resources Research, Vol. 17, no. 2, pp. 351-369

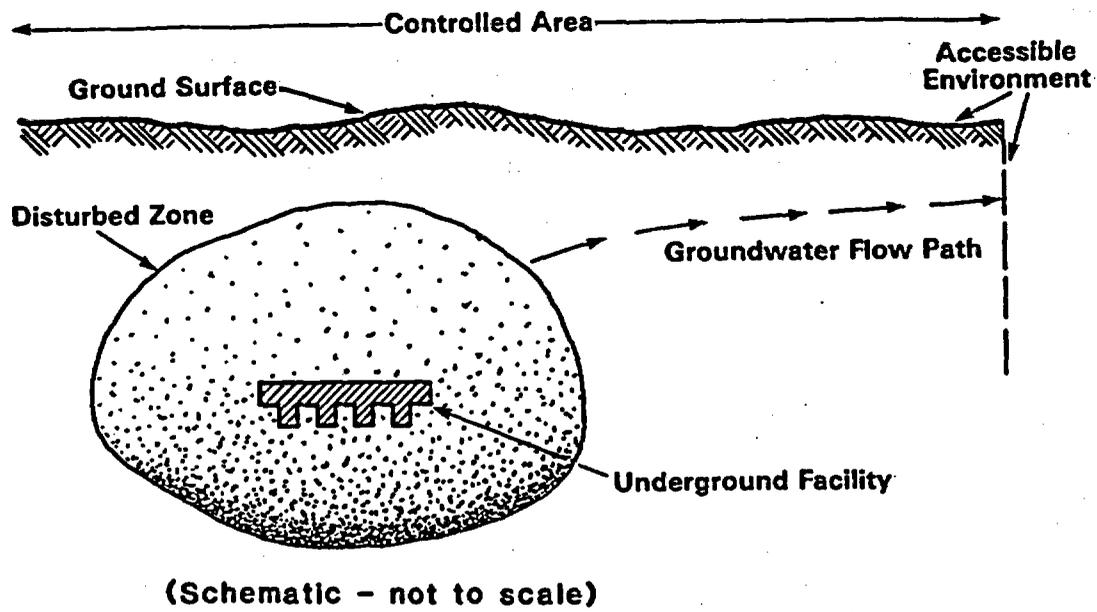


Figure 1 - Disturbed Zone, Path and Accessible Environment

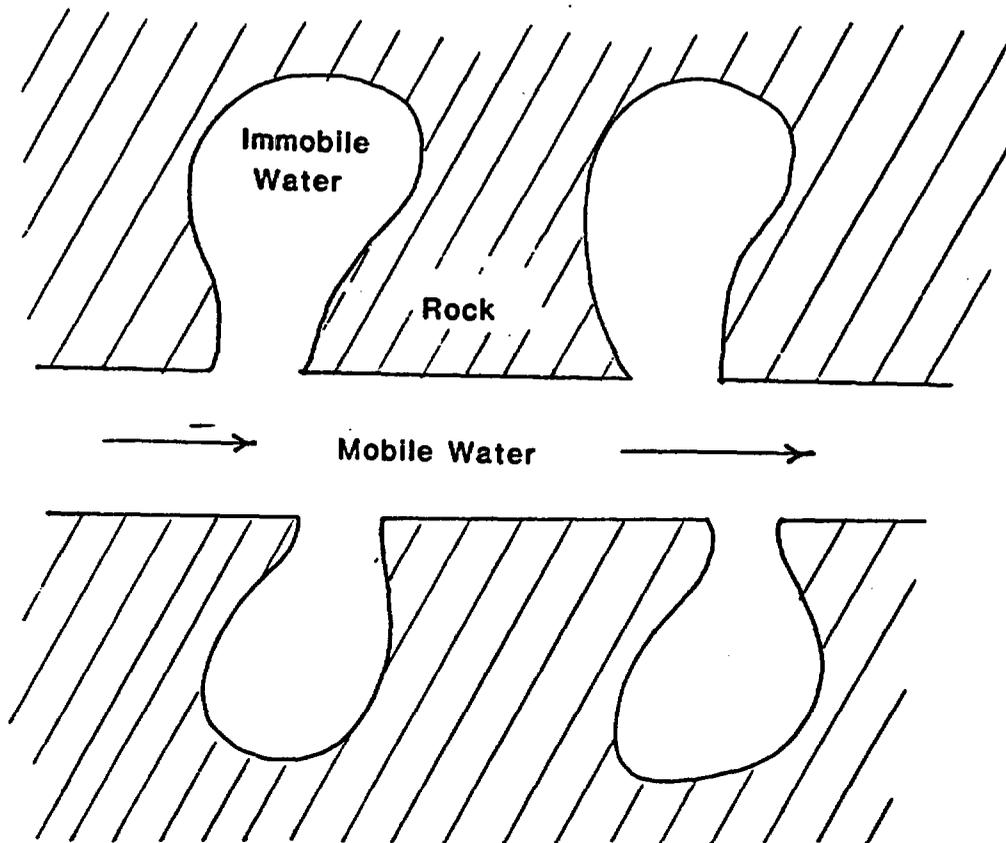
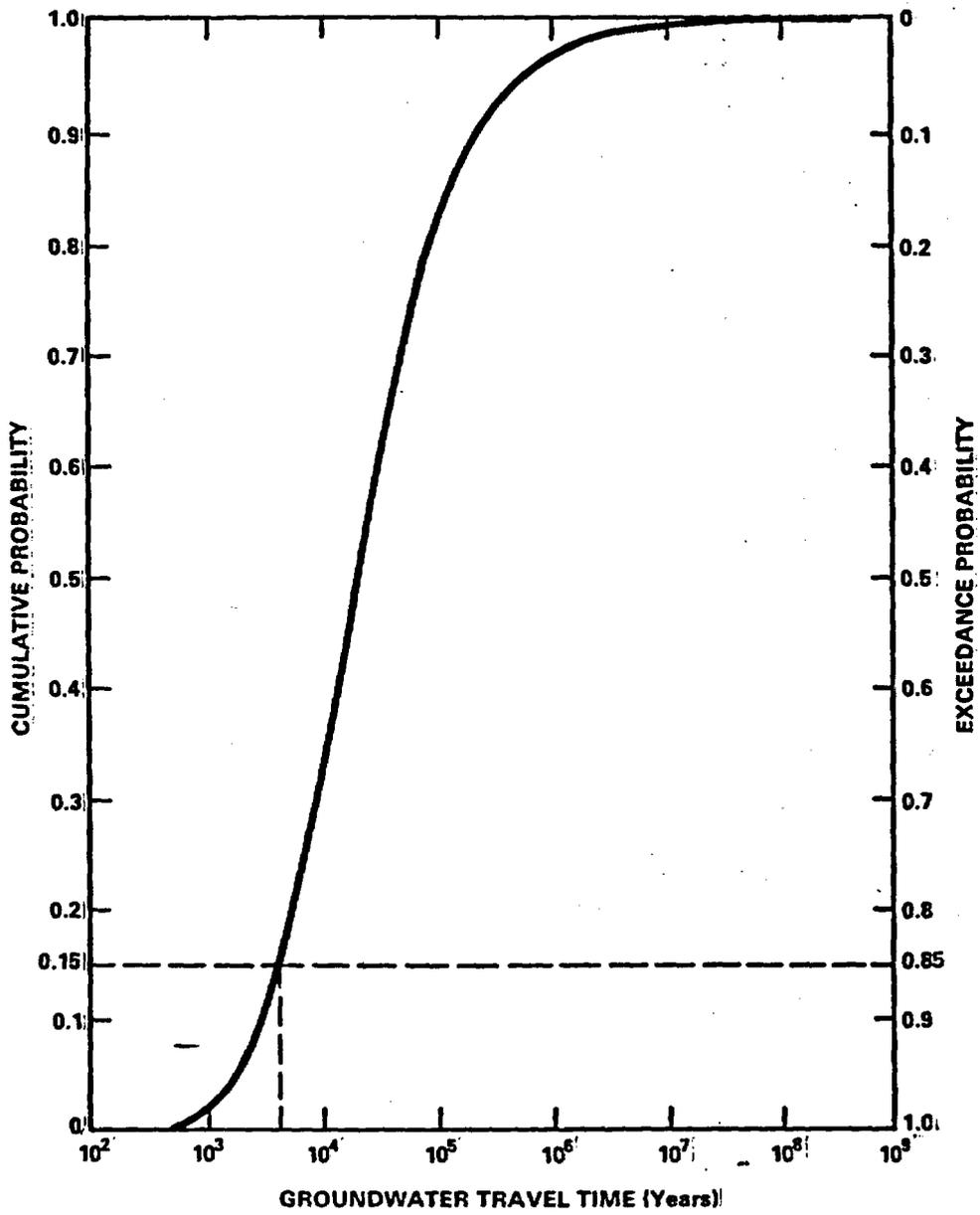


Figure 2 - Three Compartment Model of Groundwater



Cumulative Frequency

Figure 3 - Groundwater Travel Time Distribution

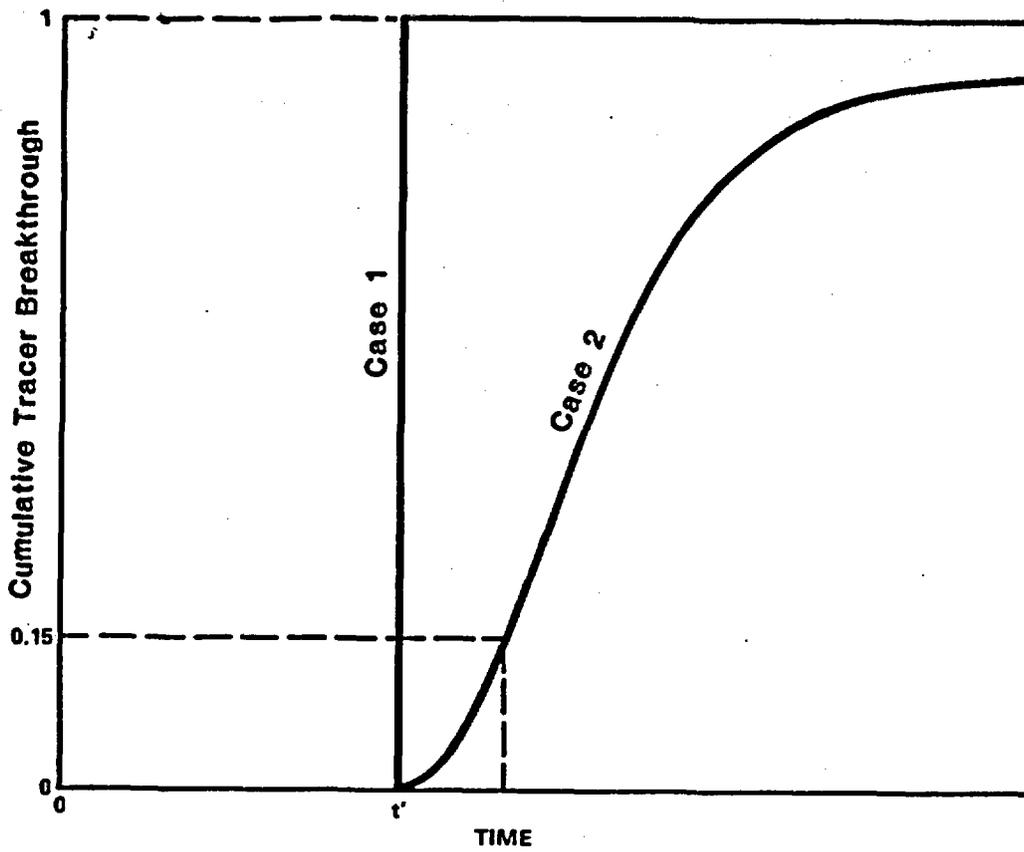


Figure 4 - Breakthrough Curves

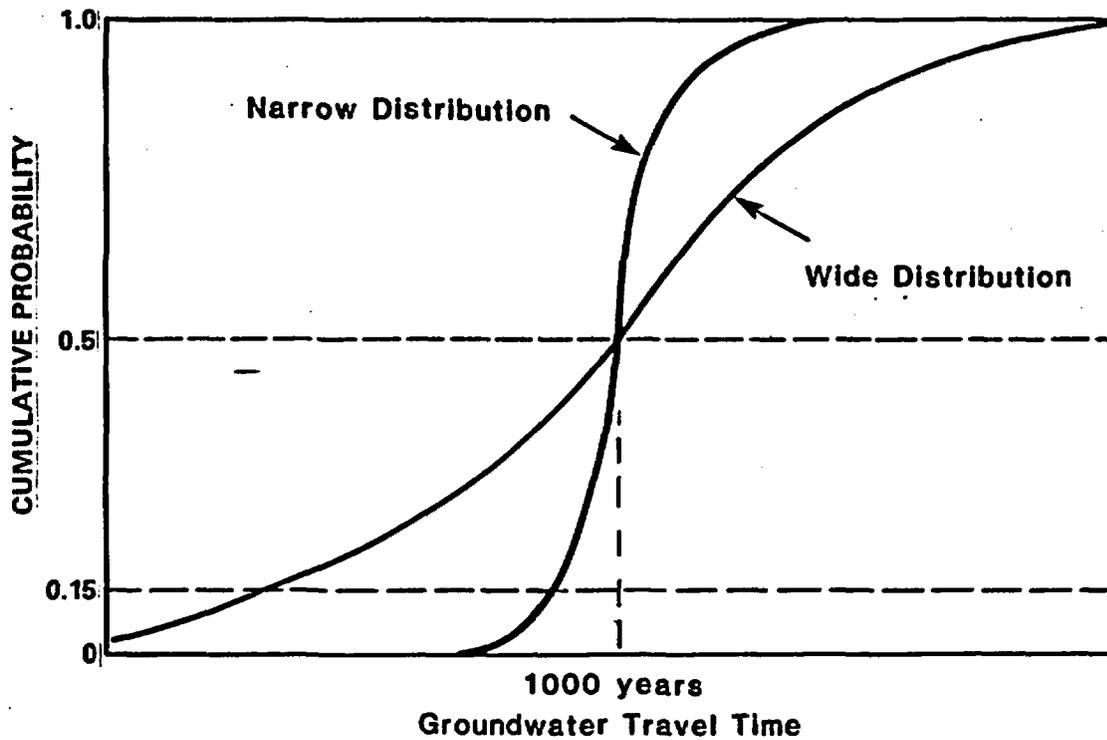


Figure 5 - Variance of Groundwater Travel Time Distribution

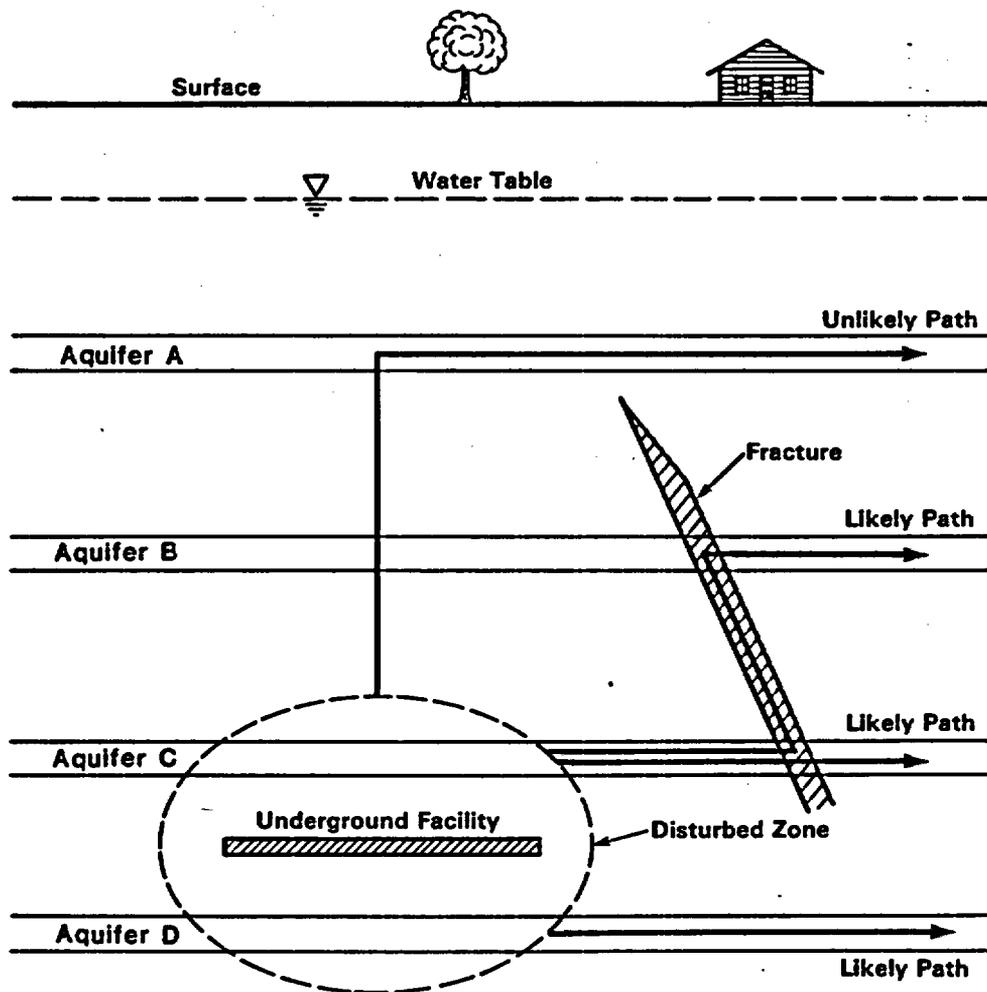


Figure B1 - Paths of Likely Radionuclide Travel - Saturated Media

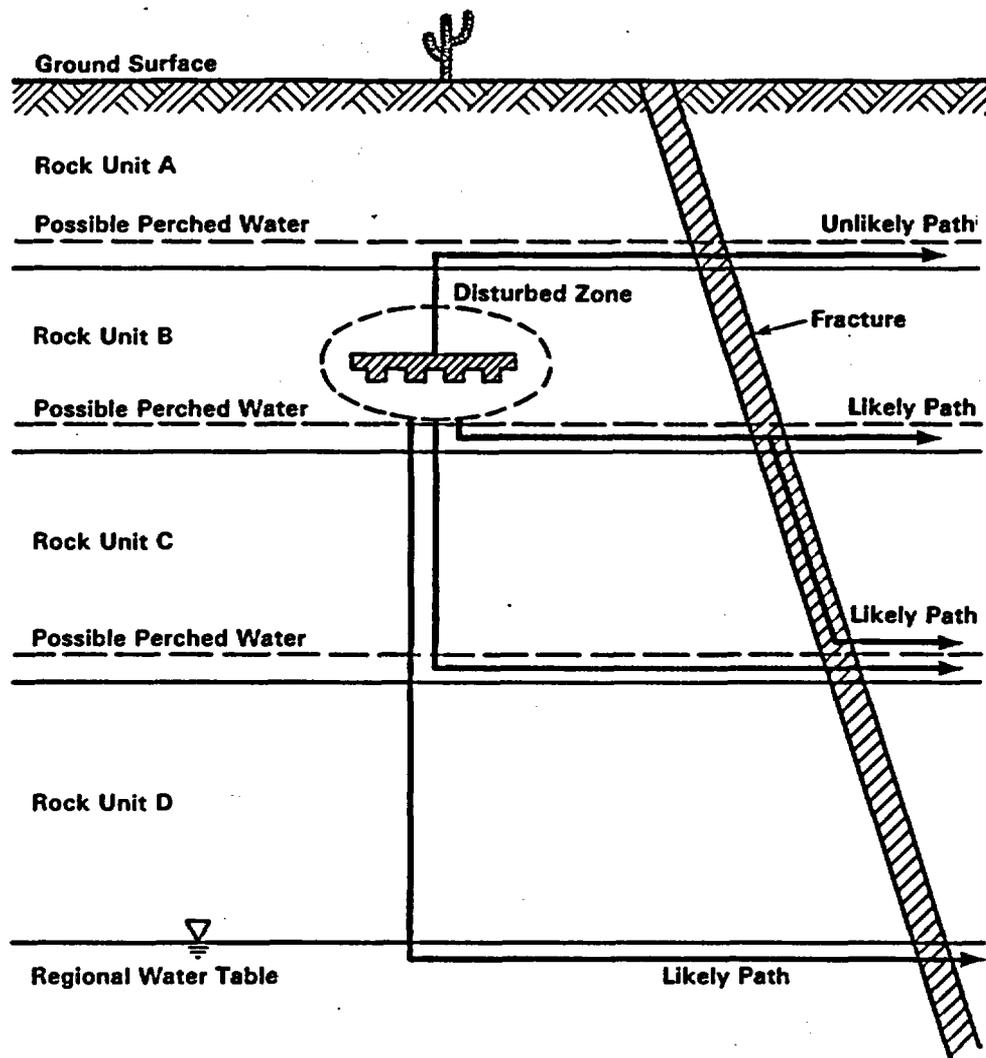


Figure B2 - Paths of Likely Radionuclide Travel - Unsaturated Media

See packet 1 for  
encl. - ltr. 7/1/86  
Communication # 67

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 7-1-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-106 DOE Comment No: \_\_\_\_\_ Comment Topic: Site subsystem

Location of Comment Address: 6-307-319  
performance

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) new analyses and supporting documents

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 7-1-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3 DOE Comment No: \_\_\_\_\_ Comment Topic: Groundwater

Location of Comment Address: 6-246-259 travel time

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) new analyses do not address all uncertainties

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: WEA Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-21 DOE Comment No: \_\_\_\_\_ Comment Topic: Disagreement

Location of Comment Address: 6-99-10.3 condition

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 622 DOE Comment No:      Comment Topic: Radionuclide

Location of Comment Address: 6-100-101 releases

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) discussion adequate

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain)

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain)

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-30-86

Site: NNWSI (EWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-23 DOE Comment No: \_\_\_\_\_ Comment Topic: Conclusion on  
qualifying condition

Location of Comment Address: 6-04-105

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) adequately addressed for EA purposes

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-30-96

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-24 DOE Comment No: \_\_\_\_\_ Comment Topic: Conclusion on qualifying condition

Location of Comment Address: 6-104-105

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) new analyses of travel time uncertainties remain

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-30-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-31 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially adverse

Location of Comment Address: 6-117-123 condition

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) statement questioned by NRC is not present

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-49 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially adverse

Location of Comment Address: 6-170-171 condition

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*Large scale testing should demonstrate hydraulic characteristics of potential boundaries*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A Date: 6-30-06

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-57 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially adverse

Location of Comment Address: 6-190-191 condition

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A Date: 6-30-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-610 DOE Comment No: \_\_\_\_\_ Comment Topic: Conclusion on qualifying

Location of Comment Address: 6-186-187 condition

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-30-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-67 DOE Comment No: \_\_\_\_\_ Comment Topic: Construction of an

Location of Comment Address: 6-218 top of page underground facility

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-71 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially adverse

Location of Comment Address: 6-231 condition

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-88 DOE Comment No: \_\_\_\_\_ Comment Topic: Subsystem performance

Location of Comment Address: 6-272-273 assessment

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) stochastic analysis addressed by new comment

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-101 DOE Comment No. \_\_\_\_\_ Comment Topic: Site subsystem

Location of Comment Address: 6-307-319 performance

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) new analyses do not address all uncertainties

Status of Unresolved Comments:

- Defer to SCP
- Precipitates FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-30-06

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-102 DOE Comment No: \_\_\_\_\_ Comment Topic: Site subsystem

Location of Comment Address: 6-307-319 performance

How Was Comment Addressed? (Circle)  
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) new analyses do not address all uncertainties

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-103 DOE Comment No: \_\_\_\_\_ Comment Topic: Site subsystem

Location of Comment Address: 6-307-319 performance

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) new analyses do not address all uncertainties

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-104 DOE Comment No: \_\_\_\_\_ Comment Topic: Site subsystem

Location of Comment Address: 6-307-319 performance

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-30-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-109 DOE Comment No: \_\_\_\_\_ Comment Topic: Site subsystem

Location of Comment Address: 6-312 - 313 performance

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) new analyses, section rewritten

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-20 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially adverse

Location of Comment Address: 6-93-99 condition

How Was Comment Addressed? (Circle)  
New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-19 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially adverse

Location of Comment Address: 6-93 condition

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA

Other (explain) stated problem in NRC comment is addressed in other location

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-18 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially adverse

Location of Comment Address: 6-92-93 condition

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRE/Contractor: W & A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-17 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable

Location of Comment Address: 6-89-92  
3-120 condition

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A Date: 6-30-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-16 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable

Location of Comment Address: 6-89-90  
3-104-105 condition

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-17 DOE Comment No: \_\_\_\_\_ Comment Topic: Grandfather

Location of Comment Address: 3-96

~~How Was Comment Addressed?~~ (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W & A Date: 6-27-96

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-18 DOE Comment No: \_\_\_\_\_ Comment Topic: Groundwater

Location of Comment Address: 3-97

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 8-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-19 DOE Comment No: \_\_\_\_\_ Comment Topic: Flow interiors

Location of Comment Address: 3-115-116

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: UWA Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-20 DOE Comment No: \_\_\_\_\_ Comment Topic: Flow meters

Location of Comment Address: 3-117

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-21 DOE Comment No: \_\_\_\_\_ Comment Topic: Flow meters

Location of Comment Address: 3-117

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: WPA Date: 6-27-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-22 DOE Comment No: \_\_\_\_\_ Comment Topic: Geometric mean

Location of Comment Address: 3-119

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-23 DOE Comment No: \_\_\_\_\_ Comment Topic: Flow contracts &

Location of Comment Address: 3-120 interbeds

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC Contractor: W4A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-24 DOE Comment No: \_\_\_\_\_ Comment Topic: Flow contacts &

Location of Comment Address: 3-120 interbeds

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-25 DOE Comment No: \_\_\_\_\_ Comment Topic: Bedrock structures

Location of Comment Address: 3-121

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: WPA Date: 6-27-06

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-1 DOE Comment No: \_\_\_\_\_ Comment Topic: large scale test

Location of Comment Address: 4-6

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-11 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable condition, travel time

Location of Comment Address: 6-77-81

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) agreed with problem - new analyses

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-12 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable conditions,

Location of Comment Address: 677-81, 85-92, 807-319 Travel time

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*Supporting documents provide inadequate detail to provide a basis for complete evaluation of new travel time analyses.*

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: WGA Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-13 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable condition -

Location of Comment Address: 6-B3-B5 large scale testing

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) section rewritten

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WEA Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-14 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable

Location of Comment Address: 6-84 condition

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) objectionable section of report was removed

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: WPA Date: 6-27-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-15 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable

Location of Comment Address: 6-86 condition

How Was Comment Addressed? (Circle) Revised Conclusions Deferred to SCP Other  
New Information New Analysis

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-43 DOE Comment No: \_\_\_\_\_ Comment Topic: Disqualifying Condition

Location of Comment Address: p.C.5-8, p 6-131 to p 6-132

Infiltration-Percolation-  
Recharge

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Uncertainty in the estimate of 0.5 mm/yr  
is noted in the FEA

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-44 DOE Comment No: \_\_\_\_\_ Comment Topic: Disqualifying Condition

Location of Comment Address: p. C. 5-10 p. 6-130

Infiltration - Percolation - Recharge.

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Fracture flow is assumed to begin at a saturation level of 95% in the travel time calculations.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-45 DOE Comment No: \_\_\_\_\_ Comment Topic: Disqualifying condition

Location of Comment Address: p. 5-9 p 6-132, p 6-153 - 6-162 Infiltration - Percolation - Recharge

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

DOE now considers the "upper bound" on flux to be 0.5mm/yr. One mm/yr is now considered to be "unrealistically conservative estimate of flux" (p. 6-160)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-46 DOE Comment No: \_\_\_\_\_ Comment Topic: Disqualifying Condition

Location of Comment Address: p. 6-149 Infiltration - Percolation - Recharge

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Table 6-17 has been changed to indicate a saturated matrix hydraulic conductivity of 0.5 mpy for the Zalaco Hills.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-47 DOE Comment No: \_\_\_\_\_ Comment Topic: Disqualifying Condition

Location of Comment Address: p 6-155 Travel time calculations

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Travel time estimates presented in the FEA are based on new information and a new analysis.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-27-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-48 DOE Comment No: \_\_\_\_\_ Comment Topic: Disqualifying Condition

Location of Comment Address: p 6-153 and 6-155 Travel-Time Calculations

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Ranges of effective porosity values were used in the travel time estimates by random sampling from a frequency distribution (p. 6-153)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams Assoc Date: 6-27-86

Site: NNWS BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-49 DOE Comment No: \_\_\_\_\_ Comment Topic: Disqualifying Condition - Travel Time calculations to 6-162

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Ranges of values for saturated matrix hydraulic conductivity were used in the FEA to estimate travel time. However, a constant value for flux was used instead of a range of values.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-27-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-50 DOE Comment No: \_\_\_\_\_ Comment Topic: Disqualifying Condition

Location of Comment Address: p. C.5-6, p 6-153 to 6-161 Travel time calculations

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

"The DOE disagrees that degree of saturation was not taken into account for travel-time calculations, because estimates of effective porosity took into account the estimated percent of voids drained" (p C.5-6)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-28 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Condition

Location of Comment Address: PC. 5-14 + P 6-136 No. 5(i)

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-29 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Condition

Location of Comment Address: p. 6-136, p. 6-230 C. 5-12 No 5(i)

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

No direct response to this comment could be found in the FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-30 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Condition

Location of Comment Address: C-5-13, p. 6-139 No. 5(iii)

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

The statement "no evidence of fracture flow has been observed in the host rock" has been deleted from the FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-31 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Condition

Location of Comment Address: p 6-137, p 6-150 C.5-8 5(iii)  
p 6-138 - C.5-10 C.5-15

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

DOE still believes in the existence of capillary barriers but acknowledges that no data are available to support the concepts of the barriers.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWS BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-32 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable conditions

Location of Comment Address: p 6-149 Table 6-16

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

The questioned value and conversion have been deleted from the FEA

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams and Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-33 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Conditions

Location of Comment Address: p 6-149

Table 6-16

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

The table has been corrected

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-34 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Conditions  
No 5(iii)

Location of Comment Address: p 6-138

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

The FEA changed the sentence to read  
" thereby significantly decreasing the effective permeability to water "

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-35 DOE Comment No: \_\_\_\_\_ Comment Topic: \_\_\_\_\_

Location of Comment Address: p 6-138

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

The DOE deleted the latter half of the sentence in question in the FEA to read.

"Until structural features with high permeability were encountered"

The description in the draft EA is more accurate.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-36 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Conditions

Location of Comment Address: p. 6-139, p. C.5-13 No. 5 (iv)

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

The FEA references Montazer and Wilson (1984)  
"for a complete explanation of the relationship  
of air permeability measurements to bulk  
hydraulic conductivities" (p. C.5-13)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-37 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Conditions

Location of Comment Address: p. C. 5-13, p. 6.138

No. 5(iv)

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Meaning of free drainage has been clarified in the FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: (NNWS) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-38 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially Adverse

Location of Comment Address: p 6-142 p. C.5-19 to p C.5.21 Conditions No. 1

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution  
 DOE disagreed with suggested resolution; alternative resolution accepted  
 DOE disagreed with problem and basis; DOE response accepted  
 Comment resolved pending NRC review of new information/analysis  
 Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment  
 Lack of understanding of the NRC stated problem and basis  
 Lack of agreement with NRC stated problem and basis  
 Lack of adequate support for disagreement with NRC stated problem and basis  
 Lack of agreement with NRC stated suggested resolution  
 Lack of adequate support for disagreement with NRC stated suggested resolution  
 Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA  
 Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP  
 Precipitate FEA Comment  
 Unresolved but not significant to siting or characterization  
 Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

The statement under question has been deleted from the FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: WNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-39 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially Adverse

Location of Comment Address: p. 6-142 Conditions, No. 1

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

The typo has been corrected in the FEA

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-40 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially Adverse Conditions, No. 1

Location of Comment Address: p.c.5-11 to p.c.5-12  
p. 6-142

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-41 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially Adverse

Location of Comment Address: 6-142 to 6-143

Conditions No. 1

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

No direct response by the DOE to the NRC comment was found. However, the statement questioned by the NRC comment has been deleted from the final FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-42 DOE Comment No: \_\_\_\_\_ Comment Topic: Potentially Adverse Conditions, No. 1

Location of Comment Address: C.5-11 to C.5-12  
6-141 to 6-142

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams Date: 4/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-11 DOE Comment No. \_\_\_\_\_

Comment Topic: and immediately

Location of Comment Address: 7.6-101  
bottom of page

DOE stated in DEEA that  
~~the host rock~~  
surrounding  
geologic units  
have low  
hydraulic K's.  
NRC said that although  
matrix K  
is  
low, fractures  
K might  
not be.

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments:

- Defer to SCP - They refused to be as conservative as we suggested, only time will tell who is right
- Precipitates FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-10 DOE Comment No. \_\_\_\_\_

Comment Topic: \_\_\_\_\_

Location of Comment Address: 6-102

*NRC said DOE should consider the potential for localized upward gradients.*

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

*They reverse this favorable condition, and say it's not present*

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and ~~suggested resolution~~ *included the potential for upward gradients in one of the geologic intervals when simulating groundwater flow inputs and travel times.*
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments:

- Defer to SCP
- Precipitates FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-11 DOE Comment No: \_\_\_\_\_ Comment Topic: Expert judgement

Location of Comment Address: 2-71

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) unres point since candidate horizon has been selected

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-12 DOE Comment No: \_\_\_\_\_ Comment Topic: Geohydrologic setting

Location of Comment Address: 2-72

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-23 DOE Comment No: \_\_\_\_\_ Comment Topic: local effects on

Location of Comment Address: 4-11 P6 *baseline data due to additional recharge*

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- ? Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*They say it. They'll install monitoring system to check for shallow contamination.*

*They say that "lines or tank leaks will be repaired and dewatering will be implemented, as required, to mitigate the impact of <sup>contaminant</sup> seepage on groundwater. What about the gw baseline heads?"*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-28 DOE Comment No: \_\_\_\_\_ Comment Topic: Rainwater infiltrat'n of wind-blown salt.

Location of Comment Address: p. 4-111 to 4-112 continuing paragraph

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*They're probably right -- now that they've provided explanation.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 5-15 DOE Comment No: \_\_\_\_\_ Comment Topic: Construction  
Effects on GW

Location of Comment Address: \_\_\_\_\_

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*Monitor wells + grouting technology if necessary seems like a good combination.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-3 DOE Comment No: \_\_\_\_\_ Comment Topic: Potential for dissolution rejected by DOE on the basis of one borehole.

Location of Comment Address: p 6-94 - 6-95

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other  
*The have taken out any discussion of potential for doesn't in the discussion of relevant data*

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 0-4 DOE Comment No: \_\_\_\_\_ Comment Topic: fracture flow

Location of Comment Address: 6-97

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment see my major comment submitted by W+A
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*DOE does consider fracture flow (using an equivalent porous <sup>medium</sup> model). (6-97)  
They never consider open joints or solution channels.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-5 DOE Comment No. \_\_\_\_\_ Comment Topic: Why does DOE reject horizontal flow in the interbed below cycle 6?

Location of Comment Address: P. 6-266  
P. 6-271

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed: They now consider the potential for horizontal flow in Paradox cycle 6 interbed. It is one of the possible exit layers in the PTRACK simulations (Andrews et al 1985)  
 DOE agreed with problem, basis, and suggested resolution  
 DOE disagreed with suggested resolution; alternative resolution accepted  
 DOE disagreed with problem and basis; DOE response accepted  
 Comment resolved pending NRC review of new information/analysis  
 Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:  
 Lack of recognition of NRC comment  
 Lack of understanding of the NRC stated problem and basis  
 Lack of agreement with NRC stated problem and basis  
 Lack of adequate support for disagreement with NRC stated problem and basis  
 Lack of agreement with NRC stated suggested resolution  
 Lack of adequate support for disagreement with NRC stated suggested resolution  
 Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA  
 Other (explain) \_\_\_\_\_

Status of Unresolved Comments:  
 Defer to SCP  
 Precipitates FEA Comment  
 Unresolved but not significant to siting or characterization  
 Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-6 DOE Comment No. \_\_\_\_\_ Comment Topic: \_\_\_\_\_

*FEA says  
No data  
support  
potential for  
dissolution"*

Location of Comment Address: \_\_\_\_\_

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

*Was not addressed. They just chose not to discuss the*

Manner in Which Comment is Adequately Addressed:

*subject at  
this point  
in  
FEA*

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments:

- Defer to SCP
- Precipitates FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-7 DOE Comment No. \_\_\_\_\_ Comment Topic: Groundwater travel time

Location of Comment Address: \_\_\_\_\_

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments:

- Defer to SCP
- Precipitates FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*See major comment submitted by Williams and Associates*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/84

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-8 DOE Comment No. \_\_\_\_\_ Comment Topic: Upward gradients

Location of Comment Address: \_\_\_\_\_

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments:

- Defer to SCP
- Precipitates FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

*I do agree, now, that ~~the~~ upward gradients are <sup>not</sup> likely to exist all the way up to Elephant Canyon*

Additional Comments: (use back if needed)

*They now acknowledge potential for upward flow, but only in formation ~~for~~ which they found the anomalous data. If they found anomalous data in "zone A" in GD-1 (See hypothetical zone) this does not mean you might not find anomalous head data in zone B in another borehole.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/26/86

Site: NNWSI BWIP DEAF SMITH (DAVIS CANYON) RICHTON DOME

NRC Comment No: 6-9 DOE Comment No: \_\_\_\_\_ Comment Topic: \_\_\_\_\_

Location of Comment Address: 6-101

6.31.2 Favorable cond #3

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

DOE stated that site would be easy to characterize and model because of simplification of structural and stratigraphic features. Preliminary regional numerical models have been successfully applied to the site.

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

they didn't admit their problems, but at least they don't continue to overestimate the defensibility of their results

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

~~They pulled back to a more conservative position saying that because of the limited data base, the site cannot be readily characterized. But they don't respond at all to all the problems we noted w/ their modeling effort. They'll have to, by SCP time. There was nothing more they could do by FEA time.~~

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 1 DOE Comment No: \_\_\_\_\_ Comment Topic: Groundwater

Location of Comment Address: 6-307-319 Travel time

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2 DOE Comment No: \_\_\_\_\_ Comment Topic: Geohydrologic

Location of Comment Address: G-93 & G-180 regime

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: E-3 DOE Comment No: \_\_\_\_\_ Comment Topic: Travel time

Location of Comment Address: 16 & 6-207-319

How Was Comment Addressed? (Circle)

New Information (New Analysis) Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) New analysis addresses some uncertainties

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 1-4 DOE Comment No: \_\_\_\_\_ Comment Topic: Geohydrologic

Location of Comment Address: 1-19 settings

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WEA Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-6 DOE Comment No: \_\_\_\_\_ Comment Topic: Regional groundwater

Location of Comment Address: 2-31-33

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WEA Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-B DOE Comment No: \_\_\_\_\_ Comment Topic: Reaking of

Location of Comment Address: 2-52-59 sites

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-26-86

Site: NNWSI (BWIP) DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 2-9 DOE Comment No: \_\_\_\_\_ Comment Topic: Preferred horizon

Location of Comment Address: 2-65

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP (Other)

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) reworked

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-25-06

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-56 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable condition

Location of Comment Address: 6-10B

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) serious oversight to reflect lack of knowledge about Dadeville Group water availability & quality

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-25-06

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-103 DOE Comment No: \_\_\_\_\_ Comment Topic: Geologic subsystem

Location of Comment Address: 6-243-259 performance

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-25-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-104 DOE Comment No: \_\_\_\_\_ Comment Topic: Free surface

Location of Comment Address: 6-243-259 modeling

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-25-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-23 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Condition  
No. 1

Location of Comment Address: p 6-131

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Stochastic approach used to evaluate uncertainty.  
According to FEA "conservative assumptions built into the flow model serve to shift the distribution to lower travel times".

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-25-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-24 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Condition

Location of Comment Address: P.C. 5-11 P.C. 5-19 p 6-132 No. 2

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Bounding studies by Sinnock et al (1981) that require a significant amount of credit for geochemical retardation in order to meet EPA release limits under a pluvial type scenario do not appear to be discussed directly.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-25-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-25 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Condition

Location of Comment Address: 6-133 No. 3

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

No change in FEA p 6-134

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-25-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-26 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable condition

Location of Comment Address: C.5-1

No. 3

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Brief explanation of what DOE did

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-25-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-27 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Conditions  
No. 3

Location of Comment Address: \_\_\_\_\_

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

FEA was not changed from the draft.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/25/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-22 DOE Comment No: \_\_\_\_\_ Comment Topic: DEA doesn't assess environmental effects an effect of ~~it~~ on air quality regimes

Location of Comment Address: p. 4-111 to 4-112

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted until SCP
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*They don't think boreholes or ESF will disturb hydrogeologic regime. They don't think water on surface will contaminate aquifer because of thick unsat'd zone.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-18 DOE Comment No: \_\_\_\_\_ Comment Topic: Date Relevant to the Evaluation

Location of Comment Address: p 6-124

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Table 6-15 has been changed to indicate that the condition does not apply to Yucca Mountain because of unsaturated conditions

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-19 DOE Comment No: \_\_\_\_\_ Comment Topic: Data Relevant to the Evaluation

Location of Comment Address: p 6-124

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Table 6-15 was changed to indicate the condition does not apply to Yuzza mountain because of unsaturated conditions.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-20 DOE Comment No: \_\_\_\_\_ Comment Topic: Data Relevant to the Evaluation  
P.C. 5-10

Location of Comment Address: P.C. 5-8 and p 6-129.

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution  
 DOE disagreed with suggested resolution; alternative resolution accepted  
 DOE disagreed with problem and basis; DOE response accepted  
 Comment resolved pending NRC review of new information/analysis  
 Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment  
 Lack of understanding of the NRC stated problem and basis  
 Lack of agreement with NRC stated problem and basis  
 Lack of adequate support for disagreement with NRC stated problem and basis  
 Lack of agreement with NRC stated suggested resolution  
 Lack of adequate support for disagreement with NRC stated suggested resolution  
 Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA  
 Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP  
 Precipitate FEA Comment  
 Unresolved but not significant to siting or characterization  
 Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

The portion of the quote "and the available data indicate that porous flow through the matrix, rather than fracture flow, dominates the prevailing flux" is not present in FEA.

comment responded to by DOE on page C.5-10

Hydrology Detailed Comment Resolution Form

NRC/Contractor: U/A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-40 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrogeologic

Location of Comment Address: 6-247-259 setting

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) new analyses addresses part of problem

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-96

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3.41 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrogeologic

Location of Comment Address: 3-155 setting

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-42 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrogeologic

Location of Comment Address: 3-100, 101, 143, 155 setting

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) FEA contains new travel time analysis

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) porosity values are used incorrectly

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W4A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-43 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrogeologic

Location of Comment Address: 6-244-259 siting

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-44 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrogeologic

Location of Comment Address: 6-244-259 setting

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-45 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrologic setting

Location of Comment Address: 3-143

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-46 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrogeologic

Location of Comment Address: 6-24-259 siting

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-47 DOE Comment No: \_\_\_\_\_ Comment Topic: Groundwater

Location of Comment Address: 3-155-160

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) uncertainties are partially addressed

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) use of unanalyzed data is not addressed

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WEA Date: 6-26-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-50 DOE Comment No: \_\_\_\_\_ Comment Topic: Ground water

Location of Comment Address: 3-161 quality

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) statement removed from Draft EA

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 5-6 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrology

Location of Comment Address: 5-61

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) assumption regarding complete mixing of plume was omitted

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 5-7 DOE Comment No: \_\_\_\_\_ Comment Topic: Ground-water

Location of Comment Address: 5-62

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-14 DOE Comment No: \_\_\_\_\_ Comment Topic: Geology

Location of Comment Address: 6-243-259

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-15 DOE Comment No: \_\_\_\_\_ Comment Topic: Qualifying Condition

Location of Comment Address: 6-247 & 253

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

~~NRC~~ Contractor: WPA Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-16 DOE Comment No: \_\_\_\_\_ Comment Topic: Geohydrology

Location of Comment Address: 6-243-259

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-17 DOE Comment No: \_\_\_\_\_ Comment Topic: Qualifying condition

Location of Comment Address: 6-243 - 259

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC Contractor: WPA Date: 6-24-96

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-21 DOE Comment No: \_\_\_\_\_ Comment Topic: Geohydrology

Location of Comment Address: 6-96

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 644 DOE Comment No: \_\_\_\_\_ Comment Topic: Adverse condition

Location of Comment Address: 6-135

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: NNWS1 BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-21 DOE Comment No: \_\_\_\_\_ Comment Topic: Data Relevant to the Evaluation

Location of Comment Address: p 6-129

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Reference to Blair et.al was stricken from the FEA (chapter 6)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams + Assoc Date: 6-24-86

Site: NNWST BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-22 DOE Comment No: \_\_\_\_\_ Comment Topic: Favorable Conditions

Location of Comment Address: PC-5-5 No. 1

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

No mention of the fact that data and interpretations presented in Weekes and Wilson (1984) are preliminary could be found in the FEA.

Hydrology Detailed Comment Resolution Form

~~NRC~~/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-33 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrostratigraphic

Location of Comment Address: p. 3-142

units

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-34 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrostratigraphic

Location of Comment Address: 3-100, 101, 142, 151, 155 units

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*DOE does not appear to understand the difference between total and effective porosity.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-35 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrostratigraphic

Location of Comment Address: 3-143

UNIT

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) addressed in part based on available info

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) comment was partially addressed; cannot be fully addressed given existing data base

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-36 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrostratigraphic

Location of Comment Address: 3-43-151 units

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-37 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrostratigraphic

Location of Comment Address: 3-151-155 units

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: 6-24-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-38 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrostratigraphic

Location of Comment Address: 3-155-160 units

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: U&A Date: 6-28-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-39 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrostratigraphic

Location of Comment Address: 3-151 units

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: Williams & Assoc Date: 6-23-86

Site: NNWS BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-17 DOE Comment No. \_\_\_\_\_ Comment Topic: Summary of analyses for section 6.3.1.1

Location of Comment Address: Page 6-125

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments:

- Defer to SCP
- Precipitates FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Table 6-15 has been changed to incorporate NRC comment. However the EA states that the condition does not apply to Yucca Mountain because of unsaturated conditions.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W E A Date: June 20, 1986

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-11 DOE Comment No: 6.3.1.1.5 Comment Topic: Flux value

Location of Comment Address: C.4-12  
C.5-8

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*See major comment.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A. Date: June 20, 1986

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-12 DOE Comment No: 6.S.1.1.5 Comment Topic: Error in stratigraphic unit

Location of Comment Address: Table 3-3 pg 3-24  
Table 6-17 pg 6-149 pg C-4-13

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WEA Date: June 20, 1986

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-13 DOE Comment No: 3.6.3.3 Comment Topic: Present & projected water Use in the Area.

Location of Comment Address: 3.3.3  
page 3-31

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WEA Date: June 20, 1986

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-16 DOE Comment No: 3.6.3.3 Comment Topic: Water Supply

Location of Comment Address: 3-85

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*Table was updated but well locations are still not presented*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A Date: June 20, 1996

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-8 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrology

Location of Comment Address: 4.2.1.1.2 page 4-22  
C4.1.2.3 page C.4-12 page C.7-4  
C.4-14

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: June 20, 1986

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-9 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrology.

Location of Comment Address: pg C.7-3

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & Assoc Date: June 20, 1986

Site: NNWS1 ~~BWIP DEAF SMITH DAVIS CANYON RICHTON DOME~~

NRC Comment No: 5-7 <sup>5-8, 5-9, 5-10,</sup> DOE Comment No: 5.2.2 <sup>Pg 5-36</sup> Comment Topic: Hydrologic Impacts

Location of Comment Address: pg C.5-50, Pg C.7-1 Pg C.7-11

How Was Comment Addressed? (Circle)

New Information  New Analysis  Revised Conclusions  Deferred to SCP  Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WE Assoc Date: June 20, 1986

Site: NNWS BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 5-11 DOE Comment No: 5.2.2 <sup>pg 5-36</sup> Comment Topic: Infiltration & containment

Location of Comment Address: pg C.7-11

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*Hypolon lining will be used.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & Assoc Date: June 20, 1986.

Site: (NNWSI) BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-12 DOE Comment No: 6.2.1.7.5 page 6-91 also sec 6.4.2  
Comment Topic: Impact on water resource

Location of Comment Address: pg C.7-39  
C.7-40

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W&A Date: June 29, 1986

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-13 DOE Comment No: 6.2.1.8, 2 Comment Topic: Flood Hazard

Location of Comment Address: \_\_\_\_\_

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

24

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-30 DOE Comment No: \_\_\_\_\_ Comment Topic: \_\_\_\_\_

Location of Comment Address: Figure 3- \_\_\_\_\_; Potentiometric Surface of Lower HSH.

*DOE map  
① May have incorrect  
value; flow could  
get toward Co River  
more directly  
② No description  
of selection  
process for  
well data.*

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed: *They provide a new map of the potentiometric surface in the Leadville Limestone. However it is a very poor quality print, so that one can't really compare it to the old map.*

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

*Also, they removed all discussion in the text of how the data were culled, etc; there was such discussion in the draft ER.*

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment *I think. It's hard to address in much more depth*
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: W & A Date: 6-20-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: J-30 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrology

Location of Comment Address: A 3-187

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WDA Date: 6-20-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-31 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrostratigraphic

Location of Comment Address: p. 3-142

Units

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WPA Date: 6-20-86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-32 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydro-archaeographic

Location of Comment Address: p. 3-142

Cuts

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) revised data presentation

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-A DOE Comment No: \_\_\_\_\_ Comment Topic: What will they do w/ the wells (H54) after testing

Location of Comment Address: ?

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*They appear not to have addressed well closure at all.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-21 DOE Comment No: \_\_\_\_\_ Comment Topic: Will water be brought in? Inconsistency

Location of Comment Address: p. 4-110 and p. 4-111

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*No further ~~in~~ inconsistency. They're ~~bringing~~ trucking water in from municipalities.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 4-3 DOE Comment No: \_\_\_\_\_ Comment Topic: What will be done with the water pumped from the lower H5U?

Location of Comment Address: \_\_\_\_\_

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*Now they say brines will be trucked to disposal wells.*  
*Are we to assume that wells will be to leadville?*  
*Or will they be shallower?*  
*Will they stress ~~local~~ local groundwater system.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 42 DOE Comment No: \_\_\_\_\_ Comment Topic: Forehole Plan  
They provided no rationale

Location of Comment Address: p 4-7  
p 4-112 PL

They have no data collection between 2 km and 22 km

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*Test holes appear to be in the same spots.  
Still no technical rationale for hole placement*

*p. 4-112 "No drilling in Canyonlands National Park is planned."*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-33 DOE Comment No: \_\_\_\_\_

Comment Topic: DOE says that <sup>strata</sup> are laterally extensive (based on geophysical logs) and ∴ little or no influx of external gw. Comparison of logs could identify missing units, but not signs of minor dissolution.

Location of Comment Address: 3-200 to 3-204

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

They <sup>do</sup> need a more complete treatment of data + altern. interpretations.

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

They use hydrochemical discussion to discuss whether water ~~is likely to come from~~ and TDS are likely to have come from dissolution.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-34 DOE Comment No: \_\_\_\_\_

Comment Topic: They stick to their single conceptual model (for flow)

Location of Comment Address: 3-212

① little or no hydraulic communication  
② Salt has very low permeability

How Was Comment Addressed? (Circle) Revised Conclusions → Should ~~not~~ consider alternative  
New Information New Analysis Revised Conclusions Deferred to SCP Other Such as

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and added one qualifier to suggested resolution address our concern.
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-32 DOE Comment No: \_\_\_\_\_ Comment Topic: DOE's statement

Location of Comment Address: p. 3-210 P 43  
*that conceptual model is realistic may not be defensible.*

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other *gradients.*

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment *- Ignored it*
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*They still say their <sup>regional</sup> conceptual model is realistic; they say this on the basis of realistic results from regional ~~model~~ simulation.*

*One could argue that they had little data to ~~verify~~ model with and less still to verify model results... but it ~~is~~ becomes pointless to argue with no data.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-31 DOE Comment No: \_\_\_\_\_ Comment Topic: Some of the head

Location of Comment Address: 3-208 P43

data shows the potential for localized upward gradients.

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

more  
upward  
was  
the  
500

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

They're ~~soft~~ <sup>padding</sup> our story line now, until new data comes in

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-29 DOE Comment No: \_\_\_\_\_ Comment Topic: Hydrochemistry (TDS &

Location of Comment Address: p. 3-204 P #2  
(also 3-200, 3-202)

*says there ~~are~~ may be 2 HSL's in upper HSL. ~~OR~~ could be evidence of dissolution*

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution *That is, they presented more defensible analysis*
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP *for further resolution*
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*They've summarized ~~discussed~~ discussion of what motivates their choice of delineation stwn HSL's. ~~their conclusion is stated on p. 3-204 on p. 3-204 P #2~~*

- p 3-200 Elephant canyon water is meteoric water*
- p 3-202 Honaker Trail water is "old formation water"*
- p. 3-204*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/20/84

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-28 DOE Comment No: \_\_\_\_\_

Comment Topic: ① They mis-state that  $lab\ K > field\ K$  when high effective porosity is present. Their data don't support this

Location of Comment Address: \_\_\_\_\_

How Was Comment Addressed? (Circle)

New Information  New Analysis  Revised Conclusions  Deferred to SCP  Other

② They misapply the term effective porosity to data from ~~unrepresentative~~ tests which measure ~~total~~ something between total pores and effective porosity

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment *for point ②*
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

~~They remove the discussion of the first problem to be resolved.~~

They remove the discussion which caused the first ① problem to be resolved.

They still call their porosity data effective porosity.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS

Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-16 DOE Comment No: 29 Comment Topic: GROUNDWATER CHEMISTRY

Location of Comment Address: C.4.1.1.7.

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) NEW THERMODYNAMIC DATA INCLUDED.

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS

Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RIGHTON DOME

NRC Comment No: 3-19 DOE Comment No: 32

Comment Topic: GEOHYDROLOGIC UNITS

Location of Comment Address: C.4.1.2.2.

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

CHECK DRAFT EA WITH FEA.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RIGHTON DOME

NRC Comment No: 3-20 DOE Comment No: 33 Comment Topic: MODELING

Location of Comment Address: C:4.1.2.2

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (Use back if needed)

MODELING ASSUMPTIONS, HOWEVER, WERE NOT INCLUDED IN F.E.A. SO THAT READERS MUST STILL REFER TO THE CITED SOURCES.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-10 DOE Comment No: 78 Comment Topic: DATA FROM SALT CORES

Location of Comment Address: C.5.1 { 3.2.3  
6.4.2.3.6 FEA  
6.3.1.1.1 }

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- or
- Defer to SCP
  - Precipitate FEA Comment
  - Unresolved but not significant to siting or characterization.
  - Other (explain) \_\_\_\_\_

Additional Comments: (Use back if needed)

STILL UNRESOLVED IS THE UNCERTAINTY INVOLVED IN USING LABORATORY (NON-SITE SPECIFIC) DATA.  
RESPONSE C.5.1 DOES NOT, BY ITSELF, EVEN ADDRESS NRC COMMENT 6-10, BUT REFERS TO FEA SECTIONS 6.3.1.1.1 AND 6.4.3.2.5.  
THE DOE ASSUMPTION IS THAT THE ASSUMED DATA ARE CONSERVATIVE.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS

Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-11 DOE Comment No: 79 Comment Topic: MODEL UNCERTAINTIES

Location of Comment Address: C.5.1 { FEA 6.3.1.1.1 }  
6.4.2.3.5 }

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- ?  Unresolved but not significant to siting or characterization (D.O.E.)
- ?  Other (explain) QUANTITATIVE ANALYSIS DROPPED FROM FEA

Additional Comments: (use back if needed)

FEA SIMPLY DROPPED ALL ANALYSES OUTSIDE THE DOME, AND IN THIS WAY DOE BYPASSED THIS COMMENT. DOE NOW USES ONLY TRAVEL TIMES WITHIN THE SALT STOCK. FLOW OUTSIDE THE DOME WILL, HOWEVER, ADD AN ADDITIONAL PERIOD TO THE TRAVEL TIME CALCULATION. THESE FLOW ANALYSES ARE IMPORTANT IN EVALUATING THE FLOW PATH IN THE EVENT OF A BREACHING OF THE REPOSITORY

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-12 DOE Comment No: 80 Comment Topic: TRAVEL TIMES FROM EDGE OF SALT DOME

Location of Comment Address: C. S. I. FEA 6.3.1.1.2

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) FEA DROPPED TRAVEL TIME CALCULATIONS FOR ZONES OUTSIDE THE DOME. SEE ALSO COMMENT 6-11

Additional Comments: (use back if needed)

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS

Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-13 DOE Comment No: 81

Comment Topic: DEFINITION OF ACCESSIBLE ENVIRONMENT

Location of Comment Address: C.5.1

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

DOE DEFINED THE EDGE OF THE DOME AS THE ACCESSIBLE ENVIRONMENT.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS

Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

ALTERNATIVE  
CONCEPTUAL  
MODELS of  
FLOW SYSTEMS

NRC Comment No: 6-14 DOE Comment No: 82

Comment Topic:

Location of Comment Address: C.5.16 C.5.11

{ FEA 6.4.2.3.5 }  
FEA 3.2.3 }

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (Use back if needed)

EITHER D.O.E. INVESTIGATORS ARE CONFIDENT THE CONCEPTUAL MODEL USED IN THE FEA IS ADEQUATELY DEMONSTRATED OR DOE SEES NO NEED TO CONSIDER ALTERNATIVE FLOW PATHS. SINCE EDGE OF DOME IS NOW THE "ACCESSIBLE ENVIRONMENT", UNCERTAINTIES IN EXTRADOMAL FLOW SYSTEM ANALYSES ARE NOT COVERED.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

DIRECTION OF VAPOR - PHASE INCLUSION  
MIGRATION IN RESPONSE TO HEAT

NRC Comment No: 6-15 DOE Comment No: 83 Comment Topic:

Location of Comment Address: C.5.11 (p. C.5-39) {FEA 6.4.2.3.2}

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

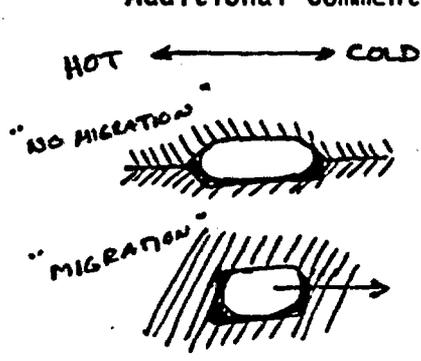
Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) COMMENT COULD BE RESOLVED IF DATA ARE PRESENTED TO SUPPORT FEA STATEMENT

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)



FEA STATES THAT VAPOR-PHASE FLUID INCLUSION MIGRATION STOPS AT INTERGRANULAR BOUNDARIES WHERE "INTERGRANULAR FLOW IS EXPECTED TO TAKE OVER." NO DATA OR REFERENCES ARE SUPPLIED TO SUPPORT THIS CONJECTURE.

Hydrology Detailed Comment Resolution Form

NRC/Contractor: WILLIAMS

Date: 19 JUN 86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-36 DOE Comment No: 105 Comment Topic: DISSOLUTION

Location of Comment Address: C.4.1.1.8 } ~~C.5.6~~ C.5.6 { FEA 3.2.5.7  
3.2.7  
6.3.1.6

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) UNCERTAINTIES GIVEN COMMENT MAY REMAIN UNTIL SCP. STATEMENT ON P. 3-47 IS CONTRADICTED IN FIG. 3-29.

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

- 1) DOE SUGGESTS THE SALINE ANOMALY IN THE UPPER AQUIFER SOUTH OF RICHTON DOME IS <sup>THE RESULT OF</sup> UNFLUSHED CONNATE WATER, ALTHOUGH
- 2) IT IS ALSO STATED THAT SOME UNCERTAINTY STILL EXISTS
- 3) ON P. 3-47 OF FEA IT STATES THAT BOREHOLE MCGG-2 SOUTH OF THE LEAF RIVER SHOULD NOT RECEIVE FLOW FROM RICHTON DOME BECAUSE <sup>(EITHER)</sup> THE LEAF RIVER IS JUXTAPOSED OR ~~BE~~ BECAUSE MCGG-2 IS ON A DRAINAGE DIVIDE. FIG. 3-29 (p.3-96) HOWEVER, DEPICTS REGIONAL FLOW FROM RICHTON DOME PAST THE LEAF RIVER AND MCGG-2.

Hydrology Detailed Comment Resolution Form

NRC/Contractor WILLIAMS Date: 19 JUN 86 *J*

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 6-64 DOE Comment No: 130 Comment Topic: HYDROLOGIC PROBLEMS CAUSED BY SHAFT SEALING.

Location of Comment Address: C.8.3

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

ASSUMPTION OF NO ANOMALOUS ZONES FOR RICHTON DOME BYPASSES PROBLEM. SITE CHARACTERIZATION WOULD PROVE OR DISPROVE THE EXISTENCE OF ANOMALOUS ZONES

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/17/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: 3-27 DOE Comment No: \_\_\_\_\_ Comment Topic: Are all T data used?

Location of Comment Address: 3-200 and Fig 3-53, p. 3-17 *They don't list the regional data from ONWI-290*

How Was Comment Addressed? (Circle) New Analysis Revised Conclusions Deferred to SCP Other *They only presented T values for G-D-L*

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA *how to determine*
- Other (explain) New problem -- effective thicknesses in evaporite sequences

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*Assuming that the regional DST data were in the Leadville limestone (which may be the case - NRC staff would have to check ONWI-290, Vol II, Appendix H, table A5), then they have presented the T data as permeabilities. This ~~part~~ brings another problem to light... who decided what the effective thickness (b) was for each test?  $T = Kb$ . Is "b" the producing unit, the packed interval, or what?*

See D1620 7/1/86  
Communication NO. 67  
J. Pohle

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/16/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: E-2 DOE Comment No: \_\_\_\_\_  
Location of Comment Address: ~~\_\_\_\_\_~~ FEA 93-200  
Comment Topic: T values in lower HSU are not necessarily lower than T values in upper HSU

How Was Comment Addressed? (Circle)  
New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) \_\_\_\_\_

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)

*They now say that the headville limestone (lower HSU) has higher transmissivities than the upper HSU. This is supported by the data.*

Hydrology Detailed Comment Resolution Form

NRC/Contractor: B. Williams Date: 6/16/86

Site: NNWSI BWIP DEAF SMITH DAVIS CANYON RICHTON DOME

NRC Comment No: E-3 DOE Comment No: \_\_\_\_\_  
Location of Comment Address: <sup>FEA</sup> p. 9 (vol. 1) Comment Topic: <sup>DEA</sup> "Vertical downward gradient from upper to lower aquifer"

How Was Comment Addressed? (Circle)

New Information New Analysis Revised Conclusions Deferred to SCP Other

Manner in Which Comment is Adequately Addressed:

- DOE agreed with problem, basis, and suggested resolution
- DOE disagreed with suggested resolution; alternative resolution accepted
- DOE disagreed with problem and basis; DOE response accepted
- Comment resolved pending NRC review of new information/analysis
- Other (explain) \_\_\_\_\_

Manner in Which Comment is Inadequately Addressed:

- Lack of recognition of NRC comment
- Lack of understanding of the NRC stated problem and basis
- Lack of agreement with NRC stated problem and basis
- Lack of adequate support for disagreement with NRC stated problem and basis
- Lack of agreement with NRC stated suggested resolution
- Lack of adequate support for disagreement with NRC stated suggested resolution
- Assuming agreement with NRC suggested resolution, lack of, inadequate, or inconsistent implementation of resolution through changes to appropriate sections of the FEA
- Other (explain) Is inadequately discussed here; adequately treated elsewhere

Status of Unresolved Comments: (Either adequately/inadequately addressed)

- Defer to SCP
- Precipitate FEA Comment
- Unresolved but not significant to siting or characterization
- Other (explain) \_\_\_\_\_

Additional Comments: (use back if needed)