START

SECOND TECHNICAL REVIEW OF DRAFT RI/FS WORK PLAN
HANFORD SITE 1100-EM-1 OPERABLE UNIT
May 31, 1989

The following comments (listed as A through M) are new comments that were not included in EPA's March 17, 1989 comments. They have now been included due to further evaluation of the Work Plan or have resulted from consideration of additional information provided in DOE's May 1, 1989 response.

(A) p. 4-17

Deficiency: The stated objective of the Phase I remedial investigation is to determine the nature and extent of contamination, both in the soil and in the ground water, including the spatial variability of contaminant concentrations. However, the data collection network described in the work plan is not sufficient to meet this objective. Only one downgradient monitoring well is planned for each of the Battery Acid Pit, the Antifreeze Tank Site, and the 1100-3 site; one pair of nested monitoring wells is planned for the 1100-2 site; and two or three downgradient monitoring wells are planned for the Horn Rapids Landfill site. These monitoring wells will provide an indication of the direction of ground-water flow and a very limited sampling of ground-water quality, but there can be no assurance that these wells will be optimally located in the downgradient direction of ground-water flow and that they will intercept a contaminant plume if one exists at a given site.

Once the direction of ground-water flow is determined, it is almost inevitable that monitoring wells, in addition to those listed in the work plan, will need to be installed at each site to adequately characterize the existing ground-water quality in the areas of greatest likelihood of contamination, the downgradient direction of ground-water flow. However, the work plan makes no contingency for the installation of these wells. The sampling and analysis plan does not describe the criteria for selecting the number and location of the wells, nor does the schedule (Figure 3-8 and Figure 3-9) note the time at which the need for additional wells will be evaluated, when they will be installed, or for what period data will be collected.

Recommendation: In order to speed the completion of the Phase I-RI, additional wells should be installed after the ground-water flow direction has been determined and the first round of water-quality samples have been analyzed. The contingency for additional wells or additional soil samples should be described in the work plan (such as on p. 7-22, section 7.2.7). This contingency should be included in the project schedule (Figures 3-8 and 3-9) and listed as a Phase I-RI activity.

(B) p. 4-30, paragraph 3 (and elsewhere)

Deficiency: As stated on p. 4-15, ground-water (and contaminant) travel times are largely influenced by the hydraulic conductivity of the aquifer. It is also acknowledged that the water table is expected to be found within the lower part of the Pasco Gravels and that hydraulic conductivity of the Pasco Gravels may be an order of magnitude greater than the upper Ringold Formation. Because the hydraulic characteristics, and therefore the ground-water and associated contaminant travel times, may differ significantly in the two major strata comprising the unconfined aquifer, the hydraulic characteristics of each strata must be determined separately. Determination of the average hydraulic characteristics of the unconfined aquifer as a whole will not be sufficient to accurately estimate ground-water flow rates.

Aquifer tests (slug tests or pump tests) are proposed in the work plan to measure the hydraulic characteristics (including hydraulic conductivity) of the unconfined aquifer. The aquifer tests are not described in detail in the work plan, but the Environmental Investigations and Site Characterization Manual is referenced for further information. However, the Site Characterization Manual does not describe aquifer testing of multiple units as will be required at the 1100-EM-1 operable unit.

Recommendation: Describe in detail in the work plan how aquifer tests will be conducted and the results analyzed to determine the hydraulic characteristics of both the Pasco Gravels and Ringold Formation in the vicinity of the 1100-EM-1 operable unit.

(C) p. 4-43, last paragraph & p. 4-53, first paragraph

The depth of the vadose-zone holes has been reduced from approximately 55 feet (expected depth of the water table) to only 20 feet. This limited depth will not provide an adequate characterization of either contamination or the physical and chemical characteristics of the vadose-zone in these areas. If contamination is found in these borings or at an appreciable depth in the 10 foot, near surface samples, additional borings will need to be completed to the water table to provide full vadose-zone characterization.

(D) p. 46, second paragraph, line 4

The water table should be at approximately 55 feet, not 25 feet as stated here.