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ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 255

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

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7-28-97

July 21, 1997

4WD-FFB

Mr. Glenn Kaden, BEC
Defense Distribution Depot Memphis
2163 Airways Boulevard
Memphis, Tennessee 38114-5210

SUBJ: Draft Background Sampling Program Technical Memorandum

Dear Mr. Kaden:

The U.S. Environmental Protection Agency, Region 4 (EPA) has reviewed the above referenced document. The comments are enclosed.

I hope that these comments are useful. If you have any questions please contact me at 404.562.8552.

Sincerely,

Dann Spariosu, Ph.D
Remedial Project Manager

Enclosures

cc w/encl: Jordan English, Tennessee Department of Environment & Conservation

Comments on: Draft Background Sampling Program Technical Memorandum

Units

Several of the tables were presented without units. Units should be included in all tables.

Proximity of Sampling Locations to Railroad Tracks

Background samples locations BS02, BW14, BS15, and BS16 appear to be close to railroad tracks in Fig. 2-1. This issue requires some discussion in the text to assure that the locations have not been impacted by rail traffic and associated contamination.

Non-parametric approach to sample size determination

The text (pp 2-9,10) discusses a non-parametric tolerance interval used to determine a level of confidence associated with sampling coverage. The formula on p. 2-10 requires more explanation *vis-a-vis* its applicability here. This section should be expanded to include all relevant equations and explanations.

A related question is the determination of a 90% confidence for each medium. How was this determined? The choice of sampling confidence levels is close to being a risk management decision and as such, should be within the purview of all stakeholders. Further explanation of this decision is needed.

Table 3-1, use of the term RME

The 95% upper confidence limit (UCL) on the mean is used as a health-protective surrogate for the true mean of a set of environmental samples. Because it is a surrogate for the mean, it is inappropriate to call the Exposure Point Concentration an RME. The acronym RME stands for "Reasonable Maximum Exposure." It pertains to exposure assumptions such as daily water intake, incidental soil ingestion, etc. The use of the 95% UCL on the mean represents a health-protective estimate of the *mean* concentration in the face of unavoidable uncertainty in sampling and site characterization. Because the 95% UCL is an estimate of the mean, it shouldnot be considered as a reasonable maximum. In short, the acronym RME should not be used to determine the concentration term.

Table 3-2, PRG criteria used

The reviewer spot-checked this table and was not able to duplicate calculations for several of the criteria. For example, the criterion (labelled a PRG) for arsenic in surface soil is 0.000876 mg/kg. This value is three orders of magnitude lower than other PRG/screening values with which the reviewer was familiar. Details of these calculations should be provided here, perhaps as an appendix, rather than as a reference to another document.

Some of the criteria are labelled "ARARs." This term is not sufficiently specific. For example, dioxin/furan TEQ in surface soil are shown to have an "ARAR" of 4 ppt. This reviewer is unaware of statutory requirements regarding dioxin in surface soil from either the federal government or Tennessee. More explanation is needed.

Tables 3-5 and 3-6, use of the t-test

This common statistical test was used to determine whether off-site and perimeter soil samples could be considered as coming from the same population. The use of the t-test assumes that both groups of samples are normally distributed. This assumption is in conflict with the assumptions underlying the use of non-parametric methods earlier in the document. Non-parametric methods

can be used for any distribution and make no assumptions regarding the distribution. Therefore, the appropriate choice for a statistical test would have been the non-parametric Mann-Whitney U test or a variant.

Page 3-21, Units

Metal concentrations in sediment are given in µg/L (micrograms/Liter). This is incorrect. The reviewer believes that the intended units are µg/kg. Assuming that these values are in µg/kg, both the lead and zinc levels are considerably above Region 4 sediment screening levels. Therefore, Cane Creek should not be used as a background sampling location - it has probably been impacted by non-DoD human activities.

Table 3-12, background levels for dioxin/furan

The reviewer points out that the national surface osil background for dioxin/furan TEQ is about 8 ppt. The mean level here of 6 ppt is equal to the national background level. The third paragraph on apge 3-37 ends with a statement about elevated dioxin levels. This statement should be removed.

Figure 3-11 and accompanying text

This figure is mis leading because it suggests two soil groups. The text does not bear this out (p. 3-43). The text should be left as is, and the figure should be removed from the document.

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