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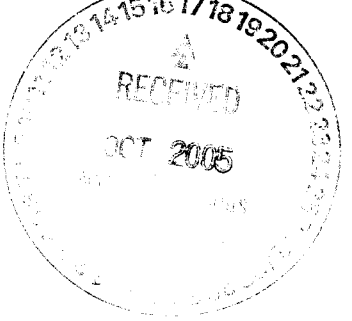
October 14, 2005



Mr. David Cobrain
State of New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building One
Santa Fe, New Mexico 87505-6303

Reference: Work Assignment No. 06110.290.0002; State of New Mexico Environment Department, Santa Fe, New Mexico; Human Health and Ecological Risk Assessment Support; Review of the Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico, Task 2 Deliverable.

Dear Mr. Cobrain:

Enclosed please find the deliverable for the above-referenced work assignment. The deliverable consists of review comments on the "Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico" dated September 1997. As noted in the submittal memorandum from Ms. Cheryl Frischkorn, the review was to focus primarily on the statistical analysis of the soil background data.

Given the date of the document, the review assessed both the methodology as was current in 1997 as well as noted changes in methodology based upon current guidance. The methodology used to calculate the upper tolerance limits (UTLs) is consistent with all guidance reviewed. However, using current guidance, the United States Environmental Protection Agency (EPA) promotes a slightly different approach for calculating upper confidence limits (UCLs). Today, for estimating the UCL, EPA recommends that the December 2002 guidance "Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites" (OSWER 9285.6-10) and its accompany software, ProUCL, be applied.

The document is slightly confusing, as it presents estimations of UTLs, UCLs, and maximum detected concentrations, but does not clearly identify what will be used to represent background. Typically, the maximum detected site concentration is compared

to a representative UTL for background. If the site concentration does not exceed this concentration, then it is assumed that the site concentrations are representative of background. If the site concentration exceeds the UTL for background, then a statistical comparison of the data sets is conducted. The most common test for comparison of the data sets is the non-parametric (distribution independent) Wilcoxon Rank Sum (WRS) test. If the results of the statistical comparison of the datasets indicate there is a significant difference, then additional analyses, such as geochemical plots, histograms, and/or box and whisker plots may be used to further assess whether the site concentrations are representative of background. If the conclusion is that the site concentrations represent contamination, then a UCL is calculated for the site data. This UCL is used as the exposure point concentration. Again, EPA now recommends the above 2002 guidance and software for determining the UCL. Given this, it is not clear what purpose the background UCL will serve. A comment concerning this issue has been drafted.

One of the purposes of the document is to establish a natural background level for pesticides. This is counter-intuitive, as pesticides do not occur naturally in background. It is typically assumed that detections of pesticides are due to site activities. It is not clear whether the history of farming and agricultural activities in the area has lead to elevated levels of pesticides in general. Given that only one pesticide (4,4-DDT) was detected in one surface soil sample, it appears that establishment of a background pesticide level for 4,4-DDT is not appropriate and that adequate demonstration that 4,4-DDT is an area-wide contaminate has not been provided. It is not recommended that any background levels for pesticides be established. A comment has been drafted concerning this issue.

The document is formatted in Word. The deliverable was emailed to you on October 14, 2005 at David_Cobrain@state.nm.us to Ms. Cheryl Frischkorn at Chery_frischkorn@state.nm.us. A formalized hard (paper) copy of this deliverable will be sent via mail. If you have any questions, please call me at (303) 763-7188 or Ms. Paige Walton at (801) 451-2978.

Sincerely,

June K Dreith

June K. Dreith
Program Manager

Enclosure
cc: Cheryl Frischkorn, NMED
Ms. Paige Walton, TechLaw

TASK 2 DELIVERABLE

REVIEW COMMENTS ON THE NATURALLY OCCURRING CONCENTRATIONS OF INORGANICS AND BACKGROUND CONCENTRATIONS OF PESTICIDES AT CANNON AIR FORCE BASE, NEW MEXICO SEPTEMBER 1997

Human Health and Ecological Risk Assessment Support

Submitted by:

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Submitted to:

Mr. David Cobrain
State of New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building One
Santa Fe, New Mexico 87505

In response to:

Work Assignment No. 06110.290

October 14, 2005

REVIEW COMMENTS ON THE NATURALLY OCCURRING CONCENTRATIONS OF INORGANICS AND BACKGROUND CONCENTRATIONS OF PESTICIDES AT CANNON AIR FORCE BASE, NEW MEXICO SEPTEMBER 1997

1. One of the purposes of the document is to establish a natural background level for pesticides. This is counter-intuitive, as pesticides do not occur naturally in background. It is typically assumed that detections of pesticides are due to site activities. It is not clear whether the history of farming and agricultural activities in the area has lead to elevated levels of pesticides in general. Low-levels of pesticides may also be indicative of industrial and/or residential use. Given that only one pesticide (4,4-DDT) was detected in one surface soil sample, it appears that establishment of a background pesticide level for 4,4-DDT is not appropriate and that adequate demonstration that 4,4-DDT is an area-wide contaminate has not been provided. It is not recommended that any background levels for pesticides be established.

2. It is not clear how field replicates were handled for the background soil samples. Typically, for field duplicates, if both of the sample results are detected values, the primary and duplicate sample results are averaged. If one sample result was a detected value, and the other was a non-detect, the detected value is averaged with one-half the sample quantitation limit (SQL) of the non-detect. Further, if both samples were non-detect values, one-half of the results with the lowest SQL is used as a surrogate value. Please clarify how field replicates were addressed.

3. The document is slightly confusing, as it presents estimations of UTLs, UCLs, and maximum detected concentrations, but does not clearly identify what will be used to represent background. Typically, the maximum detected site concentration is compared to a representative UTL for background. It is not clear what purpose the background UCL will serve. Please clarify what values will be used to represent the background concentrations and how a comparison to background will be conducted.

4. The document estimate background concentrations (UTLs and UCLs) for metals detected in surface and subsurface soil. However, based upon the discussion of the geology at the site, there may be more than one soil type present. When evaluating background, a background data set for both surface and subsurface soil is acceptable. However, if the site concentrations exceed the site-wide background concentration, often time the exceedance is due to differences in soil type. In these cases, background based on soil type is often determined. Discuss whether any background concentrations based upon soil type were determined. This may be of particular concern, for example, if an area predominantly of caliche (Clovis soils) or sand (Amarillo soil) is under investigation. Please discuss how different soil types are account for in determining background.