

HAFB 07



BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

NEW MEXICO
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

2905 Rodeo Park Drive East, Building 1

Santa Fe, New Mexico 87505-6303

Phone (505) 476-6000 Fax (505) 476-6030

www.nmenv.state.nm.us



RON CURRY
Secretary

CINDY PADILLA
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

August 24, 2007

Debbie Hartell, Chief
Environmental Flight
49th CES/CEV
550 Tabosa Avenue
Holloman AFB, NM 88330-8458

**RE: DISAPPROVAL: REPORT ON BASE-WIDE BACKGROUND STUDY,
DECEMBER 1993
HOLLOMAN AIR FORCE BASE, EPA ID# NM6572124422
HWB-HAFB-MISC**

Dear Ms. Hartell:

The New Mexico Environment Department (NMED) has reviewed the U. S. Department of Defense (Permittee) Holloman Air Force Base's (HAFB) document entitled *Base-wide Background Study, Sewage Lagoons and Lakes Investigation*, dated December 1993 (hereinafter referred to as the "Background Study"). NMED cannot find any documentation in the administrative record that the U. S. Environmental Protection Agency (EPA) has reviewed this report which was completed at a time when EPA had lead authority for corrective action under RCRA in New Mexico. Regardless, the NMED hereby disapproves the Background Study for several technical reasons that are discussed below.

As you are aware, information on the background levels of naturally occurring constituents is required to fully implement corrective action at any Solid Waste Management Unit (SWMU) or Area of Concern (AOC) where hazardous constituents (for example, metals) associated with a SWMU or AOC may also be naturally occurring. This is the case at some SWMUs and AOCs at HAFB. Background information is needed to determine if certain contaminants found naturally in the environment are at levels representative of contamination.

NMED disapproves the subject HAFB Background Study for the following reasons:

1. The sample size is much too small to ensure that there are adequate estimates of the mean and variance for any given constituent. This is true for both the groundwater and soil data sets.
2. Sampling locations are poorly described and do not provide confidence that the samples were collected at locations that are representative of natural conditions. For example, according to Figure 1-2, some of the monitoring wells used for the Background Study may be located in areas affected by Facility operations. Also, total depths of the wells vary from 16 to 54 feet, so it is not clear if the wells are monitoring the same hydrostratigraphic unit or aquifer.
3. Some of the statistical descriptors are reported as negative values (for example, the minimum, mean, and median for antimony, as well as many other values listed in Table 2-1). Given that these values cannot be less than zero, they are indicative of a fundamental misunderstanding on how to apply statistics to determine background concentrations. NMED does not have confidence that any of the statistics reported can be relied upon to make decisions.
4. Described as a *key* element of the HAFB Background Study was the common practice of using analytical results for *laboratory blanks* to augment background data (see page 14 of the Background Study). This is absolutely an unacceptable practice which again demonstrates a fundamental misunderstanding of the application of statistical methods to data sets. You cannot legitimately mix the data of different populations and claim that the pooled data are representative of one of the populations. Background data should be augmented with background data representative of the same population.
5. Although the report correctly indicates that there may be temporal or spatial variations in groundwater quality, and spatial variations in the concentrations of constituents in soil, the Permittee did not assess these potential variations and whether different populations of soil and groundwater exist and therefore should be studied separately. At a minimum, the Permittee should have evaluated and reported on the geologic and hydrogeologic conditions that influence constituent populations for soil and groundwater, as well as any temporal variations in water quality.
6. Apparently there are cases where certain unspecified data were "shifted upward by a fixed amount" (see page 31). Although NMED does not believe that there was any illicit intent by the Permittee to deceive the Department, this does represent a poor technical decision on how to deal with problematic data. Regardless, such fabricated results are not something the NMED can trust to make decisions.

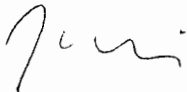
Because the Background Study is inadequate, and the NMED has absolutely no confidence in its results, it cannot be used to determine if inorganic constituents at HAFB are representative of natural or contaminated conditions. Therefore, the requirement to determine the nature and

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extent of contamination can not be met for some SWMUs and AOCs. Unfortunately, the Background Study is so grossly inadequate that it must be completely redone. Thus, the Permittee must submit to the NMED for approval, within 90 days of receipt of this letter, a work plan to conduct an appropriate background study for the HAFB Facility. The work plan shall specify what naturally occurring constituents will be evaluated (including field parameters for groundwater such as pH, Eh, specific conductance, dissolve oxygen and parameters for determining redox conditions). The work plan must also include a schedule for completing the new background study, and a description of the geologic and hydrogeologic settings of HAFB, sample locations, analytical methods, detection limits, field and laboratory quality control, quality control targets for each analyte, how population distributions will be determined, the statistical descriptors that will be determined and how they will be determined, the methods for handling outliers and non-detect data, and how all of the data and results of the study will be reported to the NMED.

Please contact Mr. William Moats of my staff at 505-222-9551 if you have any questions concerning this matter.

Sincerely,



James P. Bearzi
Chief
Hazardous Waste Bureau

JPB:wpm

cc: J. Kieling, NMED HWB
W. Moats, NMED HWB
C. Amindyas, NMED HWB
D. Strasser, NMED HWB
L. King, EPA Region 6 (6PD-F)
File: HAFB 2007 and Reading