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CAFB
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ENTERED

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CERTIFIED MAIL
RECEIPT REQUESTED

December 22, 1992

General Richard N. Goddard, Commander
Cannon Air Force Base
Headquarters 27th Combat Support Group DEEV
Cannon Air Force Base, New Mexico 87413

RE: Notice of Deficiency - Melrose Air Force Range - RCRA
Permit Application

Dear General Goddard:

The New Mexico Environment Department (NMED) has completed the technical review of the RCRA Part B application dated December 1990, along with more recent supplemental information. Deficiencies noted in this Notice of Deficiency (NOD) are summarized below:

- 1) location standards;
- 2) sampling and analysis plan;
- 3) engineering report describing the unit;
- 4) waste characterization;
- 5) update information in the Part B application; and
- 6) additional items discussed in CAFB correspondence dated November 30, 1992.

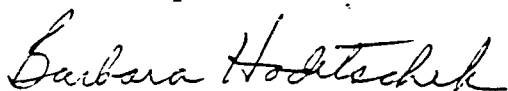
It is imperative that each of the deficiencies identified in this NOD document be addressed in detail and provide sufficient information for the NMED to make a final determination on the adequacy of the application.

Your response must be submitted within thirty days of this NOD. Only when the response is technically complete can we begin to prepare the draft permit. Failure to thoroughly address all noted deficiencies will result in a Notice of Violation and may subject Cannon Air Force Base to a permit denial pursuant to. HWMR-7, Part IX, §270.10(c).

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General Richard N. Goddard
December 22, 1992

Please contact Tom Tatkin of my staff at 827-4308 if you have any questions or would like any clarification on any of the enclosed comments.

Sincerely,



Barbara Hoditschek, Program Manager
Hazardous & Radioactive Materials Bureau

xc: David Neleigh, US EPA Region 6
Rich Mayer, US EPA Region 6
~~Benito Garcia~~, NMED
Tom Tatkin, NMED
Jim Richards, CAFB

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU
NOTICE OF DEFICIENCY COMMENTS

for

MELROSE AIR FORCE RANGE
RESOURCE CONSERVATION AND RECOVERY ACT
OPERATING PERMIT

December 22, 1992

1) Location Standards - 100 Year Flood Plain (HWMR-7, Part V, §264.18(b) and Part IX, §270.14(b)(11)(iii))

Submit 100 year flood plain documentation for the OB/OD unit.

The Cannon Air Force Base's (CAFB) letter and data package of December 30, 1990 indicates that the Open Burn/Open Detonation (OB/OD) Unit is situated in the 100 year flood plain and that a berm will be constructed around the unit to prevent flood waters from entering the unit. Neither an adequate determination of the unit's position within the flood plain nor a formal engineering design for flooding prevention at the unit have been submitted.

The method used to determine the position of the 100 year flood plain was the US Soil Conservation Service (SCS) Method TR 55. This method will compute the peak discharge expected during the designed event, but not the elevation or the velocity of the flow at any particular point along the channel. Also, Method TR 55 uses a rainfall intensity and distribution that is not applicable to the Melrose Range area. It is possible that the peak discharge is underestimated by as much as 40% by using this method. The preferred method is SCS Method TR 20. This method adjusts for the expected rainfall intensity and distribution in any particular watershed.

Acceptable methods used to determine the elevation of the waterline after the peak discharge is calculated are the US Army Corp of Engineers' Method HEC 2 or SCS Method WSP 2.

After an accurate determination is made for the elevation of the 100 year flood, relative to the position of the unit, any structural design necessary to prevent flooding must be provided based on a quantitative analysis. The December 26, 1991 letter from your office bases the proposal for a 2-foot high berm on an estimate. Designs for this purpose cannot be based on guess work.

Unless it can be properly documented that the unit is situated and adequately protected from the 100 year flood, or that the affects of flooding would not have an adverse impact on the human health or the environment, a permit cannot be issued for the present location.

2) Sampling and Analysis Plan - A Demonstration for Migration Potential of Waste Constituents, HWMR-7, Part V, §274.601(a)(1)

Submit a soil sampling and analysis plan.

It must be demonstrated that residual waste constituents from the treatment process at the Melrose Range OB/OD will not contaminate soils as defined by action levels or a determination of background concentrations. Typically, a soil sampling and analysis (S&A) plan is used to provide this demonstration for OB/OD units. An appropriate plan will be designed around operational waste management procedures, knowledge of the waste stream and environmental conditions.

In the December 1990 Part B application update, S&A was used in an attempt to demonstrate that regulated concentrations of hazardous constituents were not present in the soil. This does not satisfy the requirement under the technical review because: a formal plan was not developed explaining logic for how and why particular samples were collected; the waste stream was not defined well enough to know all constituents to test for; spatial relationships for sample collection were not identified; the number of samples collected were too limited to draw statistical conclusions; and time intervals between sampling events were not made clear. Quality control and quality assurance, also, was not addressed with respect to sampling and analysis.

Components for Developing a S&A Plan

The purpose of designing a S&A plan for the permit will be different than that for a closure. Usually a closure plan requires a single sampling event to determine the extent of contamination. For the purpose of the permit, the plan will routinely test for the migration potential of waste constituents and demonstrate effectiveness of the treatment process. The S&A plan must provide for periodic sampling to be taken during the term of the permit to

monitor for releases that could occur during the operational life of the unit.

The S&A plan should propose the analytes to be sampled and analyzed based on a complete characterization of waste to be treated in the OB/OD unit.

Proposed sampling locations should be collected closest to where it is suspected that explosive residues and metals have been distributed after the treatment. Sample locations will include horizontal and vertical components.

Background levels for naturally occurring metals should be established for each particular soil depths in order to make comparisons with areas of potential contamination. Several different locations may be sampled to validate and establish background concentrations.

Frequency of sampling events could depend on how often the unit is used, and for which constituents samples are being tested.

Both the frequency of sampling events and number of samples collected will need to be sufficient for the purpose of demonstrating statistically the migration potential.

Chemical analysis during the operational life of the unit must address at a minimum, metals associated with both inert and active portions of waste explosives, and explosive residues. Metals will include all elemental metals listed in HWMR-7, Part V, §264, Appendix IX, with the exception of those metals that are restricted from treatment. Analysis should include the EPA SW-846 test methods also listed in Appendix IX. For explosive residues, Method 8330 is recommended. The TCLP analytic method is not acceptable for this demonstration because of dilution caused by the mixing of waste constituents with soils.

Considerations for Developing a Sampling Strategy

Development of a strategy for a S&A plan at Melrose Range will be strongly influenced by selected waste management practices. For example, the OB/OD unit presently consists of a large circular area (1,000-foot diameter), with explosive detonation occurring close to the center. For each detonation a new trench is constructed, and afterward buried. Exact depths and horizontal locations of past trenches are undefined. It could be estimated that all trenches have been within a certain distance from the center of the unit and at a certain depth. During preparation for detonation, explosives are piled in the bottom of the trench, uncovered, until they are detonated. Metal fragments and possibly untreated explosive

residues are shot out from the trench. Distribution of treatment debris can be distributed beyond the limits of the unit. Distance is dependant upon the amount of the explosives being treated and effects from the wind.

The S&A plan must address the affected area. This means the area that receives any waster debris from the treatment process. By not confining all materials to the trench area, it becomes necessary to monitor a greater area. The result is an increase in the amount of samples needed.

Another element of operations that will affect the development of the sampling strategy is the precise location of where treatment takes place. Unless trenches are accurately surveyed to specific locations, a greater number of samples will be needed to define the previous active sites. A reduction in the number of samples could be brought about by restricting detonation to a single trench that was reshaped, using the same affected soils.

CAFB personnel may want to consider modifying some of the current waste management practices at the unit in order to make it less cumbersome in developing a reliable monitoring program.

3) Engineering Report that Describes how the Unit was Designed, Constructed, Operated, and Maintained (HWMR-7, Part IX, §270.23(a)(2))

Submit an engineering report, detailing construction, operational procedure and maintenance of the OB/OD unit.

The Part B application mentions operational aspects of the plan and report, but not to the extent necessary to fully understand the unit. The above description in item 2, discussing the construction of new trenches before each detonation, was gleamed from direct observation and conversations with facility personnel. A complete written description of how the unit is operated is needed. If CAFB wishes to change aspects of the OB/OD unit's operation (e.g. covering explosives with soil to minimize "kick-out") to simplify the S&A plan, these changes need to be described in the permit application. This is so that the appropriate permit conditions can be developed.

4) The Waste Characterization Plan must fully describe wastes entering the unit and residual and degradation products (HWMR-7, Part V, §264.13(b)).

Submit a complete waste analysis plan.

Waste analysis is an essential part of the permit application for miscellaneous units. Prior to treatment of any hazardous waste, a detailed chemical and physical analysis must be made from a representative sample. **The analysis may include existing published or documented data on each particular waste explosive item.** The analysis must be repeated as necessary to ensure that it is accurate and up to date.

A list of parameters should be selected that are used to analyze the wastes. These must be specific for each type of waste and should include rationale for their selection. Non-specific categories, such as "other explosives" are not acceptable.

Frequency of the analysis should be reevaluated annually at a minimum or when the make-up of the waste changes. Lead time for knowledge of process changes can be gained by keeping track of changes in purchase specifications before a product becomes a waste. With certain explosive wastes, less frequent analysis may be warranted. This would be the case when, for particular items, Cannon can demonstrate that an analysis would pose a threat to persons conducting the analysis through risk of fire, explosion, releases of toxic vapors or gases, or other conditions that may produce an unwarranted health and safety or environmental risk.

5) Update information for the Part B application, submitted December 1990, is necessary to adequately review the application. Any information that is outdated or new must be provided to the NMED in writing. Any changes that are not identified at this time may result in obsolete information becoming part of the permit. After the draft permit is written, it may require a permit modification to incorporate new information. All permit modifications have a fee associated with them.

Submit all update information.

6) Additional items discussed in CAFB's correspondence dated November 30, 1992 are not being submitted as scheduled. This information is needed. Items of concern have been referenced above or are included in the following:

Submit all information together in one package.

- a. Describe open burning and open detonation activity at the Melrose Range, including location of decommissioned sites.
- b. Itemize all waste explosives, with dates and quantities that have been burnt or detonated at the unit since November 1980.

- c. Submit a copy of the DOD study, "Identification and Characterization of Emissions and Residues from the Open Burning and Open Detonation of Munitions". This document was referenced in the Part B application.
- d. Describe site specific geology at the unit. Information submitted addresses only the uppermost surface soil. The description includes no depth and appears to be from a regional study rather than a site specific one.

This study is necessary to assess the potential for hazardous waste constituents to enter groundwater. Depending on results of the study, this information could eliminate the necessity for groundwater monitoring during the life of the permit. Information will also be useful in designing the soil sampling and analysis plan with respect to vertical sampling intervals. Borings should be to a depth of approximately 20-feet, and be performed at least in 3 locations to demonstrate continuity of strata.

- e. Explain how and when treated wastes that do not meet regulatory standards are removed from the OB/OD unit. Even when the reactive portion of the waste is eliminated, there may still be other RCRA wastes remaining (e.g. regulated metals remaining in the ash or soil).

Treated wastes at the OB/OD unit are explosives that often are contained in a metal housing or casing. The casing is considered a solid waste and may be a hazardous waste if Toxicity Character Leaching Procedure (TCLP) analysis shows that the casing exceeds concentration limits. If it is soils that are being analyzed for hazardous waste constituents, then excessive concentrations are based on health based standards or background concentrations determined from total contaminant analysis. The reason for this is that the contaminants are diluted in the soil after treatment, and therefore the soil does not provide a representative sample of the original wastestream.

- f. Explain how and when metal fragments produced from ruptured explosive casings are removed from the unit.