CAFB

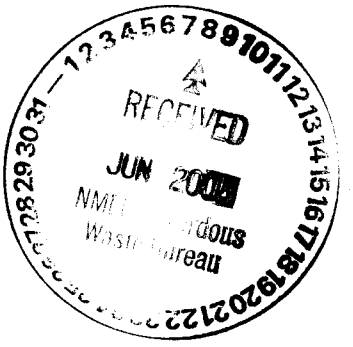
TechLaw

Twenty Years 2003

Quality & Integrity

560 Golden Ridge Road, Suite 175
Golden, CO 80401
(303) 763-7188
(303) 763-8889 FAX
www.techlawinc.com

ENTERED



June 1, 2005

Mr. David Cobrain
State of New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Sant Fe, New Mexico 87505-6303

RE: Work Assignment No. 06110.330.002; State of New Mexico Environment Department, Santa Fe, New Mexico; General Permit Support Contract; RCRA Engineering Design Support for Cannon Air Force Base, Task 2 Deliverable

Dear Mr. Cobrain,

Enclosed please find the deliverable for the above referenced work assignment. The deliverable consists of an engineering review of the landfill cover for SWMU 101 (Sewage C Lagoons).

Given the annual average rainfall in Clovis of 17 inches (plus 5 inches of snow per year) (ref http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nmcv13), the limited solubility of the constituents of concern, the shallow slopes of the completed cover (3%), and the low hydraulic conductivity of the 18-inch thick cover soil barrier, it is our opinion that the design and subsequent construction of the final cover are appropriately protective of human health and the environment.

Our only area of concern is that there was no separation layer (either soil or geosynthetic filter) placed between the 6-inch vegetative soil layer and the biotic barrier. The biotic barrier consists of an 18-inch thickness of 3- to 6-inch pieces of broken concrete, although the lower 9-inches of this material apparently contains a substantial amount of smaller particles. The pore spaces in the concrete layer are likely more than sufficient to hold all of the soil contained in the vegetative layer. Hence, over time the vegetative layer may sink or infiltrate into the biotic barrier. To assess whether this is occurring, the Air Force should periodically survey the vegetative cover. As the landfill will also be settling due to consolidation of the landfill materials and underlying soils, the survey will have to be conducted by "potholing" at 4 to 8 locations in the cover surface. We recommend conducting the survey at 1 year and then every 5 years thereafter unless the first survey shows either extensive loss of the vegetative cover or no loss. This requirement could be placed in the Post-Closure Operations and Maintenance Plan for the former sewage lagoon.

The document is formatted in Word. The deliverable was emailed to you on June 1, 2005 at david_cobrain@nmenv.state.nm.us and to Ms. Cheryl Frischkorn at cheryl_frischkorn@nmenv.state.nm.us. A formalized hard (paper) copy of this deliverable will be sent via mail. If you have any questions, please feel free to contact me at (303) 763-7188 or Mr. Greg Starkebaum at (303) 973-0072.

Sincerely,

June K. Dreith

June K. Dreith
Program Manager

Enclosure

cc: Ms. Cheryl Frischkorn
Mr. Greg Starkebaum
Denver Files

TASK 2 DELIVERABLE

ENGINEERING DESIGN SUPPORT FOR CANNON AIR FORCE BASE, SWMU 101; SEWAGE LAGOONS

Submitted by:

TechLaw, Inc.
560 Golden Ridge Road, Suite 130
Golden, CO 80401

Submitted to:

Mr. David Cobrain
State of New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building 1
Santa Fe, New Mexico 87505

In response to:

Work Assignment No. 06110.330

June 2005

General Comment

The Introduction to the Final Construction Completion Report (Report) states that the Report was prepared in accordance with requirements outlined in the Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Corrective Action Plan Guidance. However, the Report text does not explain whether the SWMU 101 site investigation and corrective measures study, completed in 1992 and 2001, respectively, or the cover construction work in 2003, were actually performed in accordance with the guidance. Previous reports, work plans and construction specifications, and contaminant data, were not reviewed as part of this assignment.

The following criteria from the Corrective Action Plan guidance were used to examine the adequacy of the Report, and apparent deficiencies are discussed in specific comments:

Chapter V, Section VI: Construction Completion Report

> The Permittee/Respondent shall prepare a Construction Completion (CC) Report which documents how the completed project is consistent with the Final Plans and Specifications. A CC Report shall be submitted to the implementing agency when the construction and any operational tests have been completed. The CC Report shall, at a minimum, include the following elements:
> 1. Purpose;
> 2. Synopsis of the corrective measure, design criteria, and certification that the corrective measure was constructed in accordance with the Final Plans and Specifications;
> 3. Explanation and description of any modifications to the Final Plans and Specifications and why these were necessary for the project;
> 4. Results of any operational testing and/or monitoring, indicating how initial operation of the corrective measure compares to the design criteria;
> 5. Summary of significant activities that occurred during construction. Include a discussion of problems encountered and how they were addressed;
> 6. Summary of any inspection findings (include copies of key inspection documents in appendices);
> 7. As built drawings or photographs; and
> 8. Schedule indicating when any treatment systems will begin full scale operations.

Specific Comments

1. The purpose of the SWMU 101 remedial action is not clearly explained in the Report. Although Section 2.3 (page 2-2) mentions the need to "prevent exposure to ecological receptors" as the reason for constructing the engineered cover and biotic barrier, the specific ecological receptors and contaminants that present unacceptable risks are not identified. A wide range of parameters is listed in discussion of groundwater monitoring (page 2-2), and additional

chemicals are identified in several reports of soil sample analyses (Appendix A). The purpose of the remedial action, however, is not described in any further detail. The Report should identify the specific ecological receptors and hazardous constituents (and their concentrations) that resulted in the decision to consolidate contaminated sludge and soil, and construct the cover system.

2. The first sentence in Section 3 (page 3-1) states a different purpose for the cover system, contradicting Section 2.3. Section 2.3 states that "No risk to human health was identified from exposure to surface or subsurface soil or sludge at the site." Section 3, however, says that "The Sewage Lagoons cover system was designed to minimize potential threat to human health and the environment..." This statement indicates that a potential threat to human health would exist if the remedial action was not implemented. These two statements are incompatible. The statement of purpose in Section 3 should be revised to identify the specific ecological receptors at risk, rather than human health.

3. The Report provides a reasonably complete description of the construction of the corrective measure, but design criteria are not provided. For example, the Report does not provide required hydraulic conductivity and USCS classification of the soil barrier, thicknesses and tolerances for the soil barrier, biota barrier and erosion/vegetation layer, compaction requirements for sludge and contaminated soil from the North Lagoon, etc. The Report should provide a summary of the design criteria for the project, as specified in the guidance.

4. The Report does not provide a certification that the corrective measure was constructed in accordance with the Final Plans and Specifications. The Report should provide this certification, as specified in the guidance.

5. Section 3.2.7 (page 3-6) states that no nonconformance reports were filed in regard to this project. This statement appears to be at odds with the description of construction of the biota barrier in Section 3.1.6 (page 3-4), which states that half of the crushed concrete (16,000 cubic yards) did not meet the grain size requirements of Specification 02115. The discussion in Section 3.1.6 does not explain whether the size of this concrete was too small or too large to meet the specification. The referenced Field Change Request (FCR) No. 6 (in Appendix B of the Report) indicates that "...fine material in the crushed concrete stockpile at SWMU 97" is the problem, but does not mention any size problems with "Keel material" (left over from runway work), which is proposed for use in FCR No. 9. Finally, Design Change Notice (DCN) No. 2 (in Appendix B of the Report), approving use of the undersized material from SWMU 97, states that "Changed specification will be reflected in record drawings and completion report". The changed specification is not mentioned in Section 3.1.6 or on the drawings provided in the Report (Figure 3-1, page 3-9), or elsewhere in the Report. Section 3.1.6 should be revised to clarify why the SWMU 97 and Keel materials did not meet specification 02115, and explain how the specification was changed.

6. Section 3.1.6 states that the first lift of the biota barrier layer consisted of the SWMU 97 and Keel materials, and the second lift was 3- to 6-inch crushed concrete from an unspecified offsite source. The Excavation and Handling Plan for Biota Barrier Layer (in Appendix A of the Report), however, states that the offsite material will be placed first, and the second lift will be

the on-site (SWMU 97 and Keel) materials. This procedure is confirmed in DCN No. 2. Section 3.1.6 should be revised to correct the description of the upper and lower lifts of crushed concrete materials. If the current description in Section 3.1.6 is actually correct, this is an apparent nonconformance with the above plan and DCN No.2. The offsite source of crushed concrete should also be identified.

7. The 6-inch thick erosion/vegetation soil is not separated from the biota barrier by soil or synthetic filter material. The absence of a filter raises the concern that soil may eventually infiltrate into the coarse broken concrete biota barrier. The infiltration of soil may occur whether the coarse or fine concrete biota barrier material was placed immediately below the erosion/vegetation soil. The Report does not explain or justify the lack of a filter material.

8. DCN Nos. 1 and 3 identify additional changes in the project specifications that are not mentioned in the Report. These changes (eliminating the berm between the North and South Lagoons, and modification of soil permeability test conditions) should be described in the body of the Report, and the reasons they were necessary for the project should be explained.

9. Future maintenance and protection of the cover system are not addressed in the Report. Periodic mowing is apparently already occurring (photographs of the mowed cover are included in Appendix C), but erosion repair is not addressed. Exposure of the biota barrier could result in increased infiltration, reduced vegetation growth, and decreased evapotranspiration. Access restrictions described in the Report are limited to fencing. If additional restrictions are proposed or have been implemented, such as warning signs, Commander's Orders, or other forms of institutional controls, they should be identified and described. These subjects are important parts of the design criteria, which should be summarized in the Report.