



Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

DEC 16 1994

Ms. Barbara Hoditschek
Program Manager
RCRA Permits Program
Hazardous and Radioactive Materials
Bureau
New Mexico Environment Department
525 Camino de los Marquez
Santa Fe, New Mexico 87502


Subject: Revised Closure Plan, NE and NW Surface Impoundments,
TA-53, OU 1100

Dear Ms. Hoditschek:

Enclosed is the response to NMED's NOD issued on the subject closure plan.

If you have any questions, please call Bob Enz, Scientech at (505) 667-5793.

Sincerely,


Theodore J. Taylor
Program Manager
Environmental Restoration Program

LAAMEP:2TT-034

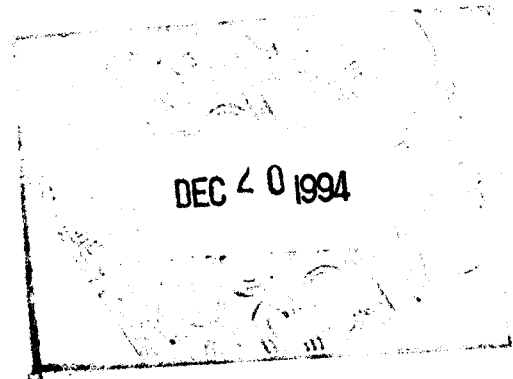
Enclosure

cc w/enclosure:

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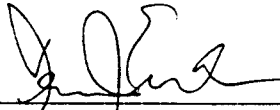
CERTIFICATION

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title:

Response to New Mexico Environment Department (NMED)
Comments Regarding the August 1994 Closure Plan for TA-53
Surface Impoundments

Name:

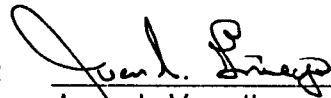


Dennis Erickson
Division Director
Los Alamos National Laboratory

Date:

12/15/94

Name:



For Joseph Vozella,
Acting Assistant Area Manager
Environment and Projects
DOE-Los Alamos Area Office

Date:

12/16/94

Response to NMED Comments Regarding the August 1994 Closure Plan
for the TA-53 Surface Impoundments

Comment 1, Page 2-19, paragraph 1. ... The Tschicoma Formation and the Bandelier Tuff, west of the Pajarito Plateau on the flank of the mountains, contain small, localized bodies of the perched water. The Bandelier Tuff contains no perched water beneath the Pajarito Plateau. OK
well

It is unknown whether there are perched aquifers under this site because the hydrogeology of the area has not been characterized adequately. Additionally, perched aquifers have been found within the Bandelier Tuff in the Guaye and Puye Formations, and the Chino Mesa Basalt within the Pajarito Plateau.

The paragraph should either be deleted or should be changed to reflect the information in the comment.

Discussion

LANL agrees with the comment. The text on p. 2-19 will be deleted as indicated below and additional text will be inserted on p. 2-14 to provide additional information regarding perched groundwater near the site. In addition, the words "upgradient" and "downgradient," will be deleted on p. 2-16, Table 2-2 from the columns under Ottowi 4 and PM-3, respectively, because these wells are not directly upgradient or downgradient from the surface impoundments. In addition, the reference for the new text on p. 2-14 will be added to p. 7-4.

Proposed Text Changes

Page 2-14, paragraph 2, line 7, revise as follows:

"A test well, TW-3, is located near Otowi-4. Perched groundwater was encountered at a depth of about 253 feet in Otowi-4 when it was installed in 1990. This perched groundwater is located in a layer of gravel within the upper member of the Puye Conglomerate above the basaltic rocks of the Cerros del Rio. This perched groundwater was separated from the top of the main aquifer by about 527 feet of conglomerate and basalt. The lateral extent of the perched groundwater body is not known. Table 2-2 includes a summary of the location, depth to top of main aquifer..."

Page 2-16, Table 2-2, second row, second column, revise as follows:

"Midreach of Los Alamos Canyon about 2800 ft. northwest and upgradient of surface impoundments"

Page 2-16, Table 2-2, second row, third column, revise as follows:

"Midreach of Sandia Canyon about 3100 ft. west-southwest and downgradient of surface impoundments"

Page 2-19, paragraph 1, revise as follows:

"The only aquifer of the Pajarito Plateau capable of providing municipal and industrial water supply is in rocks of the Santa Fe Group and Puye Formation. ~~The Tschicoma Formation and the Bandelier Tuff, west of the Pajarito Plateau on the flanks of the mountains, contain small, localized bodies of perched water. The Bandelier Tuff contains no perched water beneath the Pajarito Plateau.~~"

Page 7-4, paragraph 2, insert the following reference after the paragraph 2:

"LANL (Los Alamos National Laboratory), 1994. "RFI Work Plan for Operable Unit 1100, Environmental Restoration Program," LA-UR-94-1097, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL, 1994)"

Comment 2, Page 3-11, paragraph 2. ...Under both proposed RCRA Subpart S corrective action regulations and the Laboratory Environmental Restoration (ER) Project, constituents at concentrations below action levels do not present a human health risk.

LANL must include constituents in the baseline risk assessment if there are constituents detected at concentrations within an order of magnitude below the screening action levels.

The text should be modified to reflect this both here and in Appendix K.

Discussion

LANL agrees with NMED. Constituents will not be eliminated from consideration in the baseline risk assessment based on comparisons with screening action levels. SAL comparison will only be used to establish whether a risk assessment is required. The text in Section 3 and in Appendix K (see proposed text changes on page 6 of this response) has been modified in accordance with the comment and discussions conducted with NMED on 11/9/94.

Pages 5-2 through 5-5, Section 5.1.1.2, Figure 5-1 and page K-1, Section K.1, Figure K-1 have been substantially revised to reflect this comment (comment 2) as well as comments 12, 13, 14, 15, 16, 17, 18, 19, 26, 28, 30 and 31. Section 5.1.1.2 has been replaced. Figure 5-1 and the identical Figure K-1 have been replaced (see attached).

(new paragraph) As described in the proposed text changes for Section 5.1.1.2 (pages 5-2 through 5-5) at least 3 samples must

be collected from each exposure unit in order to develop an appropriate upper confidence limit for the risk assessment. In order to meet this requirement for 3 samples per exposure unit, 12 additional samples must be collected from each media (i.e., 12 additional sludge samples, 12 additional bentonite liner samples, and 12 additional soil/tuff samples) from each impoundment. The text will be changed on pages 3-22, 3-24, and 3-25 to reflect these changes. In addition, Figure 3-3 on p. 3-23 and Figure K-2, page K-6 have been changed to indicate the additional sample locations and Table 3-10 on pages 3-66 and 3-67 will be changed to reflect the increase in the number of samples to be collected (see attached).

Lee
OK CERCLA
needs on this
p.

Proposed Text Changes

(new paragraph) Page 3-22, paragraph 4, revise as follows:

"...Each surface impoundment will be subdivided into a grid of (approximately) 10-ft by 10-ft blocks, totalling 400 blocks. **The sample locations have been determined as follows.** The blocks in each surface impoundment will be ~~were~~ uniquely numbered and ~~16~~ **28** blocks were selected. each one ~~equidistant from impoundment walls and from each other.~~ **Most of the blocks are equidistant from impoundment walls and from each other except for blocks on the outer edge of the impoundments.** A sampling location will be selected at **the center of each block.** An additional sample location will be ~~was~~ established within 3 ft of the impoundment influent. Figure 3-3 shows **the 29** sample locations for each **impoundment.**"

Page 3-24, last paragraph, revise as follows:

"The bentonite impoundment liners and the soil or tuff beneath the liners will be collected at the same location as the sludge samples. **A total of 29 samples will be collected from the bentonite liner material and a total of 29 samples will be collected from the depth interval 18 to 24 in. below the liner at each impoundment.**"

Page 3-25, first complete paragraph, revise as follows:

"...A collar may be placed around the sampling site, if necessary, to prevent sludge from flowing onto the sampling site. **Up to 16 samples may be collected below the gunite liner...**"

Page 3-23, Figure 3-3, see revised Figure 3-3 at the end of this response to comments document.

Page 3-66 and 3-67, Table 3-10, see revised Table 3-10, pages 3-66 and 3-67 at the end of this response to comments document.

Don't have
this table.

Pages 5-2 through 5-5, delete entire Section 5.1.1.2 on Removal/Decontamination Standard [HWMR-7, Sections 264.228(a)(1)

and 270.1(c)(5)] and replace with the following (including attached Figure 5-1).

The approach for determining whether the closure performance standard has been met is illustrated in Figure 5-1. This approach is based on two methodologies: comparison with screening action levels (SALs) developed using the methodology outlined in the Installation Work Plan (LANL 1993) and development of a baseline risk assessment using methodology identified by the EPA (EPA 1989). As shown in Figure 5-1, the decision whether clean closure standards have been met can be made at several stages. The process is designed so that decisions can be made as early as possible. The major steps in this process are described briefly below.

The first step in the process is to review data to determine whether they meet QA/QC criteria. The QA/QC evaluation will be based on the Quality Assurance Project Plan (Appendix J to the Closure Plan) and Appendix K to the Installation Work Plan for Environmental Restoration (IWP) (LANL, 1994a). The level of uncertainty associated with estimated (e.g., J-flagged data) values and the potential effect this may have on the decision making process will be discussed. Those data that do not meet the QA/QC criteria will be rejected. If the rejection of the data results in less than the minimum number of 3 samples within an exposure unit, additional sample(s) will be analyzed. If a risk assessment is required, 3 samples minimum are needed to develop an upper confidence limit of the mean (95% UCL of the mean) which is used in estimating exposure and potential risk. Although a risk assessment could be conducted using one or two sample concentrations, the uncertainty associated with that analysis is greatly reduced by using at least 3 samples.

App. J doesn't address QA/QC. App. K does. See Appendix

Measured concentrations of 20 NMAC 4.1 Part 261 Appendix VIII hazardous constituents in sludge, soil, bentonite, and tuff meeting QA/QC criteria will then be compared against background concentrations. Background will be defined as the 95% upper tolerance level (UTL) calculated from concentrations of inorganic constituents measured in soil and tuff similar to that present near the TA-53 lagoons. If existing data are not sufficient to provide a statistically meaningful UTL, then additional samples will be collected near the lagoons in locations believed to be unaffected by releases from Laboratory facilities. Constituents in soil, subsoil, and tuff that are present at concentrations below the UTL will be eliminated from consideration.

U - not good enough

Those constituents in soils, subsoil, and tuff that are present above the background UTL and all constituents detected in sludge will then be compared with SALs. If the maximum concentration in soils, subsoil, and tuff is less than the SAL, then the clean closure performance standard will be met for that constituent. If multiple constituents are detected and the total sum of the SAL comparison ratios (maximum concentration/SAL) is less than 1 (LANL 1993b), then clean closure will be met (see Section 3.1 for a detailed discussion of multiple constituent comparisons). As

indicated previously, if the constituent does not have a SAL, a SAL will be developed using reference doses (RfDs) and/or cancer potency factors (CPF) using the methodology presented in Appendix J of the IWP (LANL, 1993b). RfDs and CPFs will be obtained from EPA's Health Effects Assessment Summary Tables (HEAST) and Integrated Risk Information System (IRIS). If an RfD or CPF is not available from either HEAST or IRIS, one will be requested from EPA's Environmental Criteria and Assessments Office (ECAO). If there are no EPA-approved RfDs or CPFs, a health criteria will be developed using a similar constituent which has toxicological data.

If any constituent in soil, subsoil, or tuff exceeds SALs or the sum of the SAL comparison ratios exceeds a target value of 1, then a baseline risk assessment will be conducted considering all detected constituents greater than background UTL. Constituents in sludge that exceed SALs but are below background UTLs will also be included in the risk analysis. However, a comparison risk analysis related to background UTLs will also be developed (EPA, 1989) to help the reviewer evaluate whether allowing the sludge to remain would result in an increase in human health risk. The baseline risk assessment will focus on those constituents of greatest concern. If constituents are detected at frequencies of less than 5% most will be eliminated from consideration. Infrequently detected constituents that will be considered for further evaluation include those constituents detected at high concentrations (i.e., at least one detection at a concentration greater than or equal to five times the limit of detection (LOD) (LANL, 1994a; EPA, 1989) or Group A carcinogens with at least one detection, regardless of concentration (EPA, 1989)." Similarly, tentatively identified compounds (TICs) detected infrequently and at low concentrations will be eliminated from further consideration (EPA 1989). If many TICs are present, or the TIC concentrations appear high, and effort will be taken to positively identify and reliably measure the concentrations (EPA 1989). Those constituents considered further will then be included in a concentration-toxicity (C-T) screening analysis. Those that contribute less than 1% of the total C-T risk will be eliminated from further consideration. The remaining constituents that contribute greater than 99% of the C-T risk will be included in a quantitative risk assessment. If the risk assessment shows that the total cancer risk is less than 1×10^{-6} and the total noncancer hazard index is less than 1, then the clean closure performance standard will be met. If not, an approach will be proposed for removal or decontamination that will reduce the risk to these target levels. This approach must be approved by NMED before it is implemented.

Responses specific to comment 2 are as follows:

Page 3-11, Section 3.1, paragraph 2 will be changed as follows:

The proposed RCRA Subpart S action levels and IWP SALs for soil are very conservative indicators of levels of contamination that could pose a health risk through ingestion. Under both the proposed RCRA Subpart S corrective action regulations and the Laboratory Environmental Restoration (ER) Project, **individual constituents at concentrations below action levels do not present a human health risk (i.e., the SAL comparison ratio [maximum concentration/SAL] for the individual constituent is less than 1).** The additive effects of multiple constituents is similarly evaluated by adding the ratios of the SAL comparison values (maximum concentration/SAL) for each constituent with a similar toxic end point (e.g., cancer, kidney effects, liver effects, etc.). When the total value is less than 1, then the additive effects of multiple constituents are not considered to present a human health risk. Constituents at concentrations above action levels and additive SAL comparison values greater than 1 do not necessarily pose a risk or health hazard above target values, but require a more thorough evaluation to characterize risks **potential risk and health hazard.**

ok

Pages K-1 and K-2, Section K.1, paragraph 3 will be changed as follows:

~~Remaining constituents will be compared with action levels. Those detected at concentrations less than the action levels will be eliminated from the quantitative risk assessment. The initial comparison will be made with proposed Resource Conservation and Recovery Act (RCRA) Subpart S action levels (EPA, 1990). Screening action levels (SAL) developed for the Environmental Restoration Project (LANL, 1994b) will be used for constituents with no proposed Subpart S action levels. For those constituents with toxicity criteria approved by the U.S. Environmental Protection Agency (EPA) but with no proposed Subpart S action levels or SAL values, action levels will be calculated using equations in Appendix E to proposed Subpart S (EPA, 1990). The most current sources of EPA approved toxicity criteria will be consulted. The Integrated Risk Information System (IRIS) is updated monthly and supersedes all other sources of appropriate toxicity criteria (EPA, 1989). Information in the Health Effects Assessment Summary Tables (HEAST) is the second most current source of toxicity information and will be consulted only for those constituents not listed in IRIS. EPA's Environmental Criteria and Assessment Office (ECAO) will be consulted for those constituents with no toxicity criteria listed in IRIS or HEAST. Constituents with no EPA approved toxicity criteria (i.e., IRIS, HEAST, ECAO) will be eliminated from the quantitative risk assessment and addressed in a qualitative manner. The results of the action level screening will be presented in the Summary Sampling and Analysis Report.~~