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U-004-407 .17

**CONDITIONAL APPROVAL OF REVISED OU2 FEASIBILITY
STUDY/PROPOSED PLAN REPORTS**

10/05/94

USEPA DOE-FN

**19
COMMENTS**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

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REPLY TO THE ATTENTION OF: _____

OCT 05 1994

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

HRE-8J

RE: Conditional Approval of Revised
OU 2 Feasibility Study/Proposed
Plan Reports

Dear Mr. Craig:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the United States Department of Energy's (U.S. DOE) revised Operable Unit (OU) 2 Feasibility Study (FS)/Proposed Plan (PP) Reports. Based on previous discussions between U.S. DOE, U.S. EPA and the Ohio Environmental Protection Agency these documents have undergone significant revisions, including a change of the preferred remedy in the PP report.

The revised FS/PP reports have adequately addressed the majority of U.S. EPA's comments. However there still remain a few unresolved issues. U.S. EPA approves the FS/PP reports pending incorporation of adequate responses to the attached comments into the documents. U.S. DOE must incorporate the attached comments into the FS/PP reports and submit revised documents within thirty (30) days receipt of this letter. U.S. EPA further requests that draft responses to these comments and associated change pages be submitted to U.S. EPA for review and approval prior to holding a public meeting on the PP.

Please contact me at (312) 886-0992 if you have any questions.

Sincerely,

James A. Saric
Remedial Project Manager
Technical Enforcement Section #1
RCRA Enforcement Branch

Enclosures

cc: Tom Schneider, OEPA-SWDO
Jack Baublitz, U.S. DOE-HDQ
Don Ofte, FERMCO
Jim Thiesing, FERMCO
Paul Clay, FERMCO

*Warner (R)
Critical
Action response
to R-5101
(2368)*

000001

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Appendix C Page #: NA Line #: NA
General Comment #: 4 (Original General Comment 14)

The original comment identified several errors in calculating the number of trucks required under the various alternatives. The response indicates that Appendix C (and its attachments) has been clarified to reconcile the volume and weight capacity of the trucks with the number of trucks that the alternative requires. However, the information formerly contained in "Attachment I, Relevant Information for Alternatives" is no longer presented as part of Appendix C. Therefore, it is not possible to verify if the response has been reconciled. Appendix C should be revised to provide the information or a reference to the source of the information necessary to verify that the reconciliation has been performed.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: D.1.3 and D.1.6 Page #: NA Line #: NA
General Comment #: 5

Comment: Section D.1.3 states that groundwater COCs identified in the OU2 remedial investigation (RI) and modeled in the OU2 FS are uranium isotopes. According to the response to comments for Appendix A, the COCs for the various subunits in OU2 were revised and include other COCs in addition to uranium isotopes. The text should be revised to state that uranium isotopes were not the only COCs identified during the OU2 RI and should further state how these additional COCs were addressed in the groundwater fate and transport model.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: D.1.5 Page #: NA Line #: NA
General Comment #: 6

Comment: Section D.1.5 discusses maximum predicted loading concentrations, maximum on-site Great Miami Aquifer (GMA) concentrations, and maximum fence-line GMA concentrations for the various subunit remediation scenarios evaluated in determining cross-media PRGs that are protective of the GMA. The text discusses model results for the subunits but does not justify and discuss the significance of the modeling results. For example, if the results of modeling for a subunit indicate that GMA concentrations are below the 10^{-6} incremental lifetime cancer risk (ILCR), the text should explain why the concentrations are below this level, and should not just state that this is what the model indicates. This information would be helpful because the presentation of the actual modeling data is difficult to follow due to its size. The text should be revised to discuss modeling results and their significance in more detail.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: I.4.5 Page #: I-4-14 Line #: NA
General Comment #: 7 (Original General Comment 31)
Comment: In response to the original comment, text has been added to discuss the linear relationship between soil concentrations and risks. However, the added text does not adequately address the original comment. Additional documentation is required to accurately determine if all COCs that have been reduced in concentration by 99.9 percent are within the acceptable risk range.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: I.5.1 Page #: I-5-3 Line #: NA
General Comment #: 8 (Original General Comment 33)
Comment: In response to the original comment, additional text has been added to clarify the assumption of no significant demographic change. However, the on-site farmer receptor is the pathway that is most conservative and most protective of human health based on the assumption of no significant demographic change. This assumption should be substantiated by including the discussion about the conservative and protective on-site farmer receptor.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: I.6.2.1 Page #: I-6-63 Line #: 22
General Comment #: 9 (Original General Comment 39)
Comment: The response to the original comment uses the assumption that wind erosion of caps and cover soils is less than 4 inches over the 1,000-year period. Also, the text states that the combined erosion rates for wind and surface water runoff would not cause the contaminated layers in these areas to be exposed. This assumption appears to be too low if no cap or cover soil maintenance occurs over the 1,000-year period. A reference or justification should be provided for this assumption.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: I.11.3 Page #: NA Line #: NA
General Comment #: 10 (Original General Comment 49)
Comment: The response to the original comment states that ~~missing health effects information or a lack of quantitation in chemical analysis may provide a significant source of uncertainty and may thereby underestimate risk.~~ Although these sources of uncertainty were added to the text, whether the uncertainty was overestimated or underestimated was not included in the text. Also, the response stated that additional information regarding uncertainties in underestimating risk would be added to Table I.11-6. However, this information does not appear to be added to Table I.11-6. A more detailed discussion of uncertainty should be provided.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: I.12.2 Page #: NA Line #: NA
General Comment #: 11 (Original General Comment 50)
Comment: The response to the original comment states that all receptors for all land use scenarios are "above" the ILCR of 10^{-6} . This statement is unclear. "Above" should be changed to "greater than" or "less than," as appropriate. Also, if "above" is replaced with "greater than," it would be more appropriate to discuss receptors with an ILCR of greater than 10^{-4} because this the greatest ILCR within the acceptable range.

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.3.2.1 Page #: 2-14 to 15 Line #: 28 to 31, 3 to 8
Specific Comment #: 1
Comment: Section 2.3.2.1 discusses the regulatory definition of wastes. Page 2-14 states that although the bullets are not considered waste, they will be assumed to be mixed waste (hazardous and radioactive) when they are actively managed. Page 2-15 contradicts this statement by stating that the firing range material will be screened during the remedial action and may be handled in a variety of ways depending on whether contaminant levels are above or below PRLs. This inconsistency should be corrected and the text revised appropriately.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.3 Page #: 4-10 to 4-29 Line #: NA
Specific Comment #: 2
Comment: Section 4.3 presents the initial screening of alternatives. The effectiveness criterion evaluates the reduction in contaminant toxicity, mobility, or volume through treatment. This evaluation discusses the reduction in mobility achieved by capping or containing the waste. However, capping and containment are not considered to be methods of treatment. Therefore, reductions in contaminant mobility through capping and containment should not be discussed as part of this evaluation. Reductions in contaminant mobility associated with capping and containment instead should be included as part of the long-term effectiveness and permanence evaluation.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.3.7.2 Page #: 4-24 to 25 Line #: 3 to 8, 1 to 5
Specific Comment #: 3
Comment: Section 4.3.7.2 presents the initial screening evaluation for Alternative 7. The evaluation of contaminant reduction through treatment does not explain that the principal threat to the GMA is treated by Alternative 7;

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Commenting Organization: U.S. EPA
Section #: 6.3.3 Page #: 6-11
Specific Comment #: 7

Commentor: Saric
Line #: 9 to 10

Comment: Section 6.3.3 compares the short-term effectiveness of the alternatives. The text states that Alternative 2 provides slightly better short-term effectiveness than Alternative 6 because more material is excavated under Alternative 6 and because the same amount of contaminated material is treated and transported off site for disposal. Based on the detailed analysis presented in Section 6 and because (1) Alternative 6 requires excavation of a great deal more waste than Alternative 2 does, and (2) Alternative 6 involves off-site disposal of low-level radioactive waste, Alternative 2 provides more than slightly better short-term effectiveness than Alternative 6. The text should be clarified.

Commenting Organization: U.S. EPA
Section #: Appendix B, Table B-1 Page #: B-12
Specific Comment #: 8

Commentor: Saric
Line #: NA

Comment: Table B-1 lists chemical-specific applicable or relevant and appropriate requirements (ARAR) and other criteria to be considered (TBC) for OU2. The table erroneously lists the Resource Conservation and Recovery Act (RCRA) toxicity characteristic leaching procedure (TCLP) level for lead as the soil lead cleanup standard. The RCRA TCLP analysis only determines whether or not the soil is considered a RCRA hazardous waste, but does not determine if it is a risk-based cleanup standard. Lead contaminated soil may not be RCRA hazardous waste, but it may still present a risk. The recently issued U.S. EPA directive, "Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," July 14, 1994, Directive Number 9355.34-12, should be used to calculate the soil lead cleanup level for the private and federal ownership land use scenarios. These cleanup levels would be TBCs. The RCRA TCLP lead level would be an action-specific applicable requirement for determining appropriate disposal options.

Commenting Organization: U.S. EPA
Section #: C.2.3.3 Page #: C-2-25
Specific Comment #: 9

Commentor: Saric
Line #: NA

Comment: Table C.2-2 presents a summary of receptors evaluated for OU2 residual risk. The table indicates that ingestion of perched water by the on-property resident farmer will not be evaluated under either federal or private ownership. However, Figures C.2-14, C.2-17, and C.2-19 all indicate that this exposure will be evaluated under private ownership. Therefore, Table C.2-2 should be revised to indicate that ingestion of perched groundwater by the on-property resident farmer will be evaluated under private ownership.

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Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Specific Comment #: 18 (Original Specific Comment 39)

Comment: The response to the original comment states that the ECTran model was used as a screening tool for PRGs and that final PRGs were developed using a more complex model. Therefore, Appendix D-1, which contained the ECTran model discussion, will be eliminated from the final FS. Because Appendix D-1 will be omitted, the text should be revised to contain a brief discussion of the ECTran modeling that was used to screen out contaminants that did not reach the final PRG development.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: F.3 and F.7 Page #: F-3-1, F-7-22 Line #: NA
Specific Comment #: 19

Comment: Appendix F.3, Table F-3-1 on page F-3-1 presents comparative estimated costs for Alternatives 2 through 8. Appendix F-7 presents Alternative 6 cost estimate details. The base estimate presented in the cost table on page F-7-22 does not correspond with the base estimate for Alternative 6 in Table F.3-1. This discrepancy should be resolved and corrected.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: F.3 Page #: F-3-1 Line #: NA
Specific Comment #: 20

Comment: Appendix F.3, Table F-3-1 on page F-3-1 presents comparative estimated costs for Alternatives 2 through 8. Subsequent appendixes present detailed cost estimates for each alternative. However, detailed cost estimates for Alternatives 7 and 8 are not presented in the appendixes. The reason for this omission should be stated or the detailed estimates for Alternatives 7 and 8 should be added.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: I.6.2.2 Page #: I-6-64 Line #: NA
Original Comment #: 21 (Original Specific Comment 57)

Comment: The response to the original comment states that text will be added to further justify and clarify the grouped sources for air modeling. However, the sources have been regrouped and the method used to group these sources is not provided. The method used to group the sources should be provided.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: I.7.5.3 Page #: I-7-16 Line #: 14
Original Comment #: 22 (Original Specific Comment 62)

Comment: The indicated action in response to the original comment has not been included in the revised report. The text should be revised to include the following sentence:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: October 3, 1994

SUBJECT: Review of Draft Feasibility Study Report, Operable Unit 2, Fernald Environmental Management Project (FEMP), Fernald, OH, August 1994

FROM: Pat Van Leeuwen, Toxicologist
Technical Support Unit

TO: Jim Saric
Project Manager

I have reviewed the Draft Feasibility Study for Operable Unit 2 of the Fernald Environmental Management Project (FEMP), dated August 1994. I found a number of omissions in the document which require some further explanations and/or corrections. My specific comments follow.

If you have any questions on these comments or any section of the risk assessment, please contact me at 886-4904.

1) Table 1-5, p. 1-86

It would appear that the "Max. Hit" value for benzo(a)anthracene should be 880 ug/kg, not 88. Please check this value.

2) Tables 1-6 and 1-7, COCs for Solid Waste

Landfill

The reported "Conc. Term" value is often less than the mean value. How was the "Conc. Term" value calculated for the tables in this section. The Conc. Term value is often close to the Min. Value, rather than a UCL or Max. Value. Please review these calculations and correct all errors.

3) Table 1-16, COCs/Perched Groundwater

The table shows a range of contaminant concentration values from sampling of perched groundwater. Were these data used in the subsequent risk evaluations? The ranges indicate an inhomogenous aquifer. Would any receptor ever be exposed to the mean or even the 95% UCL of the mean concentration?

4) Table 1-25, COCs/ South Field

Again, check the calculation of the "Conc. Term". Some "Conc. Term" values are lower than the mean values, even though the range is very large.

5) Lead Contaminantion in South Field

Table 1-23 and discussion of the South Field Firing Range on page 1-132 indicate high lead levels in the surface and subsurface soils. I did not see lead listed as an OU 2 COC in Table 2-1 or see it evaluated in the remediation strategies or in the worker/residual risk scenarios. Did I miss something? Where is this contaminant addressed?

6) P. 1-98, Section 1.7.3.1, lines 31-32

Table 1-41 summarized the risks for a number of receptors in addition to those listed here - e.g., homebuilder. The discussion needs to better coordinate with the data presented in the Table.

7) P. 1-205, Section 1.7.3.4

See above comment. Discussion does not cover data presented in Table 1-44. Tables and discussions should be better coordinated.

8) P. 1-213, Section 1.7.3.5, line 8

Table 1-45 does not support an expanded trespasser risk of 1×10^{-3} . Please check this evaluation for errors.

9) P. 1-213, line 11

Table 1-45 does not support an off-property resident farmer risk in excess of 1×10^{-5} . Is this a rounding error? If so a footnote is needed in these tables. See comments for the OU 1 report.

10) P.1-123, line 18

Table 1-45 does not support the RME farmer risk listed here.

11) Section 1.7.3.1 thru 1.7.3.6

The risk summaries in these sections discuss the non-carcinogenic risks as well as the carcinogenic risks for receptors exposed to the various OU 2 locations. These data are not presented in the summary tables in these sections. The data should be included or referenced.

12) P. 2-5, line 1

The footnote at the end of Table 2-1 indicates that the contaminants marked with an asterick are specific to both the private ownership and the federal ownership scenarios. Please correct this sentence to be consistent with Table 2-1.

13) P. 2-11, line 14

The Region 5 position is that 15 pCi/g, averaged over 15 cm layers of soil more than 15 cm below the surface is not protective of human health. Region 5 suggests a soil concentration cleanup criterion of 5 pCi/g (combined Ra-226 and Ra-228) for soil at any depth. The Region 5 guidance (soon to be USEPA guidance) should be cited here, and the variance with these guidelines explained.

14) Tables 2-8/ 2-9/ 2-10

The tables are not consistently labeled in section 2.0. All tables should indicate which scenarios/receptors are being evaluated by the data presented. There are three distinct types of labeling in this section. Some continuity is needed.

15) Table 2-23

It is not clear which scenario(s) are represented by this data. The labeling is not consistent with Table 2-22.

16) Table C.1-1

Correct wrap-error in "Risks Type" columns.

17) P. C-2-35, section 2.4.1

It is usually appropriate to assume that all excavation workers, remediation workers, etc. will use PPE and follow OSHA guidelines for protection of such workers. I am not certain I understand why this assessment assumes that these will not be followed. If this strategy is followed, perhaps the risks should be bounded (present a range). Other evaluations presented in Appendix C are appropriate.

18) Table C.3-4

Some dermal absorption coefficients are given as decimal values and some are given in engineering notation. Be consistent.

19) P. C-4-34, line 28 Beryllium

~~The statement here is somewhat confusing. Region 5 suggested that a review of the IRIS database showed no evidence that the administered dose was adjusted for absorption in the calculation of the RfD and Cancer Slope Factors for beryllium, and therefore, a value of 1.0 should be used in calculating the dermal toxicity values. Region 5 did not mean that the oral absorption of beryllium is 100%. Perhaps this statement should be moved to the discussion of toxicity values.~~

20) Table C.6-1/ C.6-2

What scenarios are covered by this data? Need some labeling.

21) Tables, Section C.6

All tables in this section should have a footnote which explains that risk evaluations to remediation workers, truckers, etc. assumed no PPE or shielding.

22) Section C.7, Tables

Tables should be labeled to indicate that data is evaluation of Residual Risks.

23) Section C.9

Tables of Remedial Action Risks should contain a footnote indication that risks were based on the assumption of no PPE or shielding.

24) P. I-7-56, lines 9-13, Lead

The 1989 Directive cited here has been replaced with the 1994 Directive issued earlier this year, which calls for further evaluation of soil which contains lead concentrations in excess of 400 ppm. Please update this section of the tox profile for Lead.

25) P I-4-13, section 1.4.2.3

The elimination of organic COCs in the CRARE based on degradation has been commented on in past OU CRARE reports. FERMCO was provided with a copy of the April 11, 1994 Memorandum from ECAO and Attachment: "Risk Assessment Issue Paper: Review of Degradation of PAHs in Soil", which raised serious questions about the validity of such elimination. The use of degradation half-lives obtained under laboratory conditions to eliminate other chemicals using this process is likewise subject to the same criticism. I have previously stated that there appears to be something wrong with a methodology in which the only chemicals retained in the CRARE as COCs are those for which there is no degradation data. I also noted some concern from ECAO over whether a 100-year degradation period was reasonable for the site, and suggest that perhaps this issue needs to be revisited. Since carcinogens are considered to have no threshold, a 70 year exposure is not necessary to produce an adverse effect; a short exposure to residual levels of some site carcinogens might be all that is needed to produce the response. Noncarcinogens might also produce adverse health effects from short term exposures. Perhaps the effect of exposure to average concentrations of residual chemicals over successive future time periods would provide a better evaluation. In addition, some newer discussions on the issue of degradation of COCs has raised the question of whether modeling exercises are sufficiently accurate enough to determine that COCs in groundwater will be completely degraded before they reach the site boundary (off-site receptors). This entire topic requires further discussion, and the CRARE should not be approved until some satisfactory agreement can be reached on this issue.

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CM-29A

MEMORANDUM

SUBJECT: August 1994 Draft Proposed Plan for Remedial Actions
at Operable Unit 2

FROM: Brian A. Barwick
Assistant Regional Counsel

TO: James A. Saric
Remedial Project Manager

I have reviewed U.S. DOE's August 1994 draft Proposed Plan for Remedial Actions at Operable Unit 2 and have the following comments. If you have any questions, call me at (312) 886-0992.

1. On Page 5-1, line 11; use of the term "mixture" suggests that all OU 2 wastes are physically blended together. We know that is not correct as the only potential mixed waste identified is the lead contaminated firing range materials. Clarifying this sentence is not imperative but could avoid confusion later. I would suggest DOE replace "mixture" with "variety."

2. On page 5-21, lines 11 and 12; DOE states that the final waste acceptance criteria (WAC) will be determined during the remedial design process. After our public meeting of September 13, we know the WAC is a major concern for the public. While 40 C.F.R. § 300.435(c)(1) provides that the community relations plan (CRP) may be revised to "describe further public involvement activities during RD/RA," the opportunity to appeal RD/RA decisions is limited to circumstances where the remedy design differs significantly from the one specified in the ROD. Therefore, the public's best opportunity to affect the WAC would be at the ROD stage.

DOE must specify in the ROD a WAC which contains a range of values (e.g., Uranium 300-400 ppm). This would give the citizens of Ohio, and of Nevada and Utah, a best and a worst case scenario. So long as the final WAC fell somewhere in this range, there would be no basis to challenge the remedy design as being inconsistent with the ROD. If the final WAC fell outside of this range, we may need to consider a ROD amendment.

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3. The Proposed Plan, in conjunction with the draft August 1994 Feasibility Study Report for Operable Unit 2, contains a preliminary description of the proposed disposal unit, including elements designed to attain the same level of performance as is required by Ohio Administrative Code rules 3745-27-07(B)(5) and (B)(9). What it does not include, however, is an explanation of how these engineering controls will attain a standard of performance equivalent to that afforded by the geological features required by OEPA for an Ohio Revised Code (ORC) Section 3734.02(G) exemption.

In the preamble to the National Contingency Plan (NCP), U.S. EPA explained that when considering equivalent standard of performance waivers, it would compare the ARAR to the proposed alternative by looking at the following factors:

- degree of protection;
- level of performance;
- reliability into the future; and
- time required for results.

U.S. EPA believes that the first three criteria, i.e., degree of protection, level of performance, and future reliability, should at least be equaled for an alternative to be considered equivalent. Regarding the fourth criterion, the time required to achieve results using the alternative remedy should not be significantly more than that required under the waived ARAR.

In addition, U.S. EPA explained that comparison based on risk is only permitted where the original standard is risk-based. Therefore, since the ORC § 3734.02(G) exemption criteria for OAC Rules 3745-27-07(B)(5) and (B)(9) are not risk based, the comparison should be expressed in technological terms.

In the draft OU 2 ROD, DOE must do the following:

1. Set forth the ORC § 3734.02(G) exemption criteria for OAC Rules 3745-27-07(B)(5) and (B)(9);
2. Describe the how the best available site geology does not meet that criteria thereby establishing that the ARAR is unattainable;
3. Describe the proposed disposal unit including the anticipated geology and engineering controls;
4. Describe, in terms of degree of protection, level of performance, future reliability, and time required to achieve results, how the proposed disposal unit will attain an equivalent standard of performance as the waived ARAR; and

- 3 -

5. Ensure that the comparison is expressed in appropriate terms (risk versus technological based).