

5087

**TRANSMITTAL OF RESPONSE TO COMMENTS
ON THE SCREENING LEVEL ECOLOGICAL RISK
ASSESSMENT FOR THE SITE-WIDE
ECOLOGICAL RISK ASSESSMENT (INCLUDES
RESPONSES TO U.S. FISH & WILDLIFE SERVICE
COMMENTS)**

01/25/94

**DOE-0835-94
DOE-FN/USEPA
28
RESPONSES
OU5**



Department of Energy
Fernald Environmental Management Project
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6357

-508 7

JAN 25 1994
DOE-0835-94

Mr. James A. Saric, Remedial Project Manager
U. S. Environmental Protection Agency
Region V - 5HRE-8J
77 W. Jackson Blvd.
Chicago, IL 60604-3590

Dear Mr. Saric:

TRANSMITTAL OF RESPONSE TO COMMENTS ON THE SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT FOR THE SITE-WIDE ECOLOGICAL RISK ASSESSMENT

Reference: Letter, J. A. Saric to J. R. Craig, "Screening Level Ecological Risk Assessment," dated November 24, 1993

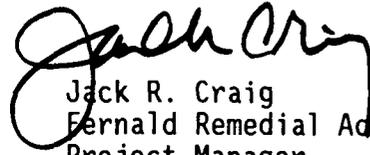
This letter transmits U. S. Department of Energy (DOE) responses to comments from the U. S. Environmental Protection Agency (U. S. EPA) and the U. S. Department of Interior, Fish and Wildlife Service on the subject report (Reference).

The Screening Level Ecological Risk Assessment (SLERA) was not required by the 1991 Amended Consent Agreement, but rather is a tool that was agreed upon by DOE and U. S. EPA to use in assessing specific areas of the Fernald Environmental Management Project (FEMP) which may be facing ecological impacts. The information in the SLERA is the basis for the Site-wide Ecological Risk Assessment, which will be Appendix B in the Remedial Investigation (RI) Report for Operable Unit 5. U. S. EPA review of the SLERA has been helpful in identifying particular areas that require additional clarification to complete the Site-wide Ecological Risk Assessment. A revised SLERA is not proposed to be issued. The comment responses - once approved by U. S. EPA - will be incorporated directly into the Operable Unit 5 Site-wide Ecological Risk Assessment presented in the RI Report. This will enable personnel in Operable Unit 5 to focus on preparing the RI Report rather than on revising the SLERA.

Please note that several U. S. EPA comments centered on "nature and extent of contamination" and "fate and transport" issues. These comment responses will be incorporated as appropriate in their respective sections of the Operable Unit 5 RI Report.

If you have any questions, please contact Kathi Nickel at (513) 648-3166.

Sincerely,


Jack R. Craig
Fernald Remedial Action
Project Manager

FN:Nickel

cc:

K. A. Chaney, EM-424, TREV
D. R. Kozlowski, EM-424, TREV
G. Jablonowski, USEPA-V, AT-18J
J. Kwasniewski, OEPA-Columbus
T. Schneider, OEPA-Dayton
P. J. Yerace, DOE-FN
R. L. Glenn, Parsons
J. Michaels, PRC
L. August, GeoTrans
F. Bell, ATSDR
B. S. Biehle, FERMCO/52-5
D. J. Brettschneider, FERMCO
P. F. Clay, FERMCO/52-2
J. W. Thiesing, FERMCO
AR Coordinator, FERMCO

**Response to U.S. EPA and U.S. Fish and Willife Service
Comments on the Screening Level Ecological Risk Assessment
for the Sitewide Ecological Risk Assessment
November 1993**

U.S. EPA Comments

- 1. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: General Comments Pg. #: Line #:

Comment: The report appears to be adequately prepared, reasonably comprehensive, and consistent with current U.S. EPA guidance. However, the only U.S. EPA guidance cited is unpublished 1977 U.S. EPA Region 5 guidelines for conducting ecological assessments discussed with a U.S. EPA Region 5 Biological Technical Assistance Group (BTAG) representative in a February 1993 meeting. The reference list indicates that this U.S. EPA Region 5 guidance is dated 1977. U.S. EPA has developed several more recent guidance documents for ecological risk assessments, including "Risk Assessment Guidance for Superfund, Volume 2, Environmental Evaluation" (Office of Solid Waste and Emergency Response Directive 9355.3-01, EPA/540/6-89/004). The report should be revised to cite more current U.S. EPA guidance in addition to the 1977 guidance.

Response: Agree with commentor.

Action: The report will incorporate citations to more recent U.S. EPA guidance.

- 2. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: General Comments Pg. #: Line #:

Comment: The report interchangeably uses the terms "ecological receptors" and "ecoreceptors." The report should be revised to use one term consistently.

Response: Agree with commentor.

Action: The report will be modified, replacing "ecoreceptors" with "ecological receptors."

- 3. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: General Comments Pg. #: Line #:

Comment: Toxicity quotient values in the SLERA are presented with up to five significant figures (for example, 112.62). U.S. EPA's "Risk Assessment Guidance for Superfund" recommends that, because of their inherent uncertainties, risk estimates be reported with only one significant figure (for example, 1 E+02). Therefore, the SLERA should be revised to present toxicity quotient values with only one significant figure.

Also, the SLERA uses the toxicity quotient method only for surface water, stating that no similar method is available for other media. Because this is a screening level report, for the sake of being conservative the toxicity quotient method should also be used to evaluate sediment and soil at the FEMP. The SLERA should be revised accordingly.

Response: Toxicity quotient values will be revised so they are reported with only one significant figure. Quotient values were used for all media examined in the SLERA (soil, sediment, and surface water; see Section 2.4). Therefore, no modification of the document is necessary.

Action: The significant figures for the toxicity quotient values will be modified as suggested.

4. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: General Comments Pg. #: Line #:

Comment: The SLERA includes numerous citations of "(pers. comm.)." Each personal communication should be fully referenced, including the names, titles, and organizations of the persons involved in the communication and the date of the communication. The SLERA should be revised to properly reference all personal communications and to cite them clearly in text.

Response: All citations of "(pers. comm.)" were confined to the Appendix A of the SLERA. The names, titles, and the organizations of the persons involved in the communication were provided. However, the date of the communication was not specifically identified in the text.

Action: All references to "pers. comm." will be modified as suggested.

5. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: General Comments Pg. #: Line #:

Comment: Five references, including "EPA, 1985e"; "EPA, 1985f"; "EPA, 1986"; "Revis et al., 1981" and "Schuurman and Klein, 1988" are apparently not cited in the text of the SLERA. The SLERA should be revised to include citations of these references or to eliminate them from the reference list.

Response: The reference to Revis et al. (1981) is cited in Table D-12. The following references were not cited in the text, tables, or appendices and will be deleted from the reference list: EPA 1985e, EPA 1985f, EPA 1986 and Schuurman and Klein 1988.

Action: The following references will be eliminated from the reference list: EPA 1985e, EPA 1985f, EPA 1986 and Schuurman and Klein 1988.

6. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: Executive Summary Pg. #: ES-2 Paragraph 1

Comment: The first sentence discusses "the area immediately east of the production area." The sentence should be revised to specify this area as Area C.

Response: Agree with commentor.

Action: The sentence will be revised as follows: "...the area immediately east of the production area (Study Area C)."

- 7. Commenting Organization: U.S. EPA Commentor: J. Saric
 Section #: Executive Summary Pg. # ES-2 Paragraphs 0 and 3

Comment: Based on Tables D-7 through D-11, lead, mercury, and silver were found in the Great Miami River and were retained as contaminants of concern. The first full sentence of paragraph 0 (the incomplete paragraph at the top of the page) on page ES-2 states that none of the contaminants identified in the Great Miami River appear to be related to activities at the FEMP. However, the first sentence in paragraph 3 suggests that lead, mercury, silver, and selenium may be associated with FEMP activities and may adversely impact on-site or off-site ecological receptors. Therefore, the first sentence in paragraph 3 appears to conflict with the first complete sentence of paragraph 0. These two sentences should be revised to resolve the apparent inconsistencies.

Response: While lead, silver, and mercury were retained as contaminants of concern for both the Great Miami River and Paddys Run, the preliminary data used to prepare the SLERA suggested that the lead, silver, and mercury present in the Great Miami River were not associated with activities at the FEMP because these contaminants were also present in samples collected from background locations. While these three contaminants were also detected in samples collected from the FEMP, interpretation of these data was constrained by the limited number of background samples as well as samples from most of the study areas. The results of analyses performed on samples collected during the 1993 summer field programs will aid in interpreting whether contaminants are associated with activities at the FEMP.

Action: Section 4 of the Remedial Investigation Report describes nature and extent of contamination, while Section 5 describes fate and transport of contaminants. The results of the sampling programs completed in the summer of 1993 to supplement the existing RI/FS database will be included in the review for these sections. In addition, data collected as part of removal actions undertaken to address immediate concerns due to contamination will be reviewed and included in these sections whenever possible. Pertinent data and information will be used to prepare the Site-wide Ecological Risk Assessment (Appendix B of the OU5 RI Report).

- 8. Commenting Organization: U.S. EPA Commentor: J. Saric
 Section #: 1.0 Pg. #: 1-1 Paragraph 2

Comment: The third sentence refers to U.S. EPA Region 5 guidelines for conducting ecological assessments. Also, this sentence states that the guidelines were discussed with a representative of U.S. EPA's BTAG during a meeting on February 17, 1993. The sentence should be revised to clearly describe the guidelines and to provide a specific reference citation. The reference cited should include the name of the BTAG representative who attended the meeting.

05

Response: Comment noted.

Action: The complete reference for the U.S. EPA Region 5 guidance document will be provided and the representative from the U.S. EPA Region 5 BTAG (Eileen Helmer) will be identified.

9. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 1.0 Pg. #: 1-2 Paragraph 2

Comment: The first sentence states that operable unit 5 (OU5) evaluated contaminant concentrations. OU5 represents a portion of the FFMP; rather, the DOE or its contractors evaluated contaminant concentrations. The sentence should be revised to state which group or groups performed the evaluation.

Response: Agree with commentor.

Action: This sentence will be rewritten to appropriately identify the group(s) responsible for performing the evaluation.

10. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 1.0 Pg. #: 1-5 Figure 1-2

Comment: Figure 1-2 presents four OUs at the FEMP. The symbol used to shade OU1 is not consistent with the symbol shown in the legend. The figure should be revised to correct this inconsistency.

Response: The figure will be corrected.

Action: Figure 1-2 will be revised so that the symbol used to shade OU1 is consistent with the symbol shown in the legend.

11. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 1.1.2 Pg. #: 1-8 Paragraph 4

Comment: The second sentence states that information obtained from the U.S. Fish and Wildlife Service (FWS) and the Ohio Department of Natural Resources (ODNR) was used to compile the summary of threatened and endangered species. The sentence should be revised to provide reference citations of the specific FWS and ODNR documents used.

Response: Comment noted.

Action: A sentence will be added to this paragraph properly referencing all material obtained from the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (FWS).

12. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 1.1.3.3 Pg. #: 1-11 Paragraph 1

Comment: The paragraph refers to "neotropical migrants." The meaning of this term is not clear. The sentence should be revised to provide a brief explanation of this term.

Response: Comment noted.

Action: The term "neotropical migrants" will be replaced with the term "spring migratory birds," and a brief explanation will be provided.

13. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 1.1.3.3 Pg. #: 1-11 Paragraph 2

Comment: The second sentence states that the storm sewer outfall ditch (SSOD) originates east of the production area. However, Figures 1-3 and 1-4 show the SSOD originating south of the production area. The sentence or the figures should be revised as necessary to correct this inconsistency. Also, the fifth and sixth sentences of this paragraph refer to a retention basin. However, Figure 1-1 shows two retention basins. The sentences or the figure should be revised as necessary to correct this inconsistency.

Response: The Storm Sewer Outfall Ditch does originate south of the production area. However, other drainage ditches east of the production area flow into the SSOD. Also, the Storm Water Retention Basin (SWRB) is a two-chambered retention basin as described in the Permit-to-Install with the State of Ohio.

Action: The text will be revised to clarify the relationship between the drainage ditches east of the production area and the SSOD. Also, the text will be revised to describe the SWRB as one basin with two-chambers.

14. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 1.1.3.4 Pg. #: 1-14 Figure 1-4

Comment: Figure 1-4 indicates that sampling locations W5 and W8 are off the figure to the north and south, respectively. However, there is no indication of how far off the figure these sampling locations are. The figure should be revised to indicate about how far off the figure sampling locations W5 and W8 are.

Response: The figure will be modified as suggested.

Action: Figure 1-4 will be modified to indicate how far W5 and W8 are from the center of the FEMP production area.

15. Commenting Organization: U.S. EPA
Section #: 1.1.3.6

Commentor: J. Saric
Pg. #: 1-15

Paragraph 3

Comment: The last sentence in this paragraph uses the term "SLERA.6," which is probably a typographical error. This sentence should be revised to use the term "SLERA."

Response: Agree with commentor.

Action: The last sentence in this paragraph will be modified, replacing the term "SLERA.6" with the term "SLERA."

16. Commenting Organization: U.S. EPA
Section #: 1.1.3.5

Commentor: J. Saric
Pg. #: 1-16

Figure 1-5

Comment: Figure 1-5 indicates that sampling locations W1 and W4 are off the figure to the northeast and southwest, respectively. However, there is no indication of how far off the figure these sampling locations are. The figure should be revised to indicate about how far off the figure sampling locations W1 and W4 are.

Response: The figure will be modified as suggested.

Action: Figure 1-5 will be modified to indicate how far W1 and W4 are from the center of the FEMP production area.

17. Commenting Organization: U.S. EPA
Section #: 1.2.1

Commentor: J. Saric
Pg. #: 1-19

Figure 1-6

Comment: Figure 1-6 presents the areas of greatest probable deposition of airborne particulates. The symbol in the legend is very difficult to read. The figure should be revised to provide a clear, legible legend.

Response: Figure 1-6 will be deleted from the document and all discussions pertaining to airborne transport/deposition will reference Section 5 of the RI Report for Operable Unit 5 which discusses fate and transport of contaminants. Any figures used in this section to depict zones or areas of deposition will also be incorporated by reference.

Action: Figure 1-6 will not be used in the Site-wide Ecological Risk Assessment.

18. Commenting Organization: U.S. EPA
Section #: 1.2.1

Commentor: J. Saric
Pg. #: 1-20

Paragraph 2

Comment: The third sentence includes the reference citation "(WMCO 1990)." The reference list indicates that the reference citation should read "(WMCO 1987)." The sentence or the reference list should be revised as necessary to correct this inconsistency.

Response: Agree with commentor.

Action: The sentence/reference will be modified to correct/delete this reference.

19. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 2.1.1 Pg. #: 2-3 Paragraph 1

Comment: The second sentence of this paragraph indicates that contaminant values were compared to concentrations known to be potentially hazardous to aquatic and terrestrial biota. However, Section 2.2.1 (referred to in the second sentence) states that contaminant values were compared with protective levels. This sentence or Section 2.2.1 should be revised as necessary to correct this inconsistency.

Response: Agree with commentor.

Action: This sentence will be modified as follows: "These values were compared to concentrations of these same chemicals identified as being either protective of aquatic biota (e.g., Ambient Water Quality Criteria) or potentially hazardous to terrestrial biota (Section 2.2.1)."

20. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 2.1.3 Pg. #: 2-5 Paragraph 3

Comment: Unlike Sections 2.1.1 and 2.1.2, this section does not explain what benchmarks soil contaminant concentrations were compared to. This paragraph should be revised to briefly provide this information.

Response: Agree with commentor.

Action: To make Section 2.1.3 consistent with Sections 2.1.1 and 2.1.2, a brief discussion will be added to this section that will define which benchmark values will be used to identify contaminants of concern in soil.

21. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 2.2.1 Pg. #: 2-9 Paragraph 2

Comment: This paragraph discusses calculation of surface water hardness. The paragraph refers to Appendix C for the formula used to calculate hardness; the formula requires calcium (Ca) and magnesium (Mg) concentrations as input parameters. The Ca and Mg concentrations used to calculate the hardness data presented at the end of the paragraph are not specified. This paragraph and Appendix C should be revised to clearly state what Ca and Mg concentrations were used and whether mean or maximum values were used.

Response: Agree with commentor.

Action: This section, as well as the information in Appendix C of the SLERA, will be revised for the Site-wide Ecological Risk Assessment to indicate that the source of the calcium and magnesium concentrations used to calculate hardness values was the RI/FS analytical database for surface water. In addition, these two sections will be revised to indicate that the mean concentrations of both calcium and magnesium were used in these calculations.

22. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 2.2.2 Pg. #: 2-11 Paragraph 1

Comment: This paragraph states that Effects Range-Low (ER-L) and Effects Range-Medium (ER-M) have been used by various agencies as appropriate screening criteria. However, no specific agencies are identified. This paragraph should be revised to identify the various agencies. Moreover, documents produced by or for these agencies in which ER-L and ER-M values are used as screening criteria should be cited in the text and included in the reference list.

Response: The change will be made as suggested.

Action: This paragraph will be modified to identify U.S. EPA Region IV as an agency that employs the Effects Range-Low and Effects Range-Medium as screening criteria. Agency-specific citations will be incorporated into the reference list, as appropriate.

23. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 2.2.2 Pg. #: 2-11 Paragraph 2

Comment: This paragraph refers to sediment quality criteria established by various government agencies. The paragraph should be revised to identify the government agencies. Moreover, documents containing the specific sediment quality criteria should be cited in the text and included in the reference list.

Response: The source for each criterion used to select sediment contaminants of concern is identified in the tables located in Appendix E of the SLERA. All references cited in these tables are listed in the reference section of the SLERA.

Action: This section will be modified so that the Site-wide Ecological Risk Assessment clearly states where to find criteria used to select sediment contaminants of concern.

24. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 2.2.2 Pg. #: 2-12 Paragraph 1

Comment: The second sentence states that interstitial water concentrations were compared to benchmark criteria. The sentence should be revised to identify the criteria used.

Response: Agree with commentor.

Action: This sentence will be modified so that it is clear that interstitial water concentrations are being compared to chronic ambient water quality criteria or an equivalent value.

25. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 2.4.1 Pg. #: 2-29 Paragraph 2

Comment: The last sentence states that the cadmium detected in the Great Miami River does not appear to be associated with activities at the FEMP. This sentence should be revised to support this assertion, and supporting documentation should be cited.

Response: Comment noted. The preliminary data used in the SLERA indicate that cadmium detected in the Great Miami River does not appear to be related to activities at the FEMP because 1) in Reach 5 of the Great Miami River (section of the river that receives Paddys Run), concentrations of cadmium (1.8 µg/L) were less than concentrations detected in Paddys Run (4.0 to 5.0 µg/L), and 2) concentrations of cadmium measured in Reach 1 of the Great Miami River (upstream from the FEMP) were the highest recorded in either body of water (9.8 µg/L); cadmium concentrations exhibited a steady decrease in concentration from Reach 1 to Reach 5 on the Great Miami River. These data are summarized in Appendix D of the SLERA, and will be included in the Site-wide Ecological Risk Assessment.

Action: Section 4 of the Remedial Investigation Report describes nature and extent of contamination, while Section 5 describes fate and transport of contaminants. The results of the sampling programs completed in the summer of 1993 to supplement the existing RI/FS database will be included in the review for these sections. In addition, data collected as part of removal actions undertaken to address immediate concerns due to contamination will be reviewed and included in these sections whenever possible. Pertinent data and information will be used to prepare the Site-wide Ecological Risk Assessment.

26. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 3.1.1 Pg. #: 3-2 Paragraph 3

Comment: The second sentence states that pine trees are among the plant species most sensitive to radiation. This sentence should be revised to include reference citations of studies supporting this assertion, and these studies should be included in the reference list.

Response: Agree with commentor.

Action: A reference to the document published by the International Atomic Energy Agency (IAEA 1992) will be incorporated into the Site-wide Ecological Risk Assessment. This reference is already included on the reference list.

27. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 3.1.2 Pg. #: 3-4 Paragraph 1

Comment: The first sentence of this paragraph is confusing. The sentence should be revised to clearly identify "the soil-skin-ingestion and water-skin-ingestion pathways" and to explain what they refer to.

Response: Agree with commentor.

Action: For the purposes of clarification, the "soil-skin-ingestion" and "water-skin-ingestion" pathways will be defined in the Site-wide Ecological Risk Assessment.

28. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 3.2.3 Pg. #: 3-9 Paragraph 3

Comment: This paragraph includes the reference citation "(Scott and Crossman 1978)." The reference list indicates that this reference should be cited as "(Scott and Crossman 1973)." This paragraph or the reference list should be revised as necessary to resolve this inconsistency.

Response: Comment noted.

Action: The year of publication for this reference will be reexamined and either Table 3-1 or the reference list will be revised to reflect the correct date.

29. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: 3.4 Pg. #: 3-15 Paragraph 3

Comment: The second sentence of this paragraph states that "intermediate calculations" are presented in Appendix K. The phrase "intermediate calculations" implies that additional calculations will be forthcoming; however, no additional calculations are included in this report. This paragraph should be revised to clearly explain why the calculations are referred to as "intermediate."

Response: Agree with commentor.

Action: The phrase "intermediate calculations" will be explained in the Site-wide Ecological Risk Assessment.

30. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: References Pg. #: R-3

Comment: The reference beginning "EPA, 1977" is inadequate as presented. Not enough information is presented to identify and locate the document referenced. This reference should be revised to include at a minimum the document title and the party or parties

responsible for the document. Also, the reference should include the document control number, if available.

Response: Comment noted.

Action: A complete reference will be provided for this citation.

31. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: Appendix A, Section 1.0 Pg. #: 3 Paragraph 2

Comment: Item (3) states that several species were listed as "special interest" and thus were not included in this appendix. This item should be revised to define the term "special interest" and to provide additional justification for excluding the red-shouldered hawk and cobblestone tiger beetle.

Response: While listed as special interest species, neither the red-shouldered hawk nor the cobblestone beetle was included in either state or federal lists of threatened or endangered species. Thus, for the purposes of this section of the document, further examination of these two species was not necessary.

Action: The Site-wide Ecological Risk Assessment will include the State of Ohio's definition of the term "special interest."

32. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: Appendix A, Section 3.2 Pg. #: 6 Paragraph 4

Comment: This paragraph includes an improperly placed hard return. The paragraph should be revised to eliminate this hard return.

Response: Agree with commentor.

Action: The hard break in this paragraph will be removed.

33. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: Appendix A, Section 3.9 Pg. #: 9 Paragraph 3

Comment: The last sentence of this paragraph includes the reference citation "(McCance, 1984)." The reference list indicates that the citation should read "(McCance et al., 1984)." The sentence or the reference list should be revised as appropriate to resolve this inconsistency.

Response: Agree with commentor.

Action: The reference in this last sentence will be modified to read as McCance and Burns 1984.

34. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: Appendix D Pg. #: NA Paragraph NA

Comment: Tables D-13 through D-22 include parenthetical statements referring to Tables 10 and 11. These statements should be revised to refer to Tables D-10 and D-11. Also, Tables D-13 through D-22 do not indicate which contaminants were retained as contaminants of concern (COC). Tables D-13 through D-22 should be revised to indicate which contaminants were retained as COCs in a manner similar to that used in Appendix E.

Response: Agree with commentor.

Action: Tables D-13 through D-22 will be modified so that Tables 10 and 11 are referred to as Tables D-10 and D-11. In addition, Tables D-13 through D-22 will be modified so that contaminants retained as COCs are clearly identified.

35. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: Appendix G Pg. #: G-2 Paragraph 2

Comment: This paragraph under the discussion of mercury includes the reference citation "(Rogers et al. 1984)." The reference list indicates that this citation should be "(Rogers 1984)." The paragraph or reference list should be revised as appropriate to resolve this inconsistency.

Response: Agree with commentor.

Action: The Site-wide Ecological Risk Assessment will be modified to resolve this inconsistency.

36. Commenting Organization: U.S. EPA Commentor: J. Saric
Section #: Appendix H Pg. #: NA Item 2

Comment: The first equation under Item 2 includes the term "R." According to the description of terms below the equation, this term should be "R_v." The equation should be revised to use the term "R_v." Also, below the second equation under Item 2 is a citation reading "(from NOREG/CR-4370, vol 1)." Earlier in the SLERA, the phrase "NOREG/CR-4370" is associated with the citation "(Oztunali and Roles, 1986)." The citation under Item 2 apparently should be revised to incorporate "(Oztunali and Roles, 1986)."

Response: The term "R" will be retained in Equation 2 (Meadow Vole Exposure Pathways) but the term "R_v" will be modified to read "R." The reference to NUREG/CR-4370, Vol 1 will be replaced with Oztunali and Roles (1986).

Action: The recommended modifications will be incorporated into the Site-wide Ecological Risk Assessment.

37. Commenting Organization: U.S. EPA
Section #: General Comment

Commentor: E. Helmer
Pg. #:

Comment: Overall the screening is thorough yet concise, and for that the authors are to be congratulated. However, its discussions of results have some major shortcomings, which constitute the majority of my comments. The risk assessment screening will in no way be acceptable unless its conclusions truly reflect not only the existing ecological risk in the ecosystems of concern, but the potential impacts of the site source areas on these ecosystems. Current risks may not merit physical disturbance of the ecosystems affected because risks do appear low (relative to disturbances which would be expected from remedial activities there). Yet, the screening combined with previous studies indicate that (1) source areas clearly merit remediation and (2) at least one exposure pathway merits field investigation.

Response: Comment (1). DOE agrees that limited data indicate a number of contaminants may pose some risk to ecological receptors inhabiting the FEMP outside the source areas. However, interpretation of these data was constrained by the limited number of background samples as well as the limited number of samples from most of these study areas (e.g., 1-2 surface water or sediment samples per study area). The results of analyses performed on samples collected during the 1993 summer field programs will aid in interpreting whether these contaminants are associated with activities at the FEMP. Furthermore, actions will be taken to remediate the source operable units which will prevent the release of contaminants into areas inhabited by ecological receptors.

Comment (2). While it was true that the insect ingestion pathway was important to the radiation dose received by mice, a conservative assumption (e.g., soil-to-insect concentration factor = 1) was made in this model. Despite employing this assumption, only the maximum soil concentration in Study Area C resulted in a dose to mice that exceeded the IAEA criterion. It is unlikely that analysis of insects from the FEMP will result in concentrations greater than those present in the soil. Studies by Swanson (1983, 1985) and others indicate that concentrations of uranium decreased ten-fold with every increase in trophic level. Therefore, despite the importance of this pathway, additional site-specific studies are not necessary.

Action: Comment (1). Section 4 of the Remedial Investigation Report describes nature and extent of contamination, while Section 5 describes fate and transport of contaminants. The results of the sampling programs completed in the summer of 1993 to supplement the existing RI/FS database will be included in the review for these sections. In addition, data collected as part of removal actions undertaken — including a removal action completed in Study Area C — to address immediate concerns due to contamination will be reviewed and included in these sections whenever possible. Pertinent data and information will be used to prepare the Site-wide Ecological Risk Assessment.

Comment (2). No field studies will be necessary to investigate the soil-to-insect pathway.

38. Commenting Organization: U.S. EPA
Section #: General Comment

Commentor: E. Helmer
Pg. #: Executive Summary

Comment: In fact, contrary to what is stated here, at least one study of Robins found a possible problem (though I realize that later studies contradicted those findings). In addition, the Facemire et al. (1987) study indicated aquatic community impacts in Paddy's Run below the site; the presence of the state threatened Cincinnati crayfish (also called Sloan's crawfish, *Orconectes sloanii*), the potential for presence of the Indiana bat (*Myotis sodalis*); riparian usage by the Northern Waterthrush (*Seiurus noveboracensis*); and wintering habitat for Dark-Eyed Junco (*Junco hyemalis*).

Response: The results of all studies performed on robins will be summarized in the Site-wide Ecological Risk Assessment. In addition, studies performed on the aquatic community in Paddys Run since 1951 will also be summarized in this section of the RI report. Although Facemire et al. (1990) did report an apparent reduction in the macroinvertebrate community at Site 3, subsequent studies performed from 1988 - 1990 produced results consistent with the results of Facemire's first sampling effort and those of earlier studies. The results of these studies indicated that the "type and number of macroinvertebrates collected from Paddys Run are typical of streams in southwestern Ohio" (Facemire et al. 1990).

Studies will be conducted in 1994 to determine if several threatened and endangered species, including the Indiana bat and Sloan's crayfish, are present on the FEMP. The scope of these studies will be summarized in the Site-wide Ecological Risk Assessment.

Action: The Site-wide Ecological Risk Assessment will include a summary of studies conducted on Paddys Run between 1951 and 1990, studies performed on robins, and studies planned for 1994 to determine if several threatened and endangered species are inhabiting the FEMP.

39. Commenting Organization: U.S. EPA
Section #: General Comment

Commentor: E. Helmer
Pg. #: Executive Summary

Comment: The Fernald property may best be left as a natural area, given that (1) the residual contamination found in the environmental media of Operable Unit 5 could pose too much risk for an agricultural or residential future scenario; and (2) fair ecological resources have been documented there.

The executive summary should reflect these ecological resources and the current and potential site impacts.

Response: The executive summary of the Site-wide Ecological Risk Assessment will describe and classify the ecological resources of the FEMP. Moreover, the baseline human health risk assessment will evaluate risk based on several land use scenarios, including the residential scenario. This information will be provided to EPA to determine the most appropriate future use of the FEMP and appropriate remediation goals.

Action: The Site-wide Ecological Risk Assessment will be modified as indicated.

40. Commenting Organization: U.S. EPA
Section #: 2.1.1

Commentor: E. Helmer
Pg. #: 2-3

Paragraph 1

Comment: Although not included as a benchmark, surface water and sediment samples should be explicitly compared with background (upstream) levels for Paddy's Run (as well as the Miami River) throughout the evaluation.

Response: Agree with commentor.

Action: Surface water and sediment samples will be compared with upstream concentrations for Paddys Run and the Great Miami River.

41. Commenting Organization: U.S. EPA
Section #: 2.2.3

Commentor: E. Helmer
Pg. #: 2-13

Paragraph 3

Comment: Mercury should be included with the final COCs since no samples have apparently been collected and from the aquatic data, and a site source is exists (data from Site-Wide Characterization).

Response: Mercury analyses were performed on all soil samples evaluated in the SLERA (e.g., samples collected from Study Areas A - G). The concentration of mercury in these samples was below the detection limit and this metal was therefore eliminated from further consideration as a soil contaminant of concern. Areas where this metal may have been used (e.g., the Production Area, OU3) were not evaluated in the SLERA as they are areas likely to be remediated based on possible risks to human health. Additional soil, sediment, and surface water samples were collected from the FEMP during the summer of 1993. The results of these analyses will be discussed in Section 4 of the RI Report. The report will include appropriate soil concentration maps. The data will also be reviewed in the Site-wide Ecological Risk Assessment to determine if mercury should be included as a final surface soil contaminant of concern for ecological receptors.

Action: The Site-wide Ecological Risk Assessment will include mercury as a soil contaminant of concern, if appropriate. Section 4 of the Remedial Investigation Report describes nature and extent of contamination, while Section 5 describes fate and transport of contaminants. The results of the sampling programs completed in the summer of 1993 to supplement the existing RI/FS database will be included in the review for these sections. In addition, data collected as part of removal actions undertaken to address immediate concerns due to contamination will be reviewed and included in these sections whenever possible. Pertinent data and information will be used to prepare the Site-wide Ecological Risk Assessment.

42. Commenting Organization: U.S. EPA
Section #: 2.4.1

Commentor: E. Helmer
Pg. #: 2-28

Paragraph 3

Comment: This discussion, along with the discussions for several other contaminants, is misleading and therefore must be revised to be acceptable. While it correctly states that risk might be overestimated because surface water concentrations are for unfiltered samples, it misleads

the reader by not stating that in fact sometimes 90% or more of total metals in surface water samples are filterable, or "dissolved." Also, interestingly for aluminum in particular, the toxicity of precipitating alumino-hydroxides can cause the greatest biota (fish) problems. That aspect of Al ecotoxicology could be addressed here; however, for this site it is likely not relevant unless discharges containing aluminum are undergoing pH change.

Response: Without actual measurements of the concentrations of metals present in filtered and unfiltered samples, it is not possible to determine what portion of the metals present in Paddys Run and the Great Miami River is biologically available. It is highly unlikely that 100% of the metals measured in these samples will be biologically available. Therefore, statements indicating that risks may be overestimated because this assessment is based on total metal concentrations are correct. Surface water samples collected in 1993 were analyzed to determine the concentrations of both total and dissolved metals, and will permit biologically available concentrations to be determined.

We agree with your comment, and although it is understood that alumino-hydroxides can be toxic to aquatic organisms, the probability that this will occur in either Paddys Run or the Great Miami River is very unlikely, given the pH and buffering capacity (hardness and alkalinity) of both systems. This discussion will be included in the Site-wide Ecological Risk Assessment.

Action: Data collected during the summer field programs in 1993 will be discussed in Section 4 of the RI Report, and a discussion of factors influencing the toxicity of aluminum to aquatic organisms will be summarized in the Site-wide Ecological Risk Assessment.

43. Commenting Organization: U.S. EPA Commentor: E. Helmer
Section #: 2.4.1 Pg. #: 2-29 Paragraph 2

Comment: This discussion fails to but must recognize that cadmium levels are increased in Paddy's Run downstream from the site, where benchmark levels are exceeded. The conclusion should be drawn that the site contributes to any ecological risk present from cadmium.

Response: No statement was made in the SLERA regarding the possible source for the cadmium detected in surface water samples collected from Reaches 2 and 3 on Paddys Run (quotient values = 1.11 and 1.37, respectively; Table 2-4). A better determination of the FEMP's potential contribution to cadmium in this stream will be possible in the RI report when background (upstream) concentrations for this metal will be available for comparison. In addition, the results of analyses performed on filtered and unfiltered samples will be available, allowing a determination of potential bioavailability to be made.

Action: Section 4 of the Remedial Investigation Report describes nature and extent of contamination, while Section 5 describes fate and transport of contaminants. The results of the sampling programs completed in the summer of 1993 to supplement the existing RI/FS database will be included in the review for these sections. In addition, data collected as part of removal actions undertaken to address immediate concerns due to contamination will be reviewed and included in these sections whenever possible.

Pertinent data and information will be used to prepare the Site-wide Ecological Risk Assessment.

44. Commenting Organization: U.S. EPA
Section #: 2.4.1

Commentor: E. Helmer
Pg. #: 2-31

Paragraph 3

Comment: As with the cadmium discussion, silver in surface water increased downstream from the site and any ecological risk present from silver in Paddy's Run is contributed to by the site. The document should clearly state the former, rather than only stating that contaminants in the Miami River are *not* associated with the site (on the top of page 2-32). The lack of such a discussion relevant to Paddy's Run indicated a bias in the document's discussions.

Response: As indicated above, determinations of the possible source for the silver present in Paddys Run cannot be made until background (upstream) concentrations are available for comparison. The results of analyses performed on samples collected during 1993 will be summarized in the Site-wide Ecological Risk Assessment.

A discussion was included in the SLERA concerning the possible source of silver present in the Great Miami River. As summarized in Table 2-4, quotient values calculated using mean concentrations ranged from 8.09 (Reach 4) to 112.62 (Reach 5); quotient values for Reach 1 equalled 95.90. As discussed in the SLERA, the high values recorded in Reach 1 indicated that silver present in the Great Miami River was associated with upstream discharges. While it is possible that the FEMP may have contributed to the silver present in samples collected in Reach 5 of the Great Miami River (via Paddys Run), the quotient value for this section of the river was more than four times greater than that recorded in Reaches 2 and 3 of Paddys Run, strongly suggesting that another source of silver is contributing to the silver present in this river.

Action: Section 4 of the Remedial Investigation Report describes nature and extent of contamination, while Section 5 describes fate and transport of contaminants. The results of the sampling programs completed in the summer of 1993 to supplement the existing RI/FS database will be included in the review for these sections. In addition, data collected as part of removal actions undertaken to address immediate concerns due to contamination will be reviewed and included in these sections whenever possible. Pertinent data and information will be used to prepare the Site-wide Ecological Risk Assessment.

45. Commenting Organization: U.S. EPA
Section #: 2.4.2

Commentor: E. Helmer
Pg. #: 2-33/34

Paragraph 5

Comment: Another discussion bias is indicated here. While the upper 95% confidence level (a value which is often higher than the max value of a data set) of background aluminum samples is used to show that sediment aluminum levels are *not* that high; the upper 95% confidence level of cadmium in sediment samples is not considered in concluding that the quotient value of 1.10 is not a problem. To correct this problem, please discuss this

quotient value in terms of the numbers and concentrations of other sediment cadmium data.

Response: As summarized in Section 2.1, concentrations of contaminants present in all media considered in this report were expressed as mean and maximum values; the upper 95% confidence limits were not calculated for any of the contaminants of concern.

As indicated on page 2-32 of the SLERA, no sediment-specific benchmark criteria could be identified for aluminum. Instead, for the purposes of comparison, the mean background concentration of aluminum present in background soil samples (DOE 1993b) served as a benchmark for this metal. When the sediment concentrations are compared to the upper 95% tolerance limit for background soil concentrations on the FEMP, the concentrations recorded for samples collected from Paddy Run were much lower than this value. This suggests that while these concentrations may have exceeded the average concentration of aluminum present in soil, these values were well within the range that would be expected for soils on the FEMP. This comparison will be verified in the Site-wide Ecological Risk Assessment.

A benchmark sediment value was available for cadmium. In this instance, Long and Morgan's "Effects Range-Low (ER-L)" value was used. As defined in this document, the ER-L is conservative and represents sediment concentrations that may result in adverse biological effects to exposed benthic organisms (Long and Morgan 1991). Only one sample contained cadmium in excess of the ER-L, resulting in a quotient value of 1.10. Because this concentration was so close to the ER-L value, it was concluded that cadmium could pose a minimal adverse impact to benthic organisms.

In the Site-wide Ecological Risk Assessment, sediment samples collected from downstream locations will be compared to samples collected from upstream (background) locations as a first step in the screening process to identify contaminants of concern.

Action: The above discussion will be incorporated into the Site-wide Ecological Risk Assessment.

46. Commenting Organization: U.S. EPA Commentor: E. Helmer
Section #: 2.4.2 Pg. #: 2-33 Paragraph 2

Comment: State that toxicity testing would be necessary to evaluate uranium toxicity in sediment here, and that the site apparently contributes uranium to Paddy's Run. Also, please state the basis for the sediment contaminant of concern (COC) for uranium selected from the EPA 1993 document.

Response: No 1993 EPA document was used to derive a sediment benchmark value for uranium. In fact, neither a benchmark value nor a background value for uranium in sediments could be identified. Instead, background concentrations of uranium present in soil (DOE 1993b) were used to evaluate sediment uranium concentrations. Based on these comparisons, samples collected from two tributaries to Paddys Run had sediment uranium concentrations exceeding the mean background soil concentration; none of the sediment samples collected from Paddys Run contained uranium concentrations exceeding this value. Of the samples collected from the Great Miami River, only one contained uranium in concentrations that

exceeded the mean background concentration of uranium (quotient value of 1.05; 1.05 times greater than the mean background concentration of uranium in soils). Unlike the samples collected from the tributaries to Paddys Run, the concentrations of uranium present in the sediment samples collected from Reach 3 were less than the upper 95% tolerance limit established for background soils.

Toxicity testing is the only means of verifying that a contaminated sediment is toxic. However, because of the pH and hardness of the water in the stream, it is unlikely that metals such as uranium will be readily mobilized from sediment particles. These conditions, as well as studies reviewed from the literature, suggest that it is unlikely that these sediments will be toxic to aquatic organisms.

Action: The Site-wide Ecological Risk Assessment will clarify the discussion concerning the presence of uranium in sediments collected from both Paddys Run and the Great Miami River. The document will also note that toxicity testing is the only means of confirming that contaminated sediments are not toxic.

47. Commenting Organization: U.S. EPA Commentor: E. Helmer
Section #: 2.4.3 Pg. #: 2-34 Paragraph 5

Comment: If possible, an explanation should be provided regarding the very high soil uranium levels detected. Since concentrations ranged up to 4000 mg/kg, that should be stated instead of the stated range of up to 579.3 mg/kg.

Response: Agree with commentor.

Action: The Site-wide Ecological Risk Assessment will indicate that of the 45 soil samples collected in Study Area C, four contained concentrations exceeding 4000 mg/kg (highest concentration = 7128.5 mg/kg). The mean uranium concentration determined for these 45 samples equalled 579.3 mg/kg. However, when the four samples containing concentrations in excess of 4000 mg/kg are eliminated from consideration, the mean uranium concentration for Study Area C becomes 78.82 mg/kg. Because a removal action was completed in this area, the Operable Unit 5 RI will discuss the levels of uranium contamination remaining in the soil after completion of the removal action. These data will be used in the Site-wide Ecological Risk Assessment.

48. Commenting Organization: U.S. EPA Commentor: E. Helmer
Section #: 2.5 Pg. #: 2-36 Summary

Comment: Mercury should be included as a possible soil COC.

Response: See response to comment 41.

Action: The Site-wide Ecological Risk Assessment will include mercury as a soil contaminant of concern, if appropriate.

49. Commenting Organization: U.S. EPA
Section #: 3.4

Commentor: E. Helmer
Pg. #: 3-17

Comment: Because of the potential importance of the insect ingestion pathway to mice and to insectivorous avian species, this pathway merits a site-specific field investigation. Recall that the Facemire et al., (1987) study noted an absence of insectivorous bird species, and such a study could also help to clarify the possible risk to vermivorous birds (Robins). The document should be re-worded to indicate the need for such an investigation.

Response: As summarized in the *Characterization of Reproduction and Growth of American Robins at the Fernald Environmental Management Project, 1991* (Osborne et al. 1992), site-specific studies were completed on the concentrations of heavy metals (including uranium) and pesticides/herbicides present in soil and earthworm samples collected from locations both on and off the FEMP. These studies indicated that there was no evidence of uranium or pesticide/herbicide bioaccumulation by earthworms. The authors concluded that there was no evidence that earthworms were concentrating silver, cadmium, chromium, barium, or lead. The results of analyses performed on other metals (arsenic, mercury, and selenium) were variable and did not permit a clear pattern of bioaccumulation to be determined (Osborne et al. 1992).

Osborne et al. (1992) also concluded that suppression of robin nestling growth was attributable to FEMP land management practices that resulted in a reduction in food availability and the quality of the nestling diet.

The executive summary in Facemire et al. (1990) did not clearly explain that the apparent reduction in insectivorous bird species was actually a reduction in the number of insectivorous species observed on the FEMP as compared to a list of species commonly observed in the Cincinnati area. As summarized in Section II of Facemire et al. (1990), the species observed on the FEMP did not match the list of bird species typically found in the Cincinnati area. Although it was true that some bird species on the "Cincinnati list" were not observed, a number of species seen on the FEMP were not included on this list. Moreover, more than 50% of the species of birds observed by Facemire et al. (1990) have diets dominated (50% or greater) by insects. A large number of these species are almost exclusively insectivorous, and almost all birds rely on insects during certain parts of the year or during certain times of their lives. In addition, the authors concluded that the FEMP supported a highly diverse bird population, due to the types of habitats found on the FEMP. Furthermore, the authors made no statements suggesting that activities on the FEMP were adversely impacting the composition of the avian community.

Based on the results of Osborne et al. (1992), no additional site-specific studies are necessary to confirm that uranium in the soil does not pose a risk to birds inhabiting the FEMP.

Action: The Site-wide Ecological Risk Assessment will be revised to include an expanded discussion of the results reported in Facemire et al. (1990) and the results of studies performed on robin growth on the FEMP. The results of these studies suggest no additional site-specific studies are necessary.

50. Commenting Organization: U.S. EPA
Section #: 4.0

Commentor: E. Helmer
Pg. #: 4-2

Paragraph 4

Comment: Revise this discussion as per all of the above comments.

Response: Comment noted.

Action: The Site-wide Ecological Risk Assessment will summarize all available data in the conclusion section of the document.

51. Commenting Organization: U.S. EPA
Section #: 4.0

Commentor: E. Helmer
Pg. #: 4-3

Paragraph 3

Comment: Revise to read: "The results of the SLERA indicate continued release of contaminants associated with activities occurring at the FEMP would continue to adversely impact on-site or off-site ecological receptors, resulting in continued degradation of the aquatic community and ecosystem of Paddy's Run. These results are consistent with results of past studies that have indicated a degraded benthic macroinvertebrate community and lowered fish diversity downstream from waste areas (Facemire et al., 1987)."

Because of the presence of a state-threatened crayfish in Paddy's Run, a monitoring program should be undertaken or continue throughout remedial activities. Feasibility studies should address prevention of sediment- or (and chemically-) contaminated run-off release to Paddy's Run. In addition, because the highest species diversity is present there, including avian diversity and the possible presence of Indiana bat habitat in the riparian zone, precautions to safeguard and potentially enhance the Paddy's Run riparian community should be part of feasibility studies.

Response: At the time that the SLERA was being prepared, plans for confirming the presence/absence of the Indiana bat (*Myotis sodalis*) on the FEMP had not been finalized. Subsequently, plans are being finalized to determine not only if the Indiana bat is present at the site, but also to search for the cave salamander, Sloan's crayfish, slender finger grass, running buffalo clover, mountain bindweed, and spring coral root. These studies will be conducted during 1994.

Action: A discussion of plans to determine if the above-mentioned species are present on the FEMP will be provided in the Site-wide Ecological Risk Assessment. Additional recommendations concerning the safeguarding of various ecological resources on the FEMP, including the riparian community on Paddys Run, will be incorporated into the appropriate RI/FS documents.

52. Commenting Organization: U.S. EPA
Section #: General Comment

Commentor: B. Mazur

23

Comment: In the Site-Wide Characterization Report (March 1993) for the FEMP, some of the field studies described in the Ecological Assessment Section (pages 6-101, 6-109, and 6-110) found differences in vegetation and wildlife on-property versus off-property. These

differences have not been discussed in any subsequent documents and the SLERA makes no mention of any such observed differences. The conclusion of the SLERA is that the terrestrial and aquatic organisms are typical of populations of the area and have not been adversely impacted. Some mention of previously documented population differences and the reasons for discounting the differences as adverse impacts should be included in the SLERA.

Response: Agree with commentor.

Action: A broader discussion of previously documented population differences and rationale for discounting the differences will be provided in the Site-wide Ecological Risk Assessment.

53. Commenting Organization: U.S. EPA Commentor: B. Mazur
Section #: General Comment

Comment: The SLERA report does not indicate what steps will be taken to confirm that the Indiana bat (*Myotis sodalis*) does not occur at the FEMP site. Appendix A of the SLERA states that additional studies are necessary to determine whether or not the Indiana bat is present at the site, but the SLERA report does not acknowledge this point.

Previously, in the Site-Wide Characterization Report (March 1993), Appendix G, it was determined that areas classified as good habitat, which includes some areas along Paddy's Run, "should be considered to have high potential for containing Indiana bats." During the field survey for the Indiana bat, echolocation equipment did detect bats of the genus *Myotis* at three sampling locations where no *Myotis* spp. were captured, possibly because of acknowledged problems with positioning the mist nets. Therefore, additional information must be provided before the presence of the Indiana bat at the FEMP site can be discounted.

Response: See response to comment 51.

Action: A discussion of plans to determine if the Indiana bat, cave salamander, Sloan's crayfish, slender finger grass, running buffalo clover, mountain bindweed, and spring coral root are present on the FEMP will be provided in the Site-wide Ecological Risk Assessment. Additional recommendations concerning the safeguarding of various ecological resources on the FEMP, including the riparian community on Paddys Run, will be incorporated into the Operable Unit 5 FS.

54. Commenting Organization: U.S. EPA Commentor: B. Mazur
Section #: General Comment

Comment: Throughout the document there are references to a drinking water maximum contaminant level (MCL) for lead. There is no longer an MCL for lead in the Federal drinking water regulations and none is proposed. Instead, an "action level" of 5 µg/L has been established for lead. Therefore, the references to a proposed MCL for lead should be corrected to refer to the action level.

58. Commenting Organization: U.S. EPA
Section #: 2.4.1

Commentor: B. Mazur
Page #: 2-30

Paragraph 0

Comment: The last word of the second full sentence should be changed from MCL to "action level."

Response: Agree with commentor.

Action: The phrase "action level" will be substituted for "MCL" in this sentence.

59. Commenting Organization: U.S. EPA
Section #: 2.4.1

Commentor: B. Mazur
Page #: 2-32

Paragraph 1

Comment: In the third sentence, "proposed MCL value" should be changed to read "drinking water action level."

Response: Agree with commentor.

Action: The phrase "proposed MCL value" will be replaced by the phrase "drinking water action level."

60. Commenting Organization: U.S. EPA
Section #: 4.0

Commentor: B. Mazur
Page #: 4-2

Paragraph 4

Comment: This paragraph, which continues on page 4-3, should be reworded to more clearly identify the contaminants of concern for the surface water and sediments of Paddy's Run and the Great Miami River.

Response: Agree with commentor.

Action: This paragraph will be rewritten so that the surface water and sediment contaminants of concern in Paddys Run and the Great Miami River are clearly identified.

61. Commenting Organization: U.S. EPA
Section #: Table D-13

Commentor: B. Mazur

Comment: Footnote b is incorrect. Lead and copper do not have maximum contaminant levels (MCLs), rather they have action levels.

Response: Comment noted.

Action: Footnote b will be modified so that references to lead and copper "MCLs" are changed to refer to lead and copper "action limits."

62. Commenting Organization: U.S. EPA Commentor: B. Mazur
Section #: Tables D-1 — D11, Note 4 (following Table D11)

Comment: The notation is incorrect, in that lead and copper do not have proposed MCL values. They have final action levels which are equal to the BTV numbers shown (i.e., the final action level for lead is 5 ppb).

Response: Comment noted.

Action: Note 4 on Table D-11 will be revised so that all references to lead and copper "MCL" values will be changed to "action limits."

63. Commenting Organization: U.S. EPA Commentor: B. Mazur
Section #: Appendix H

Comment: The pages of Appendix H should be numbered for easier reference.

Response: Comment noted.

Action: All sections of the RI Report for Operable Unit 5 will be properly paginated.

Fish and Wildlife Service Comments

64. Commenting Organization: Fish & Wildlife Commentor: B. Kurev
Section #: 2.4.1 Page #: 2-30 Paragraph 2

Comment: On page 2-30, couldn't the amount of dissolved lead and other metals be determined by filtering the water samples? Since this appears to be an issue, this should probably be a part of future studies.

Response: Surface water samples collected during the summer field programs of 1993 were analyzed to determine the concentration of both total and dissolved metals. These data will be incorporated into the Site-wide Ecological Risk Assessment and will help determine the extent to which lead may represent a risk to ecological receptors.

Action: Results of analyses performed on filtered and unfiltered samples will be used to determine the concentration of dissolved lead present in the surface water of Paddys Run and the Great Miami River. These results will be presented in Section 4 of the RI Report, and any effects will be discussed in the Site-wide Ecological Risk Assessment.

65. Commenting Organization: Fish & Wildlife Commentor: B. Kurev
Section #: 3.3 Page #: 3-10 Paragraph 2

Comment: It does not appear that any empirical data has been collected to validate the dose assumptions for the species under consideration. We believe that the model assumptions should be validated by radiological analysis of tissue in these species. Where models are

27

used to estimate the concentrations of other contaminants of concern in species of fish and wildlife, appropriate chemical analyses should be conducted to validate the models. Model validation information specific to the Fernald site should be included in the Site-wide Ecological Assessment.

Response: At the time that the SLERA was being prepared, the results of analyses performed on various types of tissue collected from both on-site and off-site locations were still undergoing review and could not be incorporated into these models. Instead, conservative assumptions and values were used in the place of tissue data. With the exception of the doses calculated for the field mouse and vole using maximum soil concentrations from Study Area C, all other calculated doses were approximately 1 to 3 orders of magnitude less than the benchmark criterion. (As mentioned in previous responses, a removal action was conducted in this area to remove soil containing high concentrations of uranium. This information will be presented in Section 4 of the RI Report.) According to Dr. Ward Whicker (pers. comm. April 1993), if the values predicted by the model were 1 - 2 orders of magnitude less than the International Atomic Energy Agency benchmark criterion, it is reasonable to assume that the contaminant levels present no risk to ecological receptors because the criterion is so conservative that it would balance the uncertainty associated with the model. (Dr. Whicker of Colorado State University participated in a project sponsored by the IAEA to examine impacts of radioactive releases on terrestrial and freshwater biota.)

Revisions to the document will use site-specific tissue concentrations, when appropriate, in the model in order to refine the determination of radiological dose absorbed by the receptor organisms examined in the SLERA. No additional samples will have to be collected in order to perform these revised calculations. Models were not employed to derive tissue concentrations of any other contaminants of concern.

Action: Site-specific tissue data will be used — where appropriate — in the model to determine the radiological dose absorbed by ecological receptor organisms.

66. Commenting Organization: Fish & Wildlife Commentor: B. Kurev
Section #: Appendix H

Comment: In Appendix H, Shiner Exposure Pathways, the uptake of contaminants model apparently does not include a factor for uptake from ingested material.

Response: Although not clear in this section of the SLERA, values were incorporated into the model to account for uptake of radionuclides by the shiner via all pathways, including ingestion. No modification of the model is necessary but this point will be clarified in the Site-wide Ecological Risk Assessment. However, if appropriate site-specific tissue data are available, the model will be revised to reflect uptake of radionuclides via ingestion.

Action: This information will be clarified in the Site-wide Ecological Risk Assessment to explain that the model accounted for uptake of radionuclides by all pathways, including ingestion. However, if the results of site-specific macroinvertebrate tissue analyses are available, these values will be incorporated into a separate pathway that accounts for uptake of radionuclides by ingestion.