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U-007-407.3

CONDITIONAL APPROVAL O.U. 5 ISA

11/28/90

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LETTER
OU5**



State of Ohio Environmental Protection Agency

Southwest District Office

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1792

Richard F. Celeste
Governor

November 28, 1990

Re: CONDITIONAL APPROVAL
O.U. 5 ISA

Mr. Andrew P. Avel
U.S. DOE-FMPC
P.O. Box 398705
Cincinnati, Ohio 45239

Dear Mr. Avel:

Ohio EPA is conditionally approving the Initial Screening of Alternatives for O.U. 5. The conditions of the approval are that DOE provide acceptable responses to the attached comments.

Please respond to these comments in 30 days. If you have any questions, please contact me.

Sincerely,

Graham E. Mitchell
DOE Coordinator

GEM/acp

cc: Tom Winston, Ohio EPA
Jack Van Kley, Ohio AG
Catherine McCord, USEPA
Robert Owen, ODH
Lisa August, GeoTrans

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COMMENTS ON DOE RESPONSES TO OEPA COMMENTS ON THE AUGUST 1990
DRAFT OU-5 ISA REPORT

1. DOE Response on Comment #16: As noted previously, Ohio EPA questions the use of 35 pCi/g as an acceptable level for uranium in soils or sediments for the FMPC site, regardless of where it has been used previously. DOE should start with a level equal to the 10^{-6} lifetime cancer risk level as the remedial action objective for uranium in soils or sediments. Calculating risk at the 10^{-6} , 10^{-5} , 10^{-4} levels does not necessarily commit DOE to using these as cleanup levels. Other factors such as technical feasibility will influence the selection of cleanup levels in the FS.
2. DOE's Response on Comment #23: DOE did not recognize the first portion of this comment in the revised document and continues to only state that no organic compounds were detected in excess of the MCL standards. This is unacceptable to Ohio EPA. Because considerable contamination exists in some wells by organic compounds which do not have MCLs, these wells should be mentioned in the text of the document. The significance of this contamination can only be judged based on an assessment of the 10^{-6} excess lifetime cancer risk.
3. DOE's Response on Comment #27: As far as the use of 35 pCi/g for uranium levels in soils and sediments is concerned, see Comment #1 above.
4. DOE's Response to Comment #33: What definition of an area of concern is DOE using when stating that "no areas of concern for Thorium-230 have been identified for this operable unit"? The document should identify the areas within Operable Unit 5 having levels of Thorium-230 which exceed background levels.
5. Response to Comment #36: Background surface water concentrations of radiological parameters in the Fernald Area are not included in Section 3.1.3.
6. Response to Comment #s 51 and 23: Preliminary remedial action goals were not established for soils, sediments, and groundwater.
7. DOE's Response on Comment #46: Based on the October 30, 1990 meeting between DOE, OEPA, and USEPA, as well as Comment #1 above, the use of 35 pCi/g as the level of concern for uranium in soils is unacceptable.
8. DOE's Response on Comment #47: DOE's response is unacceptable. The pathway involving inhalation of contaminants for showering must be included as an exposure pathway for the groundwater transport medium on page 4-2 of the revised document.

9. DOE's Response on Comment #50: Revisions made to address the original comment are unacceptable. The first bullet on Page 4-3 of the revised document should state the following: "Prevent ingestion (direct or indirect, such as showering, plant and livestock watering, etc.) of groundwater exceeding standards or other risk or health-based criteria for chemicals and radionuclides (such as the 10^{-6} cancer risk level). In addition, the groundwater exposure pathway on Page 4-2 of the revised document must include exposure through showering. The second bullet item should also be revised to state the objective is to "prevent the migration of groundwater exceeding standards or other risk or health based criteria for chemicals and radionuclides to potential additional receptors."
- DOE also failed to respond to the concerns that muscle tissue analysis for livestock had not been conducted under the RI. The concern is based on the fact that uranium has a greater affinity for muscle and bone than it does for milk. This concern should be appropriately addressed.
10. DOE's Response on Comment #53: See Comment #1 above. The use of 35 pCi/g total uranium by DOE as a cleanup level for the area around the Manhole 180, or, for that matter, at other DOE sites nationwide is irrelevant for assessing acceptable risks consistent with the NCP which are based on a 10^{-6} excess lifetime cancer risk. Levels of concern for uranium should be considered to be any concentration exceeding 10^{-6} cancer risk level, or background, whichever is lower. Neither USEPA nor Ohio EPA has considered 35 pCi/g as an acceptable final cleanup level for uranium around Manhole 180
11. DOE's Response on Comment #68: Based on Comments #1 and #10 above, as well as issues discussed at the October 30, 1990 meeting between USEPA, OEPA, and DOE, soils with uranium concentrations below 35 pCi/g may need to be remediated if they present risks in excess of the 10^{-6} lifetime cancer risk level.
12. DOE's Response on Comment #69: Although the bullet item in Section 5.2.6.4. concerning effectiveness of discharging untreated groundwater to the Great Miami River was modified to address the original comment, for consistency, this change is also required for Section 5.2.6.3. which also involves discharge of untreated groundwater to the Great Miami River, but instead through a new pipeline rather than an existing one.
13. DOE's Response on Comment #72: See Comments #1 and #10 above. The text in Section 5.3.2.2, second bullet, would be more appropriate if it stated the highest level of

contamination found outside of the FMPC boundary and that all other off-property levels were below this level. This type of wording will make it easier for the reader to know where levels of concern are being exceeded, once these levels are determined in the risk assessment.

14. DOE's Response on Comment #93: Ohio EPA strongly disagrees with the assumption that the long-term effectiveness of on site disposal is equivalent to that of off-site disposal. An off-site disposal site such as the Nevada Test Site (NTS) is superior to Fernald in terms of demographics, meteorology, hydrogeology, and security. On-site disposal requires the wastes to be stored near a large metropolitan center as well as being located above a sole source aquifer. These factors obviously make the use of an off-site disposal facility superior to the on-site disposal of contaminated material.
15. DOE's Response on Comment #101: The recommendation to analyze racoon and muskrat specimens for radionuclides and hazardous substances was not a suggestion to sample animals at a higher level in the food chain. Racoons feed primarily upon crayfish, other inverts, and vegetation while muskrats feed solely on vegetation. Thus, neither animal is necessarily higher on the food chain. The suggestion was to link the terrestrial and aquatic food chains through the sampling of these two game species. The Risk Assessment Guidance for Superfund Volume II-- Environmental Evaluation Manual states "for terrestrial species, bioconcentration factors (BCFs) of as little as 0.03 can be significant if the residue is toxic. For aquatic species, BCFs greater than 300 are generally considered significant." Thus contamination levels in these two species may be important in the ecological assessment as well as the risk assessment, since these are considered game species. Because deer meat was not sampled, the document must discuss how model predictions of radiological contaminant concentrations in deer muscle tissue will be verified.
16. DOE's Response on Comment #105: DOE's Response is inadequate. The preliminary list of Ohio ARARs was provided to DOE over a year ago. Obviously, and as dictated by the NCP, the identification and refinement of ARARs is not an ongoing process throughout the RI/FS. Whether or not OAC 3745-9-0 (original reference to 3745-5-10 was in error) was included on the initial "Ohio ARARs list" is insufficient justification on DOE's part time for not incorporating this action-specific ARAR at this time. Further, this ARAR was brought to DOE's attention by Ohio EPA in several previous comment letters for the various other operable units. If now, or at any time in the

1732

future, Ohio EPA brings DOE's attention additional state ARARs on this or any other operable unit, this agency fully expects to see these ARARs incorporated into the respective document.

COMMENTS ON THE OCTOBER 1990 REVISION OF OU-5 ISA REPORT

1. General Comment: As a result of the October 30, 1990 meeting between DOE, OEPA, and USEPA concerning the base line risk assessment, DOE needs to refrain from using the 35 pCi/g and 20 pCi/l as levels of concern for uranium in soils and groundwater, respectively. It would be more appropriate to use wording which qualifies statements made in this as well as other documents. For example, the following statement could be used: "No soil contamination of uranium above x pCi/g exists outside of the FMPC boundary", rather than "No soil contamination above the level of concern exists outside of the FMPC boundary." This style is less dependent on stating specific levels of concern which may change as the RI/FS progresses resulting in a document becoming invalid by such statements. It is suggested that the entire document be reworded in this style to prevent the continued debate over levels of concern until such time as the risk assessment is completed and approved.
2. Pages 3-3 and 3-4: Again, for the reasons mentioned previously, DOE cannot use 30 ug/l as either a level of concern or RAO.
3. Page 3-4, second paragraph, last sentence: This sentence should state organic constituents without MCLS that were detected. Previous Operable Unit ISAs developed risk-based RAOs where MCLS were not available. Why is this procedure not followed in this document?
4. Page 3-7, first full paragraph: Quarterly and duplicate sample results from wells 2013, 3013, and 4013 should be included in Appendix A to demonstrate the conclusion that the high concentrations for each well are outliers.
5. Figure 3-4: Concentrations of uranium and radium-226 exceeding 35 pCi/g and 5 pCi/g, respectively are not indicated in Figure 3-4 for sediments.
6. Page 3-13, first paragraph, last sentence: The concentration ranges presented in this sentence are different from those found in Table A-17. In addition, Table A-17 demonstrates that filtered samples from the SSOD and Paddys Run generally yield higher concentrations of radionuclides than unfiltered samples. Without an explanation of how the samples were collected, filtered, and tested, this relationship does not make sense.

7. Page 3-16, first full paragraph, sixth sentence: In context of the previous three sentences, this sentence is misleading. It implies that the constituent of concern for Paddy Run is uranium, while, the constituent of concern for SSOD is radium-226. Figure 3-4 indicates that the constituents of concern for Paddys Run are uranium and radium-226, while the constituent of concern for the SSOD is uranium.
8. Page 3-18, fourth paragraph: This paragraph discusses sample results for aquatic vegetation which are tabulated on Table A-36. As such, the reference to Table A-37 in the last sentence of this paragraph with respect to Cesium-137 results is incorrect. Table A-36 is correct reference.
9. Page 3-21, first paragraph, second sentence: Average uranium concentrations in the Great Miami River are indicated. What year(s) does this include? What Table in Appendix A represents these data?
10. Page 3-22, Section 3.2.2: This section states that uranium concentrations in both filtered and unfiltered samples collected from within drainageways in the Waste Pit Area are essentially the same. This evidence leads to the DOE conclusions that little, if any, uranium is bound up in suspended solids in the storm water runoff and that, uranium, once in the Great Miami River, will be transported downstream and will not be lost to the sediments. However, Table A-17 (see comment #6) indicates that filtered and unfiltered samples from Paddys Run and the SSOD yield different concentrations. Interestingly, it is the filtered sample that generally yields the higher concentrations.
11. Page 4-12, Section 4.4.1.5, second paragraph: This section states that only technologies applicable for uranium removal will be used in the initial development and screening of alternatives. This will affect the comparison of alternatives with groundwater treatment to those without groundwater treatment, given that provisions for removal, treatment, and disposal of organic contaminated groundwater will result in implementability advantages and/or disadvantages. How is this accounted for in the screening process?
12. Page 5-17, first bullet: As noted in Comment #12 above with regard to DOE's responses to Ohio EPA comments, the effectiveness of discharging untreated groundwater to the Great Miami River is also reduced due to the increased loading of uranium that would result. It may also result in the continued noncompliance of FMPC with DOE's Derived Concentration Guide for uranium, since some concentrations of uranium within the plume may exceed 400 ug/l.

13. Page 5-22, second bullet: This bullet should include recognition of the fact that any off-site portions of the stream that may be capped or otherwise modified will require adherence to the substantive requirements of a US Army Corps of Engineers 404 permit.
14. Page 5-30, third bullet: Soil washing is stated to be selected as the representative treatment option because the volume of residuals is reduced. No mention of this was made in Section 5.3.5.2. In addition, a more complete rationale for retaining this option should be included. Cement-based solidification and vitrification are comparable, viable options. The lack of a detailed explanation for eliminating these options results in the assumption that they are eliminated based on cost. Viable alternatives should not be eliminated at this stage due to cost.

The last sentence states that each soil treatment options will be further evaluated during the detailed analysis. Why is this not mentioned for groundwater treatment options in Section 5.4.1? Given that the viable soil treatment options listed in Section 5.4.2 will be further evaluated in the detailed analysis, it should be clarified that the representative (preferred) process options used in this comparison may not be the resultant Task 13 preferred process option. This is what the third bullet on Page 5-30 implies. Is this also the procedure for groundwater treatment option?

15. Figure 6-1: There is a significant difference in the shape of the plume (identified as having greater than 30 ug/l total uranium) in the area of the Albright and Wilson and Ruetgers-Nease facilities between this map (showing simulated uranium concentrations for current conditions) and Figure 3-1. One or both of these figures should be revised so there is consistency between them. Does the groundwater data confirm the modeled results shown on Figure 6-1?
16. Page 6-4, second paragraph, first sentence and Figure 6-1: Does Figure 6-1 depict the regional groundwater flow and solute transport model-simulated uranium concentrations or computer software (contouring package) contours based on present conditions (monitor well data)? Why aren't both depictions presented?
17. Section 7. Off-site/On-site Disposal Alternatives: For reasons mentioned above (Comment #14), the scores for long-term effectiveness of on-site disposal of sediment/soils should be "4" for all alternatives using this option. The scores for long-term effectiveness of off-site disposal should remain at "5" for all alternatives.

18. Table 7-1, Alternatives 6 and 7: Alternatives 6 and 7 implement treatment of soils/sediments prior to on-site disposal, while Alternatives 2, 3, 10 and 11 do not. Nevertheless, all these alternatives scored a 5 for long-term protection of the environment. Alternatives 6 and 7 should yield a higher score in this category than that of Alternatives 2, 3, 10 and 11. This should be evident based on the more favorable rating of Alternatives' 6 and 7 Reduction of Mobility, Toxicity or Volume of Waste.
19. Page 7-5, last paragraph: The off-site disposal of sediments/soils will have an increased risk of human exposure due to the hazards of shipping. This should reduce the short-term effectiveness score below that of on-site disposal.
20. Page 7-7, Section 7.1.8 and Page 7-8, Section 7.1.9: The rationale for a low score for Sediments/Soils - Short-Term Protection of Human Health is inconsistent with previous ratings. This section states that leaving the contaminated sediments in place subjects them to groundwater infiltration and leaching of contaminants. It is also stated that stream bed preparation may result in disturbance and movement of contaminated sediments. This rationale differs from that of Alternatives 2, 3, 5, 6, 7, 10 and 11 where rankings were high because there was low potential for human exposure. These alternatives excavate soils/sediments and no mention is made of disturbing contaminated soils/sediments. Because Short-Term Human Health applies during remediation, wouldn't leaving the contaminants in place, as in Alternatives 8 and 9, yield a lower potential (higher score) for Short-Term Human exposure?
21. Page 7-9, Section 7.1.11, Groundwater Effectiveness: It is doubtful that Alternative 11: Recharge Area Modification will have higher agency approval than that of Alternatives 2, 4, 6 and 8: Extraction and Discharge.
22. Table A-2: This table lists data from "Western Monitoring Wells" yet many of the wells are located either near the southern FMPC boundary or are south of the FMPC altogether (e.g., 2002, 2127, 2094, 2095). Consequently, this table would be more appropriately titled "Southern Monitoring Wells."
23. Table A-5: The title for this table should be changed to "Southern Monitoring Wells" for the same reason as in the preceding comment.

24. Table A-8: Organizationally, it would be much easier for the reader to follow trends in given wells if data were presented in such a manner so that all data for a particular well would be listed together and not separated on different pages (e.g., data for well 2016, 2021, 2060, among others). Along with presenting the data for each well, the heading should then indicate whether the data is RCRA or RI/FS-generated data. This would eliminate the need for a footnote along with having to constantly flip pages back and forth to refer to existing footnotes "a" and "b". In addition, individual data which lacks QAPP qualifiers should be flagged and a corresponding footnote at the end of the table added defining the meaning of the flagged data. Also, well 2307 should be well 2037. Well 2106 should follow well 2095 in the table, not well 2042.
25. Table A-9: See preceding Comment #24.
26. Table A-18: Why are Paddys Run Sample locations W5 and W9 combined? Are the concentrations at these points averaged together? If so, it is inappropriate to include these sampling points together as W5 is off-site and W9 is on-site.
27. Table A-22: Two samples are indicated to be zero meters from the confluence of the SSOD and Paddys Run for total uranium in 1987. The data, however, are different.
28. Table A-27: SSOD samples for 1987 and 1988 are indicated to be "not analyzed" for total uranium. Table A-22 reports total uranium concentrations for these dates, therefore, these data should be referenced in Table A-27.
29. Appendix B, Page B-4, State of Ohio ARARs, second bullet: DOE's statement that "OEPA has been developing extensive solid and hazardous waste regulations..." should be changed to "OEPA has developed extensive...".
30. Appendix B, Page B-4, State of Ohio ARARs, third bullet: This item should be modified to also note that OEPA has surface water quality criteria for both acute and chronic effects on aquatic organisms as part of OAC 3745-1-07 in addition to water use criteria for all major surface water bodies.
31. Appendix B, Table B-1, page B-10: The duplicate listing of OAC 3745-17-07 under item "a" should be corrected. Also, the description for OAC 3745-81 only mentions limits set on radiological parameters and not on other organics and inorganics that have been found in the Operable Unit 1 study area. This deficiency should be corrected.

- 32. Appendix B, Table B-1, page B-12: OAC 3745-9-10 (abandonment of test holes and wells) should be included in this table as a State of Ohio action-specific ARAR.
- 33. The following is an additional Action-Specific state ARAR for all off-site FMPC remedial actions including the south plume. This ARAR should be brought to the attention of DOE:

ORC 1521.16: Requires any owner of a facility, or combination of facilities, with the capacity to withdraw more than 100,000 gallons of water daily (GPD) to register such facilities with the Ohio Department of Natural Resources, Division of Water.