U-004-407.8

1808

OU#2 ISA DISAPPROVAL
U.S. DOE FERNALD
OH6 890 008 976

02-15-91

USEPA/DOE-FMPC
1
LETTER

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARB
CHICAGO, ILLINOIS

1808

FEB 15 1991

REPLY TO ATTENTION OF:

5HR-12

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

Re: OU#2 ISA Disapproval
U.S. DOE Fernald
OH6 890 008 976

Dear Mr. Craig:

On October 24, 1990, the United States Department of Energy (U.S. DOE) submitted a draft Initial Screening of Alternatives (ISA) report (a primary document) for Operable Unit (OU) #2 (Other Waste Units). The United States Environmental Protection Agency (U.S. EPA) disapproved this draft report on November 20, 1990. Pursuant to Section XII of the 1990 Consent Agreement, U. S. DOE was required to submit a revised draft ISA report that addressed all the deficiencies identified by U.S. EPA.

On January 9, 1991 U.S. DOE submitted a revised draft RI report to U.S. EPA. In accordance with Section XII.B of the Consent Agreement, U.S. EPA reviewed the revised ISA report. Based upon this review, U.S. EPA has determined that the report is not adequate.

U.S. EPA is disapproving the revised draft ISA report for OU #2. Since this is the second disapproval of this document, this letter constitutes a notice of dispute in accordance with Section XII of the Consent Agreement. The following are comments and deficiencies regarding the revised draft ISA report:

The alternatives retained for detailed analysis are adequate and represent a reasonable range of containment, treatment, and disposal general response actions. However, the information in the ISA report is poorly presented and contains many inconsistencies, resulting in a screening process that does not appear well thought out. Although, the general and specific comments should be addressed, they will probably not change the alternatives retained for detailed analysis.

1. As stated in comments on previous draft ISA reports, U.S. DOE's approach to establishing preliminary remediation goals

Printed on Recycled Paper

does not comply with the National Contingency Plan (NCP). However, the level of detail presented for establishing preliminary remediation goals is acceptable at this point in the FS process. However, preliminary remediation goals in the FS must be established on specific exposure scenarios and based on risk to receptors. At this point there are two predominant deficiencies in the proposed strategy for establishing preliminary remediation goals. First, U.S. DOE has not summed the risks from proposed "acceptable concentration" to determine the overall risk of a particular media. Second, DOE continues to use dose-based (instead of risk-based) remediation goals for the radionuclides. U.S. DOE should consider:

(A) summing the risk from all contaminants from a particular media (and later all media) when setting preliminary remediation goals. Even where promulgated standards are established, DOE must determine the summed risk from all carcinogens, which must not exceed the 1E-06 cancer risk level or a Hazard Index (HI) of 1.

(B) using the 25 mrem/year overall exposure dose limit instead of the 100 mrem/year limit proposed if U.S. DOE continues to use dose-based remediation goals instead of risk-based remediation goals. U.S. EPA recommended this 25 mrem/year overall exposure dose limit for the remediation goal of the Maxey Flats Superfund site.

(C) providing a table presenting the following for each potential chemical of concern, the ARAR (including TBCs); the concentration resulting in a 1E-06 risk for carcinogens or an HI of 1 for noncarcinogens considering each contaminant independently; and the concentration resulting in a 1E-06 risk for carcinogens or HI of 1 for noncarcinogens considering the contaminants collectively.

After risk-based preliminary remediation goals are established, they can be refined in the FS when considering risk management type factors such as potential exposure, technical practicality, cost and so on.

2. The description of contaminant concentrations and waste volumes seems to rely only on the results of the Characterization Investigation Study (CIS) conducted by Weston in December 1987 and reported in Appendix C of the ISA report. Additional sampling and analysis to be conducted as part of other programs could significantly affect the ISA results and thus should be considered prior to the detailed analysis of alternatives. Additional information needs are outlined in the Facilities Testing Program (FTP) work plan (November 1988) and subsequent revisions to the remedial investigation and feasibility

study (RI/FS) work plan (November 1990). This needs to be discussed along with how the results could affect the alternatives. 1808

3. Several portions of Section 2 discussing the preliminary evaluation of process options do not provide a consistent level of detail. For example, Section 2.6.1.5 discusses the effectiveness and implementability of each treatment process option. However, Section 2.6.2.6 discusses only the effectiveness and implementability of the selected process option. The results of all evaluations (both effectiveness and implementability) should be presented for all process options listed in the figures. This consistent approach, while not specifically required by EPA guidance, would greatly increase the clarity of the ISA report.

4. As noted in the reviews of previous drafts, DOE assumes that an engineered disposal facility (EDF) can be sited within the boundaries of the FMPC. However, the evaluation of siting the EDF is not complete. The EDF investigation must be completed and the results considered when conducting the detailed analysis of alternatives.

5. Although not required at this stage of the feasibility study, EPA does require that a quantitative analysis be conducted to demonstrate the percent reduction in toxicity, mobility, or volume of hazardous substances (55 FR 8721). This analysis should be conducted and considered in the detailed analysis of alternatives.

6. Two issues concerning the costs in Section 5 consistently arise for each of the suboperable units. First, the increase in capital cost from $6 million for alternative 1 (containment) to $8 million for alternative 2 (containment with collection and treatment of a small volume of ground water at a very low rate) seems excessive. Second, Section 5 consistently reports operation and maintenance (O&M) costs for off-site disposal. These are costs incurred by the disposal facility (not the generator) after receipt of the waste materials.

7. It is not clear whether DOE is proposing to remediate ground water in the perched water table aquifer. First, DOE did not include remedial action objectives or a point of compliance for the perched ground water. However, several portions of the perched water table aquifer have contaminant concentrations above both background concentrations and applicable relevant and appropriate requirements (ARAR). DOE should state whether the ground water will be remediated and then justify its proposal. If not remediated, ground-water monitoring of the perched water table aquifer could be included in the alternatives that require waste to remain

in-place. If DOE proposes to remediate the ground water, a remedial action objectives and points of compliance must be established to monitor the effectiveness of the ground-water remediation and to demonstrate compliance with established ground-water remediation goals.

8. Section 2.2.4 states that risk-based RAOs are developed in a manner similar to the development of maximum contaminant levels (MCLs). This statement is misleading and should be deleted since MCLs include additional factors such as technical limitations and cost. Risk-based RAOs are based solely on the potential risk to human health. The application of ARARs and the use of risk-based RAOs are independent processes, and the distinction between these should be made clear.

9. Section 2, page 2-14, paragraph 2: U.S. DOE's response to U.S. EPA comment 15 mis-stated guidance for establishing cleanup levels at the Maxey Flats site. The Maxey Flats guidance (U.S. EPA memorandum, November 19, 1990) allows a radionuclide action level for groundwater based on a 4 millirem (mrem) dose to the whole body or any organ <u>only</u> for beta and photon radioactivity from human-made radionuclides. This level does not apply to uranium contamination in groundwater. Since there is no chemical-specific ARAR for uranium in groundwater, the appropriate guidance for establishing clean-up levels is the CERCLA risk range of 10E-04 to 10E-06 range.

SPECIFIC COMMENTS:

10. Section 1.5.4.2, Page 1-24, Paragraph 3: The current land use scenario for surface water considers only current use of the Great Miami River. However, current land use scenarios should also consider exposure from contaminated surface water and sediments in Paddys Run located between the source areas and the discharge point to the Great Miami River.

11. Section 1.5.4.2, Page 1-24, Paragraph 3: This section of the ISA report assumes that the only contributor of contaminants to the Great Miami River is the active flyash pile. However, this assumption contradicts the information presented in Section 1.5.2.4 where it is reported that the source of surface water contamination in this area is the inactive flyash pile.

12. Section 1.5.4.2, Page 1-25, Paragraph 2: Insufficient information is presented to support the approach of using the contaminant concentrations in sediment at the confluence of Paddys Run and the stormsewer water outfall ditch as the concentration of chemicals of potential present concern.

13. Section 2.1, Page 2-2, Paragraph 1: The point of compliance for soil should conservatively be set anywhere within the waste management unit. DOE cannot assume that passive controls such as fences or deed restrictions will prevent people from exposure while on the waste management unit. However, the type of exposure considered in the future use scenarios may not include direct contact with waste materials.

14. Section 2.2.1, Page 2-2, Paragraph 4: A point of compliance must be established for the perched water table aquifer. See similar EPA comments on other ISA reports. A point of compliance for sediment must also be established. The point of compliance established at the boundary of the waste unit for the soils is acceptable (assuming soils include waste materials in the lime sludge ponds, flyash piles, and sanitary landfill) and assuming that future receptors will not have direct exposure to waste materials after a remedial action is completed. However, the risk assessment must determine the risk to future use receptors in the absence of remedial action. Such an assessment would include direct contact with waste materials. Determining in the baseline risk assessment that direct content with waste materials presents an unacceptable risk (> 10^{-6} increased cancer risk) does not preclude containment remedial actions because eliminating the exposure route is a viable remedial alternative. However, the risk via direct exposure to waste materials must be determined in the event the containment remedial action alternative fails or is breached.

15. Section 2.2.2, Page 2-3, Paragraph 2: The reference to Table 2-1 incorrectly states that the table lists contaminants of potential concern associated with exposure pathways and media. Exposure pathways and media are not included in the table. Second, Section 1.5.4.1 states that all chemicals and radionuclides within the boundaries of waste units at levels exceeding background concentrations are considered potential contaminants of concern for future use scenarios. Therefore, the following chemicals and radionuclides should be included in Table 2-1: arsenic, cobalt, mercury, nickel, cesium-137, lead-210, and strontium-90. All other tables that present risk information or preliminary remediation goals should also be revised accordingly.

16. Section 2.2.3, Page 2-3, Paragraph 4: Both Tables 2-5 and 2-6 used proposed maximum contaminant levels (PMCLs). In addition, the NCP requires that non-zero maximum contaminant level goals (MCLGs) be used instead of maximum contaminant levels (MCLs). Therefore, PMCLs should also be used in developing the preliminary remediation goals.

17. Section 2.2.3, Page 2-5, Table 2-2: The table appears to be missing the Safe Drinking Water Act maximum contaminant level goals for drinking water.

18. Table 2-2, Page 2-5. The U.S. EPA memorandum (November 19, 1990) recommending the use of 25 mrem/year as the remediation goal dose limit for all pathways should also be included in this table as a to-be-considered (TBC) guidance. DOE cited this EPA memorandum recommending the use of dose-based remediation goals in its response to previous comments on the ISA report.

19. Table 2-2, Page 2-5. MCLs are established concentrations and, therefore, the "less than" (>) should be removed for each concentration listed.

20. Figure 2-1, Page 2-7 and 2-8. If U.S. DOE is proposing to use dose-based limits for remedial action objectives, the 25 mrem/year overall exposure dose limit should be used instead of the 100 mrem limit listed in the figure. (U.S. EPA recommended the 25 mrem/year overall exposure dose limit for the remediation goal of the Maxey Flats Superfund site.) Similarly, an U.S. EPA memorandum (November 19, 1990) recommended that the dose limit for soils be set at the difference between the 25 mrem/year overall dose limit and the sum of the other individual medium-specific doses. This also would apply to the solid wastes, surface water, and sediment media.

21. Section 2.2.5, Page 2-3, Paragraph 3: The cumulative Hazard Index (HI) for all contaminants (not just the individual contaminant) should not exceed 1.

22. Section 2.2.5, Page 2-9, Paragraph 3: The site is conducting the remedial actions as part of a CERCLA response; therefore, the governing regulations are those established in the NCP, not in the RCRA regulations.

23. Section 2.2.5.1, Page 2-9, Paragraph 3: The remedial action objective of restricting exposure to receptors at 100 mrem/year should be used as an upper limit. It should also be noted that the 100 mrem/year dose limit is not consistent with the 25 mrem/year dose limit stated in the EPA memo recommending the use of dose limits as remediation goals.

24. Section 2.2.5.4, Page 2-10, Paragraph 4: Remedial action objectives (RAOs) for surface water and sediment cannot be based on the same criteria as soil. First, surface water is a liquid and would have different exposure routes and scenarios than soil. Second, sediment would have different exposure scenarios than soils.

25. Table 2-3, Page 2-11: Several errors and inconsistencies were noted in this table: 1808

(A) The reference dose factor (RfD) for acenapthene is 0.006 mg/kg/d.

(B) The slope factors (SF) are presented for each arochlor; however, the MCL is presented as the acceptable soil concentration.

(C) Interim guidance from EPA states that an SF for benzo(a)pyrene of 11.5 (oral ingestion) and 6.1 (inhalation) can be used; in addition, these SFs should be used for all polyaromatic hydrocarbons that have a B2 (probable human carcinogen) classification.

(D) The RfD presented for carbon disulfide should result in an acceptable soil concentration of 8,000 mg/kg.

(E) The RfD for 2,4-dimethylphenol is 0.001 mg/mg/d, resulting in an acceptable soil concentration of 80 mg/kg.

(F) The RfD for toluene is 0.2 mg/kg/d, resulting in an acceptable soil concentration of 16,000 mg/kg.

(G) The RfD for 1,1,2-trichloro-1,2,2-triflouroethane is 3 mg/kg/d, resulting in an acceptable soil concentration of 240,000 mg/kg.

(H) HEAST lists the RfD for cadmium as 0.003 mg/kg/d for food and 0.0005 mg/kg/d for water; please provide a reference for the value 0.0004 used.

(I) Please provide a reference for Marcus 1986; the Center for Disease Control (CDC) recommends that the limit for lead in soil be set at 0.5 to 1.0 mg/kg.

26. Table 2-3, Page 2-12: The acceptable soil concentration should be mg/Kg not mg/L.

27. Table 2-4, Page 2-13: This table should also consider the U.S. EPA's ambient water quality criteria for the protection of human health and adjusted for drinking water (Federal Register, November 28, 1980). The 10E-06 concentrations for specific chemicals are as follows: chlordane, 0.00046 mg/L; chloroform, 0.19 mg/L; tetrachloroethane, 0.8 mg/L; trichloroethene, 2.7 mg/L.

28. Section 2.2.5.5, Page 2-14, Paragraph 2: As stated previously, the risks (or doses) from contaminants must be summed so that the resultant concentrations do not exceed the upper bound risk or dose-based limit.

29. Tables 2-5 and 2-6, Page 2-13: The acceptable soil concentrations in Table 2-3 were established by conservatively assuming that the exposed individual was a 16-Kg child. However, it is not clear why the same conservative assumption was not used in determining the acceptable water concentration. Many of the acceptable water concentrations would be much lower if the same conservative approach was used for ingestion of water as for the ingestion of soils.

30. Table 2-7, Page 2-18: This table should also present the acceptable water concentration for each radionuclide, which when added with all the radionuclides would not exceed the 4 mrem/year dose limit. In addition, the acceptable concentration resulting in the 1E-06 cancer risk should be presented for each radionuclide. In all cases these concentrations are significantly lower than those presented in the table.

31. Table 2-7, Page 2-18: A similar table should be generated for radionuclides in soils.

32. Section 2.3.4, Page 2-19, Paragraph 4: This section should clearly describe what media will be treated, particularly since the removal/disposal response action is not included here as it was in Table ES-3.

33. Section 2.4, Page 2-21, Paragraph 1: The list of remedial technologies at the top of the page does not include any technologies for removal of ground water (either from the perched or regional aquifer).

34. Section 2.4.1.1, Page 2-21, Paragraph 3: The no action general response action states that no monitoring or institutional control technologies will be included. However, Section 2.3.2 indicates that institutional controls may be included in the no action alternative. This discrepancy should be reconciled.

35. Section 2.4.1.1, Figure 2-2: This figure appears to present conflicting information. One example is on Pages 6 and 7 of the figure, which present several technologies for treating perched ground water. Before perched ground water could be treated, it would have to be removed. However, this portion of the table is listed as pertaining to the "containment/treatment" general response action and does not

include removal technologies. Therefore, it seems that only in-situ treatment technologies (for ground water) would be appropriate under the containment/treatment general response action. The table needs to correctly apply general response actions and technologies to each media. Also, Figure 2-2 should address discharge.

36. Section 2.4.1.1, Page 2-34, Paragraph 2: It is not clear why this section does not discuss the subsurface flow control process option listed for containment/treatment general response actions on Page 4 of Table 2-2.

37. Section 2.4.1.1, Page 2-36, Paragraph 5: Other discharge process options, such as discharge to on-site streams or a POTW, should be evaluated. Although these two examples may not retained for additional screening, they must be justifiably eliminated.

38. Section 2.4.1.2, Page 2-41, Paragraph 1: The text should clearly indicate whether the waste stabilization process options for the treatment of residuals are those listed on Page 8 or Page 5 of Figure 2-2.

39. Section 2.4.1.2, Page 2-41, Paragraph 1: Page 9 in Figure 2-2 lists biological treatment and volume reduction as potentially applicable treatment technologies for the removal/treatment/disposal general response action but does not discuss these in the text.

40. Section 2.4.1.2, Page 2-41, Paragraph 2: This section should describe the difference between the above or below-grade vault and the EDF. Also, temporary storage units should be discussed.

41. Section 2.4.1.3, Page 2-43, Paragraph 5: Neither the text nor Figure 2-2 addresses dust suppressants or containment structures although they are listed as remedial technologies in this paragraph.

42. Section 2.4.2.1, Page 2-45, Paragraph 1: Since this section of the ISA report relies on Section 2.4.1.1 to present the screening of remedial technologies and process options for ground and surface water, this section should be revised to address the comments for Section 2.4.1.1.

43. Section 2.4.2.2, Page 2-59, Paragraph 1: Additional justification is required to retain vitrification of removed material. The ISA report stated in earlier sections that the high moisture content of the lime sludge would limit the implementability of this process option.

44. Section 2.6.1.2, Page 2-74, Paragraph 4: Surface water monitoring should be discussed previously if included at this point in the ISA report.

45. Section 2.6.1.3, Page 2-83, Paragraph 3: Both the text on Page 2-84 and Figure 2-2 indicate that chemical sealants have been retained for further analysis, but are not listed here.

46. Section 2.6.1.3, Page 2-84, Paragraph 1: The capital cost is listed in Figure 2-5 (Page 1 of 7) as being low. This seems inappropriate considering that a multimedia cap involves considerably more engineering and construction than the soil base cap, which is listed as having a moderate capital cost.

47. Section 2.6.1.4, Page 2-84, Paragraph 3: The capital cost of each subsurface flow control process option listed in Figure 2-5 (Page 6 of 7) is reported as high. The cost evaluation should compare process options for the same technology so that the relative cost can be reported.

48. Section 2.6.1.4, Page 2-85, Paragraph 1: Slurry walls and grout curtains are described together as having similar implementability; however, Figure 2-5 (Page 6 of 7) lists slurry walls as being more implementable than grout curtains.

48. Section 2.6.1.5, Page 2-87, Paragraph 7: The process options for the physical treatment of water are not included in Figure 2-5 (belt filter press, sedimentation/clarification, dual media filtration). If these are ancillary pre- or post-treatment process option (as stated on Page 2-36), they should be presented in a manner consistent with other ancillary process options. For example, several run-on/runoff control process options considered as ancillary are not discussed in the text but are presented in Figure 2-5; whereas the physical treatment process options listed as ancillary are discussed in the text but not in Figure 2-5.

49. Section 2.6.2.5, Page 2-90, Paragraph 3: The capital and O&M costs of each thermal treatment process option listed in Figure 2-5 (Page 7 of 7) is reported as high. The cost evaluation should compare process options for the same technology so that a relative cost can be reported.

50. Section 2.7.2.2, Page 2-103, Paragraph 5: This section presents in-situ stabilization as a remedial technology included in the containment general response action. In-situ stabilization was not included in the containment general response action presented in Section 2.4.2.2 and

Page 2 of Figure 2-3. Rather, in-situ stabilization was included in the containment/treatment general response action (Page 4 of Figure 2-3) as well as the containment/treatment general response action (Page 4 of Figure 2-6). In addition, the containment/treatment general response action (which should not include removal) lists several treatment technologies and process options (Page 4 of Figure 2-6) that require removal of perched ground water. Therefore, only in-situ treatment technologies would seem appropriate under the containment/treatment general response action. The report (both text and figures) needs to take a consistent approach towards what is meant by containment/ treatment and containment. The approach should be clearly described in Section 3. 1808

51. Section 3.1, Page 3-1, Paragraph 3: Figure 3-1 (page 12 of 12) identifies the temporary storage process option as part of the remedial technology for the two on-site disposal alternatives. Temporary storage was previously screened out for the on-site disposal general response action.

52. Section 3.2.1.2, Page 3-44, Paragraph 2: The well point system presented in this section (as shown on Figure 3-5) is proposed to be inside the horizontal extent of the ground-water contamination detected by wells 1035 and 1038. DOE should explain why it is not proposing to remediate the entire contaminant plume. This comment should also be addressed for all subsequent sections of the ISA report that refer to ground-water removal.

53. Section 3.2.1.4, Page 3-49, Paragraph 3: The text states that both truck and rail transport is retained for further consideration. However, truck transport was screened out in Section 2.

54. Section 3.2.1.6, Page 3-59, Paragraph 5: The text states that the mixed and hazardous waste from the sanitary landfill would be either treated and packaged for off-site disposal or packaged and shipped to a permitted treatment, storage, and disposal (TSD) facility. The ISA should clarify whether the TSD facility will be required to treat the landfill materials prior to disposal. If so, the treatment and disposal method should be specified.

55. Section 3.2.1.6, Page 3-59, Paragraph 5: This section should estimate the total volume reduction resulting from incineration because the volume will affect both the off-site transportation and disposal costs. The volume will also affect the cost of shipping untreated waste off-site for treatment and disposal.

56. Section 3.2.3, Page 3-72, Paragraph 1: It is not clear from the description whether remedial technologies will be applied to surface water and sediment in Paddys Run. 1808

57. Section 4.1, Page 4-1, Paragraph 1: The text states that the alternatives are refined further with respect to the size and configuration of extraction or treatment systems, flow rates, and special requirements, among others. However, the ISA report does not present any additional refinement of alternatives.

The draft ISA report cannot become final until all of the deficiencies outlined above, have been adequately addressed by U.S. DOE. Accordingly, U.S. EPA hereby invokes dispute resolution as provided under Paragraph B of Section XIV of the 1990 Consent Agreement. U.S. EPA proposes an informal dispute resolution on January 26, 1991, at 10:00 in Chicago.

Please contact me at (312/FTS) 886-4436, if there are any questions regarding this matter.

Sincerely yours,

Catherine A. McCord

Catherine A. McCord
Remedial Project Manager

cc: Gerry Ioannides, OEPA - CO
Graham Mitchell, OEPA - SWDO
Joe LaGrone, U.S. DOE - ORO
Pat Whitfield, U.S. DOE - HDQ