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OHIO EPA COMMENTS INITIAL SCREENING OF ALTERNATIVES FOR O.U. 2

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ENCLOSURE

OHIO EPA COMMENTS
INITIAL SCREENING OF ALTERNATIVES FOR O.U. 2

General Comments

1. The Initial Screening of Alternatives for Operable Unit 2 shows a lack of integration between the RI and FS processes. This document generally lacks the data pertinent to determine the usefulness and applicability of certain alternatives. Continual reference to an RI report which has not yet been released leaves the reader with little to support the conclusions that are drawn in the document. A revised document should include more detailed information describing the contaminant types and levels characterizing each of the waste areas as well as data on groundwater contamination. The requirement for this information in the Initial Screening of Alternatives is pointed out in the USEPA Guidance for Conducting RI/FS under CERCLA (page 4-3). The RI/FS is an interactive process in which data gathered during the RI should be used in the development and screening of alternatives. The information provided in this document does not provide sufficient justification for the elimination of either Alternatives 2 or 3.

2. Some figures and tables do not have page numbers.

3. The Alternative Screening Methodology described in Section 4.0 includes nine evaluation criteria. These evaluation criteria are ranked (Threshold, Primary Balancing, and Modifying) in terms of their role during remedy selection, however, Section 5 does not include reference to this ranking system. Instead, criteria area weighted evenly when comparing alternatives.

4. It is not clearly defined in Section 5 why Alternatives 2 and 3 are difficult to implement for the Southfield, the Inactive Fly Ash Disposal Area, and the Active Fly Ash Pile.

5. The conclusion in Section 5 that the volume and toxicity of the waste units will not be reduced should be supported. For example, Section 5.1.6.1 states that the volume and toxicity of the sanitary landfill will not be significantly reduced. Section 3.1.5.2, in contrast, includes volume reduction.

6. The screening of Alternatives in Section 5 is discussed based on the three screening criteria; effectiveness, implementability, and cost, however, Table 5-2 summarizes the screening based on effectiveness and implementability are vague and are difficult to relate to the components in Table 5-2. Figure 4-1 implies that these 9 evaluations

criteria were used in Task 12. They will be used in Task 13, why are they presented here? This implies that ranked criteria area used.

7. Volume calculations and/or the cost per volume should be included in the cost of Section 5.

8. References are made throughout the document to groundwater treatment. Wherever it is necessary to discuss this component of the alternatives, Section 3.1.3.1 is stated to fully describe the treatment of groundwater. This is, however, not the case. A description of the AWWT is necessary and should include: efficiencies, effectiveness on the environment, reduction in toxicity, mobility and volume, operation and maintenancce requirements, the removal media, media lifetime, exhausted media disposal/ regeneration requirements, how the system will be cleaned, and provisions for closure.

9. The requirements for long-term maintenance and monitoring programs are not well defined for the selected alternatives in this evaluation.

Specific Comments

1. Figure ES-1, General Comment: As mentioned in previous comment letters on other operable units, and during the October 30, 1990 meeting/conference call between USEPA, DOE, and OEPA, remedial action objectives must be developed for the cancer risk range of 10^{-4} to 10^{-6} with 10^{-6} as the point of departure for these risks (as required by the NCP). Remedial Action Objectives should not be based solely on radiation dose.

2. Figure ES-1, soil medium: The second remedial response objective for soils needs clarification. It is unclear what is meant by ". . . would result in cancer risks of 2.5E-05 to 2.5E-07, or not cancer hazards resulting in a hazard index of 0.25."

3. Page ES-2, 1st paragraph: This section states: "Only similar alternatives were compared in the initial screening of alternatives process. . .". This is not clear. If all the alternatives are similar, why is screening necessary? The end of this paragraph implies more alternatives will be considered in Task 13 than in Task 12. This defeats the purpose of an "initial screening". This is applicable to page 1-5, 2nd to last paragraph.

4. Figure ES-1, mediums 2, 3, and 4, Remedial Action Objectives for Human Health: These RAOs state that the objective is to prevent an excess of 2.5E-05 to 2.5E-07 cancer risk. The justification for using this range should be included at this point. It is not described until Section 2.2.

5. Figure ES-1, Medium 3, for Human Health, 2nd RAO: Should this statement include "and/or" in place of "or not"?

6. Figure ES-1, mediums 3, 4, and 5: These RAOs indicate that concentrations must not be in excess of 25 percent of those reported in Table 2-3. The RAOs should clarify that the RAO is 25 percent of the first column in Table 2-3. This applies to ES-4 and Figure 2-1 also.

7. Page ES-5, paragraphs 5 and 6: The use of the word "treatment" is confusing. Does treatment refer to the same processes in both paragraphs? Treatment should be more clearly defined in this section.

8. Page ES-7, paragraph 1 and 2: If Alternatives 2 and 3 are identical except for the groundwater collection technique, as is stated in paragraph 2, why are these alternatives described differently? For instance, it appears that stabilizing the lime sludge wastes is incorporated in Alternative 2, but only an option in Alternative 3.

9. Page ES-7, paragraph 3: What provisions are included for removed perched groundwater?

10. Page ES-7, last paragraph: This paragraph states that attention to RCRA is given only in the event that higher concentrations of organics are found in the Sanitary Landfill. The recent enactment of the TCLP may affect the quantity of material in the landfill which is considered hazardous waste once it is excavated. The lower concentration limits of the TCLP necessitate a closer look at the quantity and likelihood of waste which will require disposal in a RCRA facility.

11. Page ES-9, last paragraph: Alternatives 2 and 3 should not be eliminated from further consideration because they involve treatment as a principal element to reduce toxicity and mobility of the wastes. Further, the NCP prohibits the comparison of treatment and non-treatment alternatives where the treatment alternative is eliminated because of the lower cost of the non-treatment alternative. It is also difficult to believe that an alternative that involves capping (Alternative 1) could be judged to be as effective as an alternative involving capping but which also removes and treats contaminated groundwater as do Alternatives 2 and 3.

12. Page 1-5, Section 1.4 heading: "Organization of Reports" should be singular, not plural.

13. Page 1-5, last paragraph: This report contains two appendices rather than "an appendix."

14. Page 1-8, fourth paragraph: This paragraph discusses an additional volume of waste of approximately 6,000 to 8,000 cubic yards that was buried outside of the five cells in the sanitary Landfill yet states the FS will focus on the five cells only. This is unacceptable to Ohio EPA. This additional waste area must be addressed along with the actual landfill cells. This is especially important because this additional waste was probably not engineered as a sanitary landfill and would likely have a greater opportunity for leachate generation and contaminant migration.

15. Figures 1-3, 1-4, 1-5, 1-6, and 1-7: Labeled contours should be referenced to a datum such as "feet above NGVD."

16. Page 1-13 Third bullet What is the estimated amount of oils sprayed on the fly ash piles? What is the basis for the estimate of 1000 kg of uranium contained in this oil?

17. Page 1-13: The 1st bullet item implies that borehole 11 is in the west-southwest portion of the Inactive Fly Ash Disposal Area. Figure 1-5, however, depicts borehole 11 in the southeast portion of this area.

18. Page 2-1, Section 2.2: Based on discussions during the October 30, 1990 meeting/conference call between DOE, OEPA, and USEPA, the concept of limiting risk from a single operable unit to 25% of the total allowable risk will be eliminated and allowable risk will not be apportioned to each operable unit based on the quantity of specific contaminants within each operable unit. It is assumed that this document will be revised accordingly to incorporate this concept.

19. Page 2-2, Section 2.2.1: The point of compliance should be considered to be the nearest actual or potential receptor location (under current or future use scenarios) for each exposure pathway, not just the nearest identified receptor location. This means the compliance point would be anywhere within the boundary of the waste unit for soil exposures or any point directly beneath the waste unit for groundwater exposures. Also, Ohio EPA does not agree with DOE's definition of future land use being defined as that land use 100 years from the present. Future use is any land use that occurs in the immediate future and beyond and which under a no action scenario could expose populations to contaminants. Therefore, the assumptions made in the risk assessment relating to the 100-year future use must be changed to be consistent with a traditional future use scenario.

20. Page 2-2, 3rd paragraph: A baseline risk assessment is referred to but is not keyed to reference.

21. Page 2-3, Section 2.2.4, 1st paragraph: As stated in previously submitted OEPA comments, the USEPA no longer uses the term "cancer potency factor" in risk assessments. It has been replaced by the term "cancer slope factor" to refer to carcinogenic risk.

22. Section 2.2.4, 4th bullet: As stated in previously submitted OEPA comments, the NCP states that the 1×10^{-6} risk level shall be used as the point of departure for determining remediation goals when ARARs are not available or are not sufficiently protective. The DOE does not appear to be considering $10-^{-6}$ as the point of departure but is content to use anything that falls within the acceptable cancer risk range (10^{-4} to 10^{-6}) specified by the NCP while providing no justification for doing so.

23. Page 2-3, Section 2.2.2: Absent a complete RI for Operable Unit 2, OEPA reserves its judgement as to the completeness of the list of potential contaminants of concern.

24. Page 2-3, Section 2.2.4: "Cancer Potency Factors" are now referred to as "Slope Factors". Please use the correct terminology.

25. Page 2-6,, top bullet item: While the acceptable cancer risk range specified in the NCP is 1×10^{-4} to 1×10^{-6}, the NCP also states that the 1×10^{-6} risk level shall be used as the point of departure for determining remediation goals when ARARs are not available or are not sufficiently protective. DOE does not appear to be considering 10^{-6} as the point of departure but is content to use anything that falls within the range while providing no justification for doing so. This is inappropriate and inconsistent with the NCP and therefore, unacceptable to Ohio EPA.

26. Page 2-6, Section 2.2.5: See Comments 1, 8, and 25 above.

27. Page 2-6, Section 2.2.5.1: DOE must use USEPA's most recent quarterly Health Effects Assessment Summary Tables document (HEAST) when calculating carcinogenic risks for radionuclides in air, soils, and groundwater and not use dose limits based on DOE Order 5400.5. In addition, calculations must be based on a 10^{-6} excess lifetime cancer risk.

28. Table 2-1: Chapter 3 of the DOE Task 12 report - Development of Alternatives (Prepared as Part of the Feasibility Study for the FMPC) Revision 1, December 1988, indicates that the following constituents of concern were detected in OU-2: organic compounds: 2-methylnapthalene, pyrene; HSL Inorganics: aluminum, calcium, iron, magnesium; and radionuclides: technetium (Tc-99). These constituents are not included in Table 2-1.

29. Page 2-6, Sections 2.2.5.3 and 2.2.5.4: The state of Ohio also has acute and chronic water quality criteria for surface water bodies which are enforceable and constitute state ARARs. These criteria must also be presented in this document.

30. Page 2-7, Figure 2-1: See Comment #2.

31. Page 2-8, Figure 2-1, Groundwater, Environmental Protection: Stating that biota are not exposed to contaminants in groundwater is inappropriate since groundwater may be pumped to water livestock and gardens. Biota may also be exposed to the contaminants in groundwater at seeps in the banks of surface waterways such as the Great Miami River and Paddys Run. The remedial action objectives should include the prevention of such exposures at levels above acceptable risks.

32. Page 2-9, Section 2.2.5.5.: As stated in comments above and as discussed at the October 30, 1990 meeting, RAOs for radionuclides must be derived in a manner consistent with USEPA's HEAST document using 10^{-6} as the point of departure for assessing acceptable risks. This requires that Table 2-3 be modified accordingly.

33. Page 2-9, 2nd paragraph: Is the "sum" rule applied in anyway at this site?

34. Page 2-9, Section 2.2.5.5. and Tables 2-4 and 2-5: Fourteen (14) organic compounds and one (1) inorganic analyte listed in Table 2-1 as chemicals of potential concern are not listed in Tables 2-4 and 2-5.

35. Page 2-9, Section 2.2.5.5, first sentence: Concern for past and present potential for constituents of OU-2 to enter the underlying Great Miami Aquifer should be included.

36. Page 2-9, Section 2.2.5.5: Remedial action objectives for groundwater specify that releases should not exceed MCLs and risk-based derived cleanup levels. It is not clear to what media or medium groundwater is being released.

37. Page 2-11, Table 2-4: For any and all carcinogenic compounds that have a do not have final MCLs, DOE must consider the RAO to be the 10^{-6} cancer risk level. In addition, for those compounds (carcinogens and noncarcinogens) listed in this table that have a non-zero MCLG, this MCLG must be considered as an RAO unless the value given in the table is lower than the MCLG. A few compounds listed in this table have both Reference Doses and cancer Slope Factors which should be used to derive groundwater RAOs (e.g., Bis (2-ethylhexyl) phthalate, Chlordane, Methylene Chloride, and Tetrachloroethene). Other compounds whose ingestion Reference Doses were not listed in Table 2-4 include: Acenapthene (RfD = 0.06 mg/kg/day); Carbon disulfide (RfD = 0.1 mg/kd/day); 2-n-butylphthalate (RfD = 0.1 mg/kg/day); 1,1-Dichloroethane (RfD=0.1 mg/kg/day); and Di-n-Octylphthalate (RfD = 0.02 mg/kg/day. These RfDs should be used to derive groundwater RAOs for the respective compounds. All of the above changes should also be made to Appendix B.

38. Page 2-15, Table 2-5: Table 2-5 shows the groundwater remedial action objectives of Operable Unit 2 for inorganic contaminants. The table fails to include several inorganic contaminants (barium, chromium, selenium, etc.) which have MCls and have been sampled in monitoring wells on the FMPC. Since little information is provided as to the types and extent of contamination within Operable Unit 2, one must assume the potential presence of any of these compounds and the need for their respective FMPC action levels.

39. Page 2-16, Table 2-6: This table should also list Ohio's surface water quality criteria which consitute ARARs for the FMPC.

40. Page 2-17, Section 2.3.3 and 2.3.4: Section 2.3.3 states that the Containment General Response Action would utilize isolation techniques such as run-on/runoff control, and capping. Section 23.4 states that the Containment With Treatment General Response Action is similar to containment, with the exception that leachate could be controlled by subsurface flow control. The 4th and 5th paragraphs on page ES-5 contradict these statements. Paragraph four states that isolation techniques include runon/runoff control, capping, and/or subsurface control. The fifth paragraph states that the difference between containment and containment with

treatment is that the waste would be stabilized in situ prior to isolation. No reference in the fifth paragraph is made to subsurface controls. Which general response action description is correct? In addition, Figures 2.2 includes "perched groundwater/wastewater treatment." This was not mentioned in either Section 2.3.4 or the 5th paragraph on page ES-5.

41. Page 2-17, Section 2.3.4: Again this seems to define treatment as "leachate controlled by subsurface flow control." Is this treatment? Is this the same treatment described in Section 2.3.5? Treatment should be clearly defined.

42. Figure 2-2, General Response Action - Institutional Controls: The Process Option physical barriers should be "potentially applicable."

43. Figures 2.2, 2.3, and 2.4, Remedial Technology - Perched Groundwater/Waste Water Treatment: This remedial technology includes only a partial list of available process options. Other treatment technologies such as, chemical precipitation, activated carbon absorption, and air/steam stripping should be considered.

44. Figures 2-2, 2-3, and 2-4: Technologies and process options cannot be screened out merely because they are "not required for sanitary landfill waste." Instead, technologies and process options should be eliminated based on their inability to be effective in protecting human health and the environment (likelihood of meeting appropriate RAOs) or because they are difficult, inappropriate, or impossible to implement. If a release from a waste unit occurs, then appropriate actions need to be taken no matter what the waste is. Because of the possibility of mixed wastes being present in the sanitary landfill, consideration should be given to in-situ vitrification.

45. Page 2-36, last paragraph: Although tests conducted as part of the Weston Characterization Investigation Study (CIS) indicated that the sanitary landfill wastes were not characteristic hazardous wastes, the new TCLP procedure may likely show that the wastes found in the landfill are hazardous.

46. Page 2-36, Table 2-7: The Remedial Technology Subsurface Flow Control is missing from this table.

47. Page 2-37, last paragraph: This paragraph states that testing for hazardous characteristics was performed under the Weston CIS and the results of these tests indicated no hazardous wastes present in the Lime Sludge Ponds. However, the preceding paragraphs states that the concentration of organic chemicals is low and hazardous constituents are not present in concentrations that cause concern. In addition, perched groundwater/wastewater treatment is included for the Containment/Treatment Response action. Does this imply that there are hazardous constituents in the perched groundwater/wastewater and not in the lime sludge?

48. Page 2-38, 2nd paragraph: Does "non-treatment" refer to thermal treatment only, or all types of treatment? Also, this section states that "the preference of non-treatment of these large volumes, low-concentration waste is based on data. ." What data are referenced, and what is the basis for this preference?

49. Page 2-38, 2nd paragraph: This section states that thermal treatment is eliminated from consideration for the Southfield/Fly Ash areas based on the low concentration data and "on information provided in Section 1.5 of EPA guidance for conducting RI/FS." What is the extent of data (sampling depths and number of sampling points) in these waste units? The third bullet on page 1-13 states that elevated levels of uranium were found in the Inactive Fly Ash Disposal Area during the 1987 Weston CIS. These levels are <u>suspected</u> to be related to the spraying of uranium contaminated waste oils on the waste unit as a dust suppressant. The last paragraph on page 1-13 also states that this procedure was utilized on a periodic basis on the Active Fly Ash Pile. Also, the Inactive Fly Ash Disposal Area is located on top of a surface water drainage path to Paddys Run (page 1-16).

    In addition, the Southfield was reportedly used for disposal for construction rubble with low levels of radioactivity (page 1-15). These conditions might indicate that undetected caches of contamination exist. These uncertainties should be addressed and evidence of no contamination should be demonstrated prior to elimination of remedial technologies and alternatives.

50. Page 2-38, second paragraph: This document should discuss what is contained in Section 1.5 of the RI/FS guidance and how it applies to DOE's reasons for preferring non-treatment of Southfield/Fly Ash Area wastes.

51. Figures 2-5, 2-6, and 2-7, removal/treatment/disposal general response action: The slurry wall process option should not be eliminated from consideration since, based on the Figures, it is as effective and easy to implement as pumping wells.

52. Figure 2-5, Remedial Technology - Perched Groundwater/Waste Water Treatment: The process options listed do not address organic compounds. Section 2.4.1.1, page 2-36 states that data indicates that the sanitary landfill contains the highest diversity of organics of all the Operable Unit 2 waste areas. See also comment #43.

53. Figure 2-5, 2-6, and 2-7, general comment: Rationale for eliminating process options from further consideration should be described in the text.

54. Page 3-1, second paragraph: The purpose of referencing what appears to be an old Development of Alternatives report is unclear, since alternatives are developed in this September, 1990, Task 12 report. Reference to this 1988 ASI/IT document should be deleted.

55. Page 3-6, first full paragraph: Constructed waste area caps, particularly that of the Sanitary Landfill, must comply with applicable portions of Ohio Administrative Code (OAC) 3745-27-10 through 3745-27-12.

56. Figures 3-2, 3-3, and 3-4: The flexible membrane liner, if any is used, should be shown on the inset cap components diagrams. The liner is mentioned in the text on page 3-6.

57. Page 3-10, Section 3.1.2.2: The landfill area to be capped or otherwise remediated must include the estimated 6000 to 8000 cubic yards of wastes that are buried outside of the five existing cells.

58. Figure 3-4: Section A-A illustrates that the portions of the Southfield waste unit are in direct contact with the Great Miami Aquifer. Is this correct? The implications of this condition should be included.

59. Page 3-10, Section 3.1.2.3, last sentence: This sentence states that the construction of caps to berms may require the relocation of on-site drainage pathways (Paddys Run and the storm sewer outfall ditch. Section 3.1.2.1, last sentence, states that this alternative <u>would</u> require the realignment of these drainage ways.

60. Page 3-11, Section 3.1.2.5: 49 CFR 173 should be listed in Appendix A as a potential action-specific federal ARAR.

61. Page 3-11, Section 3.1.2.7: The nonremoval capping alternative which would result in the realignment of Paddys Run must include, under Permits Required, the substantial requirements of an Army Corps of Engineers approval for such action. This comment applies to <u>all</u> alternatives which involve capping that results in the necessity for realigning Paddys Run.

62. Page 3-11, Section 3.1.3: No data is provided to show the extent of existence of perched groundwater contamination associated with the waste areas in Operable Unit 2 thus leaving the reviewer to assume that no alternative can be eliminated at this stage since groundwater contamination may need to be addressed.

63. Page 3-11, Section 3.1.3, 1st paragraph: The fourth sentence indicates that Figure 3-5 shows a well and wellpoint system that surround the Sanitary Landfill and Lime Sludge Ponds while extending only partially around the fly Ash/Southfield areas. The correct figure reference should be Figures 3-6, 3-7, and 3-8.

64. Page 3-13, Section 3.1.3.1: The first bullet states that the estimated length of the slurry wall surrounding the Sanitary Landfill will be 900 feet, however, using the scale on Figure 3-6 results in a slurry wall length of approximately 2000 feet. Likewise the scales in Figure 3-7 and 3-8 do not yield the same slurry wall length as indicated in Section 3.1.3.1.

65. Page 3-13, middle paragraph: The units of permeability (really hydraulic conductivity) given here are incorrect. The correct units should be cm/s.

66. Page 3-13, last paragraph: There is little point in referencing a document such as the RI report for Operable Unit 2 that neither Ohio EPA nor USEPA has. Absent this report, the Task 12 report must provide the fence diagrams mentioned in this paragraph.

67. Figures 3-6, 3-7, and 3-8: See Commment #56 above.

68. Figure 3-6, 3-7, and 3-8: The dashed line in Section A-A implies that a component of the slurry wall exists below the sand lens. In addition, the well point system is not included in Section A-A. Also See comment #77.

69. Page 3-17, last paragraph: As mentioned by Ohio EPA in several comment letters on previous DOE submittals regarding EE/CA documents and Task 12 reports, a level of 30 ug/l for uranium represents a carcinogenic risk outside of the 10^{-4} to 10^{-6} risk range (30 ug/l represents a 2 x 10^{-4} risk) and its use as an RAO is, therefore, unacceptable. Further, the NCP also states that the 1 x 10^{-6} risk level shall be used as the point of departure for determining remediation goals when ARARs are not available or are not sufficiently protective. Further, the methodology used to arrive at this value for total uranium is consistent with USEPA's HEAST document. Based on the October 30, 1990 meeting, DOE will evaluate risks consistent with HEAST.

70. Page 3-17, Groundwater Treatment: As stated in previous OEPA comments, this section states that the proposed concentration of total uranium is 20 pCi/l which was calculated using the 50-year CEDE limit of 4 mrem from an annual intake of radioactive materials in drinking water. This is well above the 1 x 10^{-6} risk level that the NCP uses as the point of departure for assessing long-term cleanup goals.

71. Page 3-17: What differentiates "water treatment" from "groundwater treatment"? It is not clear if water treatment applies to standing water and groundwater treatment applies to perched groundwater.

72. Page 3-19, 2nd paragraph and page 3-32, 1st paragraph: Do the volume calculations assume a pumping range of 20 gpm, 40 gpm, or some value in between? Since the projected pumping rates are expressed as a range, shouldn't the volume calculations for 1 year of pumping also be expressed as a range?

73. Page 3-20, Section 3.1.3.4: This section should include the same spatial requirements that were encountered in Alternative 1.

74. Page 3-20, Section 3.1.3.7: See Comment #61 above.

75. Page 3-22, 1st paragraph: Alternative 3 utilizes a passive groundwater collection trench to control releases to the underlying aquifer. This system "would capture horizontal movement of leachate in the sand lens before it escapes into the sand and gravel aquifer". This alternative does not address the possible vertical movement of leachate or the potentially contaminated soils beneath these wastes units.

76. Page 3-22, Section 3.1.4.1: The lengths of trench necessary to surround the Sanitary Landfill and the Lime Sludge Ponds do not correlate with the horizontal scales depicted in Figures 3-11 and 3-12.

77. Figures 3-11 and 3-12: The Section A-A implies that a component of the interceptor trench exists below the waste units. The dashed line in the sections may be the correct way to depict a technical section, but, nontechnical parties will review this document. Therefore, an explanation should be included in the text to prevent a misinterpretation of the design.

78. Figures 3-11, 3-12, and 3-13: See Comment #56 above.

79. Figures 3-14: The on-site, above ground disposal facility depicted in Figure 3-14 is not described in detail in the text.

80. Page 3-27, Section 3.1.5: The substantive provisions of OAC 3745-27 must be met for on-property disposal of any solid wastes as the term is defined under state law.

81. Page 3-31, second paragraph: The diagrams discussed in the second paragraph should be included in this document so that the reader may more readily understand the geological characteristics of the area in question, particularly since neither USEPA nor Ohio EPA have possession of the RI report for Operable Unit 2.

82. Page 3-34; 1st full paragraph and page 3-44; 3rd paragraph: "Soil washing is effective in the removal of organics and volatile and nonvolatile metals." What volatile metals are present in this waste unit? Mercury? Typically, a distinction is made between volatile organics and nonvolatile organics. The distinction between volatile and nonvolatile metals here is not clear.

83. Page 3-35, 1st and 2nd full paragraphs: This section should include provisions for leachability testing of "stabilized" solid wastes.

84. Page 3-45, 2nd paragraph: See Comment #85.

85. Section 3-2: page 3-2, Table 3-1; page 3-3, Table 3-2; and page 3-4, Table 3-3.: General Response Actions - Alternative 5 does not include access restrictions and monitoring. Both these technology types should be included in this alternative. Long-term monitoring will be used to determine the effectiveness of the alternative implemented. In addition, the technology type: runoff control should include run-on control as stated in text.

86. Chapter 5, General Comment: The numerical ranking factor associated with each alternative's "favorability" should be included in the discussion of each rating category. Including scores in the text will allow the reader to more easily associate the justification for each score with the numerical ranking given. Simply providing scores in a tabular form does not allow the reviewer to assimilate justifications with scores.

In addition to those pages and sections of the Task 12 report cited below, Comments 89-93 also apply to the criteria ranking of <u>all</u> areas within Operable Unit 2, not just the Sanitary Landfill.

87. Page 5-2, Section 5.1.2.1: Justifying the rank of alternatives based on stating "contaminant concentrations in the perched groundwater are low" is inappropriate without data provided to support such statements.

88. Page 5-2, last paragraph: Stating that "activity associated with this alternative is on property, agency approval is less likely to be a problem than for off-site activities" is not necessarily true. Alternatives which require on-site disposal or leave contaminants in place should be ranked lower than or equal to off-site disposal alternatives (such as disposal at Nevada Test Site or other existing approved radioactive waste disposal site) due to their being less likely to receive state approval since the site is located near a metropolitan center, is located over a sole source aquifer, and would not be a preferred site for disposal. This comment applies to all alternatives which have the final disposition of waste occurring on-site. Also, the fact that capping alternatives may require the realignment of Paddys Run and thus the approval of the Army Corps of Engineers should be included in this discussion. This comment applies to all alternatives which would require the realignment of Paddys Run.

89. Page 5-4, Section 5.1.5.1, second paragraph: The assumption that the long term effects of on-site disposal are equivalent to off-site disposal is faulty. An off-site disposal site such as the NTS is superior to Fernald in terms of demographics, meteorology, hydrology and security. The final disposition of wastes on-site requires the wastes to be stored near a large metropolitan center as well as being located above a sole source aquifer. These factors make the use of an off-site disposal facility superior to the on-site disposal of contaminated material.

90. Page 5-6, top partial paragraph: See Comment #91 above.

91. Page 5-6, Section 5.1.6.2: Unless a new off-site disposal facility for FMPC wastes is contemplated, it should be assumed that no maintenance will be required for an off-site disposal facility since long-term management, monitoring and maintenance are already committed at sites such as NTS regardless of the presence of FMPC wastes.

92. Page 5-2, Section 5.1.2.1: The determination is made that Alternative 1 ranks evenly with Alternatives 2 and 3 for long term environmental protection. This conclusion is based on the low concentrations of contaminants in the perched groundwater. As stated in previous OEPA comments, a more appropriate and complete objective of the final remedial alternative should be to prevent migration of contaminants to environmental media, regardless of whether or not a public health or environmental standard is exceeded. With this in mind, Alternatives 2 and 3 would provide better long-term environmental protection than Alternative 1. Further, provisions for subsurface flow control in Alternatives 2 and 3 would also provide better long-term environmental protection. See also comments #49 and #99.

93. Page 5-2, 5th paragraph: See Comment #59.

94. Sections 5.1.3.1, 5.1.4.1, 5.2.2.1, 5.2.3.1, and 5.2.4.1: See comments #92 and 49.

95. Page 5-4, Section 5.1.5.1: This section states that Alternative 4 ranks higher than Alternative 5 because Alternative 5 requires off-site transport for disposal. This section also states "Alternative 5 is ranked as even with Alternative 4 because proposed off-site disposal facilities are comparable with those planned for on-property disposal." These two statements do not address a specific component of "Effectiveness," therefore, it is difficult to understand the reasoning.

96. Page 5-5, 1st full paragraph: It is left to the reader to determine that administrative problems and public acceptance problems anticipated for Alternative 5 result in a lower "Agency Approvals" implementability ranking in comparsion to that Alternative 4 (Table 5-2). In addition, this section states that "Alternative 4 ranks slightly higher than Alternative 5 as a result of these considerations". Table 5-2 indicates that Alternative 4 scored a "5" in Agency Approvals, whereas Alternative 5 scored a "2". According to this methodology and ranking system, a "5" is more than "slightly" higher than a "2".

97. Page 5-5, Section 5.1.6.1, 1st paragraph: In contrast to what is stated in the text, the level of effectiveness for short-term public health and environmental protection for Alternative 5 is lower than that of Alternative 4 due to increased possibility of exposure during offsite transport. The risk of worker exposure to hazardous, mixed, and low-level radioactive wastes during removal, treatment, and handling in both Alternatives 4 and 5 is essentially the same.

98. Page 5-6, 1st paragraph: The wording "as even with" should be corrected to better illustrate effectiveness comparisons.

99. Sections 5.3.2.1, 5.3.2.2, 5.3.3.1, 5.3.3.2, 5.3.4.1, 5.3.4.2, 5.4.2.1, 5.4.2.2, 5.4.3.1, 5.4.3.2, 5.4.4.1, and 5.4.4.2: These sections overlook the fact that contamination can also infiltrate into the Great Miami Aquifer in Alternative 1. In addition, Alternative 1 does not provide for the mitigation of horizontal contaminant migration, whereas, Alternatives 2 and 3 utilize subsurface flow control. An explanation of Alternative 1's higher long term public health and environmental effectiveness ranking than that of Alternatives 2 and 3 is necessary. Alternatives 2 and 3 provide: a more proactive approach to leachate control, treatment of groundwater, and stabilization and/or solidification. These approaches may be more appropriate given the placement of uranium contaminated waste oils in the waste units. See also comments #49 and 92.

100. Page 5-12, Section 5.3.3.2; page 5-13, Section 5.3.4.2: Rationale for the reduction of Alternative 2 and 3 (Inactive Fly Ash Disposal Area) constructability, reliability, and maintainability in comparison to the other waste units should be included here. Why are these alternatives more difficult to implement in the fly ash disposal areas and the southfield than in sanitary landfill and the lime sludge ponds?

101. Page 5-15, Section 5.3.6.2: Why doesn't the constructability ranking increase for Alternative 5 in comparison to alternative 4 (see Table 5-4)? This is an example of the inadequate flexibility of the "1-5" scale.

102. Page 5-16, Section 5.4.2.1: This section should evaluate the effectiveness of Alternative 1 based on: short term public health and environmental protection, long term public health and environmental protection, and reduction in toxicity, mobility and volume. An explanation of the rankings in Table 5-5 is necessary for the comparison of alternatives.

103. Page 5-16, Section 5.4.2.1, last sentence: It is questionable that Alternative 1 would be as effective as Alternative 2 and 3. This equal effectiveness is based on the assumption that the sand lens/lenses are continuous or connected and provide a drainage way below the Active Fly Ash Pile.

104. Page 5-17, Section 5.4.3.2 and 5.4.4.2: These sections state that Alternatives 2 and 3 would be difficult to implement due partially to the low concentration of contaminants in the perched water. Sections 5.4.3.1 and 5.4.4.1 state that these alternatives would not be effective due to the lack of perched water. These statements appear to be incomplete or conflicting.

105. Page 5-20, Section 5.5.2.1: The second sentence states that the Southfield lacks perched water zones while also indicating that removal of perched groundwater over a short time frame would be of limited effectiveness. First, what media contains perched groundwater if there are no perched water zones? Second, given the possibility that contaminated dust suppressant oils and construction rubble which may have contained low levels of radioactivity are present in the Southfield, wouldn't Alternatives 2 and 3 be more effective in controlling subsurface flow and treating groundwater?

106. Page 5-21, Section 5.5.2.1, last sentence: See Comment #92.

107. Page 5-21, Section 5.5.2.2 and Section 5.5.3.2: See Comment #92.

108. Page 5-24, Section 5.6: Please clarify the first and third paragraphs in this section as to how Sections 5.1 through 5.5 can apply to both Alternatives 4 and 5.

109. Page 5-26, Table 5-1: Explain how Alternative 1 can be considered to be as effective as Alternatives 2 and 3 when Alternatives 2 and 3 utilize treatment but Alternative 1 does not.

110. Table 5-1, General: Phrases such as "moderately low," "moderately high," "low," and "effective," "favorable," etc., mean nothing absent a numerical score with which to associate these qualitative ranking phrases. This report should clearly define the numerical ranking scale and descriptive phrases that go along with them.

111. Tables 5-2 through 5-6: The presentation of rankings, which at best are questionable, is compounded by the fact these scores were not included in the text which may have provided their respective justifications. The result is a document that is inconsistent with previous Task 12 reports for other operable units and one that is difficult to effectively review.

112. Page 5-36, Table 5-2, Short Term Public Health: The short term public health effectiveness of Alternative 1 should not be equal to that of the No Action Alternative since Alternative 1 will involve the use of heavy equipment, the resuspension of dust and an increase in local traffic as materials are brought on-site.

113. Page 5-36, Table 5-2; page 5-37, Table 5-3:

- The rankings for Alternative 0's Short Term Public Health, Short Term Environmental Protection and Agency Approvals (all scored a "5") seem to be unrealistically high. Migration pathways to the environment and exposure pathways to the public are not mitigated in this alternative. Why then does this alternative score the highest rating, 5, for Agency Approvals, Short Term Public Health and Environmental Protection?

- The rationale for Alternatives 1, 2, and 3 having equal scores of 2 in Reduction in Toxicity, Mobility and Volume should be included in the text.

- The rationale for a decrease in Agency Approval for Alternatives 2 and 3 in comparison to Alternative 1 should be included in the text.

114. Page 5-36, Table 5-2, Long Term Effectiveness: Both the long term public health and environmental effectiveness of Alternative 5 is superior to that of all other alternatives including Alternative 4 as previously mentioned. The ranking for Alternative 5 should reflect this.

115. Page 5-36, Table 5-2, Agency Approvals: The likelihood of any agency approving the acceptance of the No Action Alternative is very low and this is not appropriately reflected in its rank (score should be 1). The ranking of agency approval for Alternatives 4 and 5 are questionable. These scores should more appropriately be reversed depending upon DOE's definition of "off-site disposal".

116. Page 5-37, Table 5-3: See Comments #112, 114, 115.

117. Page 5-38, Table 5-4: See Comments #114 and 115.

118. Page 5-39, Table 5-5: See Comments #114 and 115.

119. Page 5-40, Table 5-6: See Comments #112, 114, 115.

120. Page 5-38, Table 5-5; page 5-39, Table 5-5:

- The rationale for the decrease in the score for Long Term Public Health and Environmental Protection for Alternatives 2 and 3 in comparison to Alternative 1 should be included in the text.

- Why is effectiveness for Short Term Public Health and Environmental Protection reduced for Alternative 4 in comparison to Alternative 4 for the Sanitary Landfill, Lime Sludge Ponds, and Southfield?

- The rationale for the decrease in the implementability scores for Alternatives 2 and 3 should be included in the text.

- See also comment #113.

121. Page 5-40, Table 5-6:

- The rationale for the increase in the Short Term Public Health effectiveness score to 5 for Alternatives 2 and 3 in comparison to all other waste units should be explained in the text.

- The rationale for the decrease in the score for Long Term Public Health and Environmental Protection for Alternatives 2 and 3 in comparison to Alternative 1 should be included in the text.

- The rationale for the decrease in the implementability scores for Alternatives 2 and 3 should be included in the text.

- See also comment #113.

122. Tables 5-2, 5-3, 5-4, 5-5, and 5-6: Alternatives 4 and 5 result in equal rankings for Long Term Public Health and Long Term Environmental Protection. Alternative 5 would be superior to that of Alternative 4 since contaminated soils, sludges, and fly ash, etc. will be disposed of off-site. Contaminated materials will remain on-site in Alternative 4 (near a larger metropolitan center as well as being located above a sole source aquifer), thereby posing potential long-term threats to human health and the environment.

123. Tables 5-2 through 5-6: The construction of an off-site disposal facility is not necessarily a requirement since a pre-existing facility may be used. The scoring of constructability for Alternative 5, therefore, should improve from that of Alternative 4.

124. Tables 5-4, 5-5, and 5-6: The rationale for the Maintainability of Alternatives 2 and 3 ranking much lower than that of Alternative 4 should be included in the text. The Maintainability of Alternative 4 requires long-term management, monitoring, and maintenance of an on-site disposal facility, however, results in a score of "4".

125. Sections 6.1.1, 6.2.1, 6.3.1, 6.4.1, and 6.5.1: These sections state that the primary reason for retaining Alternative 1 for further consideration is its implementability. This rationale is not in accordance with the methodology outlined in Figure 4-1. This conflict is an example of the inherent problem with this screening analysis. The composite scores are the sums of equally weighted factors such as Constructability and Long Term Environmental Protection. The components of the alternatives' effectiveness and implementability should not be equally "weighted." This problem is the reason Alternative 1 and Alternative 0 result in relatively high composite scores.

126. Page 6-5, Section 6.6: The deletion of Alternatives 2 and 3 for all areas in Operable Unit 2 is unjustified, since insufficient detail was presented in describing perched groundwater contamination and waste area geology. A revised document which provides more information on these areas may prove that these alternatives can be eliminated from consideration, but at present, insufficient justification is provided.

127. Appendix A, page 1-5, second bullet: DOE's statement that "OEPA has been developing extensive solid and hazardous waste regulations" should be changed to "OEPA has developed extensive...."

128. Appendix A, page A-5, third bullet: This item should be changed to read 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.

129. Appendix A, page A-5, fifth bullet: Not all portions of OAC 3745-9 apply exclusively to new wells intended for human consumption. For example, OAC 3745-9-10 covers the abandonment of test holes and wells and constitutes an action-specific state ARAR for remedial actions involving the installation of <u>any</u> borings and wells (whether for water supply or monitoring purposes) at the FMPC. This should be noted in the text here and included in Table A-1.

130. Appendix A, page A-6: MCLGs and proposed MCLs must be listed as federal TBC criteria and included in Table A-1. Also, in the first bullet on this page, the phrase "cancer potency factors" should be changed to "cancer slope factors" to reflect the current nomenclature given in USEPA's Human Health Evaluation Manual.

131. Appendix A, Table A-1, page A-10: The description for OAC 3745-81 only mentions limits set on radiological parameters and not on other organics and inorganics that have been found or may be present in the Operable Unit 2 study area. This deficiency must be corrected. In addition, the OAC citation for Ohio's radiation protection standards was omitted from item "c." This citation should be provided.

132. Appendix A, Table A-1, page A-11: A location-specific state of Ohio ARAR which should be listed in this table is OAC 3745-27-07 (gives location criteria for solid waste disposal facilities).

133. Appendix A, Table A-1, page A-12: Again, OAC 3745-27 should be cited here as an action-specific state ARAR for operation and closure of solid waste disposal facilities.

134. Appendix B, Table B-2: See Comment #34.

135. Appendix B, Table B-3: See Comment #34.

136. Appendix B, Table B-6: See Comment #34.

137. Appendix B, Table B-8: See Comment #34.

138. Appendix B, Table B-3: The following constituents of concern listed in Table 3.9 of the DOE Revision 1, December 1988, Task 12 Report - Development of Alternatives (Prepared As Part Of The Feasibility Study For The FMPC) are not included in Table B-3: thorium-230, butyl benzyl phthalate, and HSL inorganics - aluminum, calcium, iron, and magnesium. Were these constituents determined to be not present in the July 1990 RI for OU-2? Ohio EPA does not have access to this document.

139. Appendix B, Table B-1 and B2: The following constituents of concern listed in Table 3.10 of the DOE Revision 1, December 1988, Task 12 Report - Development of Alternatives (Prepared As Part Of The Feasibility Study For The FMPC) are not included in Tables B-1 and B-2: technetium (tc-99), thorium-230, arsenic, and dibenze (a,h) antracene. Were these constituents determined to be not present in the July 1990 RI for OU-2? Again, Ohio EPA does not have access to this document.

140. Appendix B, Tables B-4, B-5, and B-6: The following constituents of concern listed in Table 3.11 of the DOE Revision 1, December 1988, Task 12 Report - Development of Alternatives (Prepared As Part Of The Feasibility Study For The FMPC) are not include in Tables B-4, B-5, and B-6: thorium-230, arsenic (noted in upper fly ash pile), and HSL inorganics: aluminum, calcium, iron, magnesium. Were these constituents determined to be not present in the July 1990 RI for OU-2? Again, Ohio EPA does not have access to this document.