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**DOE RESPONSES TO U.S. EPA AND OEPA
COMMENTS ON THE INITIAL SCREENING OF
ALTERNATIVES FOR OPERABLE UNIT 2 TASK 12
REPORT SEPTEMBER 1990 FMPC-0212-4
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REPORT**

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FOR OPERABLE UNIT 2**

TASK 12 REPORT

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INITIAL SCREENING OF ALTERNATIVES: TASK 12
EPA & OEPA COMMENTS
DOE RESPONSES

EPA COMMENTS

GENERAL COMMENTS

EPA - 1. Methods used in establishing remedial action objective (RAO) cleanup goals are incorrect. The NCP requires the use of maximum contaminant levels (MCLs) for remediation goals when only one compound is the source of contamination. At the Fernald site, many contaminants contribute to the site's risk. Consequently, RAOs must be based on all contaminants and on summation of carcinogenic and non-carcinogenic effects. Therefore, the 10^{-6} carcinogenic risk level and 1.0 Hazard Index (HI) level must be re-evaluated based on the summation of risks from all contaminants. More flexibility must be inherent in the RAO to reflect the differing levels of contamination in the different operable units, in order to achieve an overall risk level.

Response: Remedial Action Objectives are an issue that will take some guidance from both DOE & EPA Headquarters. In view of guidance on cleanup levels, we have written a position for developing preliminary RAOs that will allow us to proceed through the FS process on schedule.

RAOs are contaminant-specific, medium-specific goals for protecting human health and the environment (EPA 1988a,b), thus they are an integral part of evaluating the ability of a remedial alternative to achieve an acceptable risk level. The Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA states that "objectives should be as specific as possible but not so specific that the range of alternatives that can be developed is unduly limited."

RAOs are normally determined on the basis of the results of the baseline risk assessment. The objectives must address the contaminants of concern and the exposure routes and receptors identified for Operable Unit 1. However, in a situation where a site is divided into operable units, the operable unit-specific RAOs must still be based on knowledge of the site-wide risks.

The goal of the FMPC RI/FS is to manage risks from a site-wide perspective. Because many preliminary remediation goals are being developed before the completion of site characterization and a site-wide risk assessment, it is difficult to apportion risk levels among operable units. For example, it is not known how many operable units contribute chemical "x" via exposure pathway "y" to receptor "z."

The interim policy for developing preliminary remediation goals is to make use of "readily available ARARs and other criteria, advisories or guidance" as specified in the preamble to the 40CFR300 (EPA 1990a). Where ARARs or TBCs are not available, preliminary remediation goals will be developed based on a 1×10^{-6} risk level. Effort is underway to develop final remediation goals based on the results of a site-wide baseline risk assessment.

This will ensure that final remediation goals account for such concerns as multiple contaminants, multiple exposure pathways, and multiple sources.

When characterization of individual operable units and the site-wide risk assessment are complete, the risk distribution will be evaluated and appropriate adjustments will be made in the operable unit-specific remediation goals.

As stated in the preamble to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (EPA 1990a), chemical-specific applicable or relevant and appropriate requirements (ARARs) will be used to the degree possible to determine remediation goals for the operable unit. Where ARARs do not exist for a constituent, risk-based cleanup goals will be developed.

The ISA developed preliminary remediation goals based on Chemical Specific ARARs since information from the baseline risk assessment was not yet available.

Action: Extensive text revision is incorporated into Chapter 2 of the report.

EPA - 2. The alternatives or response actions developed in anticipation of the Feasibility Study (FS) are meant to analyze the "scope characteristics and complexity of site problems" (40 CFR 300.430(e)(2)). The alternatives proposed in this report are very limited and fail to contain analysis for any of the above mentioned traits. Further, one or more innovative treatment technologies are required for comparison of the alternatives (40 CFR 300.430(e)(3)). The alternatives suggested are very simple (not innovative), as evidenced by the small amount of analysis needed to eliminate alternatives.

While it is true that the alternatives are simple, the NCP section cited does state that "when appropriate, treatment should be considered..." In the case of Operable Unit 2, the wastes are characterized by high volume of waste material and low concentrations of contaminants. Treatment is not likely to be cost effective. However DOE does concur that the document should consider more treatment technologies in the alternative development process. Therefore the document has been revised to consider treatment technologies and process options, and development of waste treatment alternatives.

Action Document has been revised as stated in response.

EPA - 3. Preliminary Goals for Remediation are required in developing alternatives during the FS. Initially, preliminary remedial goals are developed and are based on a available information, such as chemical specific ARARs or the point of departure for the range of acceptable risk (40CFR300.430(a)(2)(i)), ARAR analysis is required by both U.S. EPA guidance (OSWER Directive 9355.3-01, 4-3) and the NCP (40CFR300.430(e)(2)(i)(A)), but is grossly insufficient in the ISA report.

Response: This comment is similar to the first comment. Preliminary remediation goals, or RAOs, are based on ARARs, TBCs, and toxicity data. RAOs presented in the report are based on ARARs/TBCs (Table 2-2) and toxicity data from HEAST and IRIS for risk-based numbers (e.g. Table 2-4).

Action: Clarifications to text have been made so the reader is aware EPA guidance has been used.

EPA - 4a. The NCP states (40CFR300.430(e)(7)) states that alternatives may be eliminated during screening of alternatives based effectiveness, implementability, or grossly excessive cost. The ISA report incorrectly eliminates alternatives without the analysis required above. U.S. DOE did not support conclusions and decisions to eliminate alternatives. There are no quantifiable terms for decreasing toxicity, mobility, or volume through treatment. Additionally, U.S. DOE did not adequately address effectiveness.

Response: DOE disagrees. Section 5.0 of the ISA Report provides sufficient analysis to develop a basis for elimination of alternatives. The information presented in section 5.0 supports conclusions and decisions to eliminate alternatives. The purpose of the screening evaluation is to reduce the number of alternatives that will undergo a more thorough and extensive analysis. Defined alternatives are evaluated against the short and long-term aspects of effectiveness, implementability, and cost. During the detailed analysis phase, the alternatives will be evaluated against nine specific criteria and their individual factors rather than the general criteria used in screening (reference CERCLA guidance for RI/FS, section 4.3.2). Therefore, the ISA Report adequately addresses effectiveness, implementability, and cost. Also, the alternatives (except for the Sanitary Landfill and Lime Sludge Ponds) did not consider treatment; therefore there is not quantifiable reduction of toxicity, mobility or volume through treatment.

Treatment Technologies were previously not considered in any of the nonremoval alternatives since insitu treatment was thought to be not practical for Operable Unit 2 Wastes (reference CERCLA guidance for RI/FS, section 1.5); however the document will be revised as indicated in response to EPA comment 2.

Action: The text will be revised to provide additional detail on the rationale of alternative ranking.

EPA - 4b. The ISA report claims that there are low levels of contaminants in several waste areas of OU2. RI sampling of these units, including the sanitary landfill, are needed before such statements can be made.

Response: The statement in the ISA Report concerning low levels of contaminants in several waste areas of OU2 is based on source sampling from previous investigations. The remedial Investigation Report to be released February 11, 1991 will include the necessary data to substantiate this statement.

Action: None required.

EPA - 5. Approval for off-site pumping is not a justification for selecting or not selecting such an alternative.

Response: Alternatives involving discharge of treated effluent were ranked lower for administrative feasibility due to permitting requirements only. The fact that the permits are needed does not disqualify an alternative from being carried into detailed analysis.

Action: None required.

EPA - 6. The point of departure for establishing carcinogenic risk is 10^{-6} . The NCP requires justification if a lower level of protection is to be used for RAOs.

Response: DOE agrees. The ISA originally had one-fourth of 1×10^{-6} , however the document has been revised to show the point of departure referenced in the NCP (1×10^{-6}).

Action: The document has been revised as stated in the response.

EPA - 7. The use of 25 percent of the 10^{-6} or HI-1 concentration levels for cleanup goals is not necessarily protective of human health and the environment. Once RAOs are correctly established, a lower value could be used for cleanup if desired. However, the cumulative effect of all operable units must be reviewed to determine the effect of total site remediation on human health and the environment.

Response: For the ISA work, we are presenting preliminary remediation goals that can be used as screening tools for evaluating alternatives. These goals are based primarily on "ARARs... other criteria, advisories or guidance" (55FR8713). Note that this practice is well-described in the preamble to the NCP and proposed RCRA subpart S regulations. Also note that the revised text points out the preliminary remediation goals may be altered based on the results of the site-wide risk assessment.

Action: Major revisions to the text will clarify this point.

EPA - 8. The sanitary landfill, lime sludge ponds, fly ash piles, and southfield have been addressed as similar sources of contamination. In reality, they have different physical characteristics and require different mechanical means of remediation. It may be necessary to review each source area independently in order to develop area-specific remedial action to be combined into site-wide remedial alternatives. For example, it may be best to cap dry fly ash areas because of low levels of contamination, whereas it may be best to stabilize and remove liquid lime sludge ponds.

Response: DOE disagrees. Each source area is being reviewed independently in order to develop remedial alternatives. Various Technologies/Process options are screened out in section 2.0 of the ISA Report for each waste area based on their physical properties. For example, insitu stabilization is screened out for all waste units except the Lime Sludge Ponds (Figures 2-2 through 2-4). The Fly Ash/Southfield areas do have similar Physical characteristics and are located adjacent to each other. The remediation for these units will likely be similar.

- Action:** Text in all sections (Section 3 in particular) will be separated by waste unit so that remedial alternative development can focus on each specific waste unit.
- EPA - 9.** U.S. DOE must specify whether the storm water retention basins, biodenitrification pond, and waste water treatment facility will be addressed under this operable unit or operable unit 3.
- Response:** The storm water retention basins, biodenitrification pond, and wastewater treatment facility will not be addressed as part of Operable Unit 2.
- Action:** None required.
- EPA - 10.** The Remedial Investigation/Feasibility Study (RI/FS) guidance suggests that technologies and process options should be evaluated. Process options should then be chosen from technologies used to develop alternatives. Figures 2-5 through 2-7 summarize the evaluation of process options performed in Section 2. It would be useful to have a figure in Section 2 or 3 that shows the process options selected for alternative development. If necessary, two process options from a single technology can be used in different alternatives, as was done with the interceptor trenches and pumping wells from the flow control technology.
- Response:** DOE agrees.
- Action:** Text has been added to support the selection of process options, as was done for technologies, and a figure has been added to document the alternative selection process.
- EPA - 11.** There is limited discussion of the on-site disposal facility. The facility has been discussed in other reports, and these reports should be referenced for details. It should be clarified whether the cost listed for the storage facility listed is just for Operable Unit 2 or for all on-site storage.
- Response:** DOE agrees.
- Action:** A more detailed discussion of the on-site disposal facility has been included in section 3.0 of the ISA Report. The costs listed for Alternative 4 in section 5.0 are applicable for on-site disposal of Operable Unit 2 wastes only. This has been specified in the text.
- EPA - 12.** No information is provided for review of cost estimates included in Section 5. Not all of the process options have been selected, so it does not seem possible to have cost estimates accurate to the nearest dollar. At this stage of alternative development, estimates to two significant figures would be more reasonable.
- Response:** Detailed cost information will be presented in the Feasibility Study, Task 15 Report.

Action: Cost data as presented in the Task 12 Report has been revised to estimate to three significant figures rather than two significant figures.

SPECIFIC COMMENTS

EPA - 13. Section 1.5.2.2 and .3, page 10, paragraph 1 and 4: The volume for sludge stored in the South and North Ponds should be recalculated, or text should be revised to discuss only the storage area dimensions, excluding the berms.

Response: DOE agrees.

Action: Sections 1.5.2.2 and 1.5.2.3 have been revised to indicate a volume for the sludge as well as a volume for the berm material.

EPA - 14. Section 1.5.2.4, page 13, paragraph 4: The basis for the estimate of uranium in the oil should be explained or referenced.

Response: DOE agrees.

Action: The DOE Environmental Survey Report and Roy F. Weston CIS has been referenced for the estimate of uranium in the waste oil.

EPA - 15. Section 2.2.4, page 3, paragraph 5: The basis for establishing acceptable intake levels in water must be revised. Several values are not reported accurately or are omitted. U.S. EPA's Integrated Risk Information System (IRIS) and Health Effects Assessment Summary Tables (HEAST) should be reviewed. Information listed in Table 2-4 should be updated.

Response: IRIS and HEAST are currently used for chemical risk-based action levels. IRIS and HEAST are also used in the baseline risk assessments for quantifying both chemical and radiation risks. However, radionuclide action levels are based on the 4-mrem-dose ARAR. (Note: Use of a dose-based ARAR has been recommended by EPA Headquarters for establishing cleanup levels at the Maxey Flats RI/FS site.)

Action: None required.

EPA - 16. Section 2.2.4, page 6, top of page: In accordance with the NCP, the point of departure for target risk levels is 10^{-6} .

Response: DOE agrees.

Action: The 10^{-6} point of departure has been clarified in the text.

EPA - 17. Table 2-2, Page 2-5: Since Table 2-1 lists Ra-226 and Ra-228 as potential radionuclides of concern, the MCL for each (5 pCi/l) must be listed in Table 2-2 as an ARAR.

Response: DOE agrees.

Action: Table 2-2, page 2-5 has been revised to include the MCL of 5 pCi/l for combined radium-226 and radium-228 as stipulated in 40CFR141.15.

EPA - 18. Section 2.2.5, page 6: The requirement of the NCP that the cancer risk be below 25% of the goal set forth in the NCP for all media is addressed by the individual media goals set forth in Figure 2-1 in which each media is allowed to expose individuals to the 2.5×10^{-5} to 2.5×10^{-7} . Additionally, the annual dose limits proposed in this section allows 25 percent of 100 mrem (25 mrem) for each media, instead of 25 mrem for the entire OU2.

Response: Significant changes to the document have been made that make this comment difficult to address. We agree that the dose limit applies to all media. In Operable Unit 2, direct radiation and air do not contribute measurably to dose, therefore dose must eventually be apportioned between soils and sediments.

Action: Text has been rewritten to clarify these concerns.

EPA - 19. Section 2.2.5.5, page 9, paragraph 2: The reference to Table 2-6 is incorrect.

Response: DOE agrees.

Action: Extensive changes to text and tables have been made to this part of the report; table references have been corrected.

EPA - 20. Figure 2-2, page 18: A screening comment should be provided for physical barriers.

Response: DOE agrees.

Action: Figure 2-2 has been revised to add a screening comment for physical barriers.

EPA - 21. Figure 2-2, page 20: Precipitation should be included as a process option under perched ground-water treatment.

Response: DOE agrees.

Action: Precipitation has been included as a process option under perched groundwater treatment and Figure 2-3 has been revised.

EPA - 22. Figure 2-2, page 22: Rail and truck are means of transportation to an off-site disposal facility. Available disposal facilities should also be included.

Response: DOE agrees.

Action: Available disposal facilities (Hanford site, Richland, WA; Nevada test site, NV; Envirocare at Clive, UT) has been included in the description of each alternative as appropriate.

EPA - 23. Figure 2-3, page 25: See Figure 2-2, page 20 comment.

Response: DOE agrees.

Action: Precipitation has been included as a process option under perched groundwater treatment and Figure 2-3 has been revised.

EPA - 24. Figure 2-3, page 26: Segregation of waste from Lime Sludge Ponds could apparently be eliminated.

Response: DOE agrees.

Action: Figure 2-3 has been revised and segregation of Lime Sludge Ponds water has been eliminated.

EPA - 25. Figure 2-3, page 27: See Figure 2-2, page 22 comment.

Response: See response to EPA comment 22.

Action: Revise figure.

EPA - 26. Figure 2-4, page 31: See Figure 2-2, page 20 comment.

Response: DOE agrees.

Action: Precipitation has been included as a process option under perched groundwater treatment and Figure 2-4 has been revised.

EPA - 27. Figure 2-4, page 33: See Figure 2-2, page 22 comments.

Response: See response to EPA comment 22.

Action: Revise figure.

EPA - 28. Figure 2-6, page 49: Lime sludge has a high moisture content. Removal with a bulldozer, backhoe, or clamshell would be difficult.

Response: DOE agrees. The Lime Sludge actually exists in two forms: 1) a dried, low moisture content material that exists at the top of each pond, and 2) a high moisture content material that exists below the top layer of each pond. Mechanical means of removal for both low moisture and high moisture content materials need to be retained as process options. Hydraulic removal has been evaluated as another process option.

Action: Clarification will be added to the report to support this assertion.

EPA - 29. Figure 2-6, page 51: Solid/liquid separation should be included in Figure 2-3.

Response: DOE disagrees. Solid/liquid separation and dewatering are the same process options.

Action: Solid/liquid separation has been eliminated from Figure 2-6.

EPA - 30. Section 3.1.3, page 11, paragraph 1: Figure 3-5 should be Figures 3-6 through 3-8.

Response: DOE agrees.

Action: Reference to Figure 3-5 has been changed to reference to Figure 3-6 through 3-8.

EPA - 31. Section 3.1.3.1, page 17, Water Treatment: The difference between the water treatment flows and the groundwater treatment flows should be defined.

Response: DOE agrees. The water treatment section clearly defines the perched groundwater/wastewater treatment technology and associated process options. The groundwater treatment section defines actual contamination levels in the perched groundwater and indicates the proposed water treatment system will be capable of reducing contamination to acceptable levels prior to discharge.

Action: The "water treatment" and "groundwater treatment" sections have been combined into one section called "water treatment." Text has been modified to better explain this difference.

EPA - 32. Section 3.1.3.1, page 17, paragraph 3: The FS process involves review and evaluation of process options. There is no discussion of treatment options except in this section. If the evaluation occurred in another Operable Unit, the appropriate report should be referenced.

Response: DOE disagrees. Review and evaluation of perched groundwater/wastewater treatment options exists in section 2.4 of the ISA Report.

Action: As discussed in comment response for comment #10, text will be added to discuss the evaluation of process options.

EPA - 33. Figure 3-13: A sump and extraction well are apparently needed for this alternative.

Response: DOE agrees, however, wellpoint extraction systems has been selected as the representative process option for this technology.

Action: None required.

EPA - 34. Section 3.1.5.2, page 30, Removal of Solid Wastes: The characteristics of the sludge area are needed to finalize the alternative and develop costs. The process option review and evaluation for sludge removal are part of the FS process and should be documented.

Response: DOE agrees. Known sludge area characteristics are sufficient to finalize Alternative 4 and develop costs. The process option review and evaluation for sludge removal are documented in section 2.0 of the ISA Report.

Action: Text will be added to support the evaluation of process options.

EPA - 35. Section 3.1.5.2, page 31, paragraph 1: Section 3.1.3.1, page 17, states that the groundwater is contaminated and must be treated. There should be no question that the groundwater in this alternative must be treated.

Response: Nowhere on page 3-17 does it state that the groundwater must be treated. The text implies that groundwater treatment is a part of the alternative.

Action: No action required.

EPA - 36. Section 3.1.6.1, page 45, paragraph 1: The review and evaluation of sludge dewatering process options should be included in the final draft FS.

Response: DOE agrees. Correct section reference is section 3.1.6.2.

Action: Review and evaluation of sludge dewatering process options will be included in the first draft FS.

EPA - 37. Section 3.1.6.5, page 46, paragraph 3: The volumes stated do not account for the increase in volume resulting from lime sludge stabilization.

Response: DOE agrees.

Action: Discussion of volume increase is included in section 3.

EPA - 38. Section 3.2.5, page 55, Alternative 4: The volume reduction via compaction option is not discussed in the text for Alternative 4.

Response: DOE agrees. Volume reduction of solid waste by compaction is discussed as a process option for Alternative 4 on page 3-33. An estimate of action quantity of reduction is not presented however. No significant volume reduction can be expected on the major portion of the solid waste, since it is basically in a consolidated state. Miscellaneous rubble and wastes such as drums, crates, etc., can be reduced in volume either by shredding or compaction; but this quantity of material is not considered significant compared to overall volumes involved.

Action: Text will be modified to incorporate explanation as above.

EPA - 39. Section 5.1.5.3, page 6, paragraph 4: There appears to be an Operation and Maintenance cost of greater than \$20,000,000 when compared to Alternative 4. The fact that there is no Operation and Maintenance cost for materials disposed of off-site must also be presented.

Response: For purposes of establishing costs for the ISA, O and M costs are based on a percentage of the direct capital cost of a particular alternative. Therefore, since the direct capital costs are higher for alternative 5 than alternative 4, then the O and M costs for alternative 5 would be higher. Also, the costs for the EDF is not included in the costs shown in section 5.1.5.3 (level 4 draft) for alternative 4. EDF costs are shown in section 5.4 of the level 5 draft.

Action: Text has been modified to clarify.

EPA - 40. Section 5.4.3.2 and 4.2, page 17: The implementability of the alternative refers to the ability to install the option. The small volume of water to be collected by the groundwater collection system does not reduce its implementability.

Response: DOE agrees.

Action: Clarify text.

EPA - 41. Section 6.6, page 5, Table 6-1: Scoring of alternatives can be very subjective. Alternatives 2 or 3 should be retained for detailed analysis. This would provide a wider range of alternatives.

Response: DOE agrees that an additional alternative should be carried to detailed analysis (see response to EPA comment 4a. Ranking of alternative for screening of alternatives is necessarily subjective.

Action: Revise report as stated.

EPA - 42. Appendix B: See Section 2.2.4, page 3, paragraph 5 comment.

Response: DOE agrees. IRIS and HEAST were the sources used for developing risk-based preliminary remediation goals for chemicals.

Action: None required.

OHIO EPA COMMENTS

GENERAL COMMENTS

OEPA - G1. 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.

Response: DOE disagrees. Chemicals and radionuclides contained within the waste units are presented in Table 2-1, while detectable concentrations of uranium within the perched groundwater zones are presented in section 3.1.3.1. Data gathered during the RI and determination of potential sources of contamination and associated transport mechanisms to adjacent media in the RI Report are used in the development and screening of alternatives. In addition see response to OEPA comment 126.

Action: More detailed information including additional data, has been provided in the ISA Report Alternative 2 or 3 will be carried into detailed analysis. In addition, the alternative development process has been extensively revised; see EPA comment 2.

OEPA - G2. Some figures and tables do not have page numbers.

Response: Tables have page numbers and figures do not.

Action: Text has been checked to see that all tables in the body of the ISA report have page numbers.

OEPA - G3. 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 are weighted evenly when comparing alternatives.

Response: As stated in the USEPA guidance for conducting RI/FS under CERCLA, section 4.3.2, "during the detailed analysis, the alternatives will be evaluated against nine specific criteria and their individual factors rather than the general criteria used in screening."

Action: Introductory statements in section 4.2 of the ISA Report have been inserted to reflect the above analysis steps. A reference to this ranking system has been included in Section 5.

OEPA - G4. 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.

Response: DOE agrees.

Action: Section 5.0 of the ISA Report has been revised to add more detail pertaining to implementability of Alternatives 2 and 3 for the Southfield, the Inactive Fly Ash Disposal Area, and the Active Fly Ash Pile.

OEPA - G5. 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.

Response: DOE agrees.

Action: The discussion of Toxicity, Mobility, and Volume as related to treatment/non-treatment issues has been clarified in section 5.0.

OEPA - G6. 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 nine evaluation criteria were in Task 12. They will be used in Task 13, why are they presented here? This implies that ranked criteria area used.

Response: DOE disagrees. Table 5-2 includes subcriteria for effectiveness and implementability as specified in the EPA guidance for conducting RI/FS under CERCLA, sections 4.3.2.1 and 4.3.2.2. These subcriteria are part of the general criteria used during the screening process. The nine evaluation criteria presented on Figure 4-1 will be evaluated during the detailed analysis phase of the RI/FS.

Action: As stated in the action for comment OEPA-3, introductory statements in section 4.2 of the ISA Report have been inserted to indicate that the nine evaluation criteria will be evaluated during the detailed analysis phase of the RI/FS.

OEPA - G7. Volume calculations and/or the cost per volume should be included in the cost of Section 5.

Response: Costs are included in accordance with the NCP. The volume of waste is also discussed in the report.

Action: None required.

OEPA - G8. 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, the removal media, media lifetime, exhausted media disposal/regeneration requirements, how the system will be cleaned, and provisions for closure.

Response: DOE disagrees. The ISA Report sufficiently addresses the wastewater treatment technology and associated process options. With the exception of maintenance requirements and reduction of the detail that you propose for the AWWT is best addressed during the detailed design phase of the remediation process. The detail that you propose for the AWWT is even more involved than necessary for the detailed analysis phase of the RI/FS reduction in toxicity, mobility and volume, operation and maintenance requirements.

Action: The text has been revised to discuss reducing of TMV and maintenance requirements. A discussion of the site wide water treatment system will also be included.

OEPA - G9. The requirements for long-term maintenance and monitoring programs are not well defined for the selected alternatives in this evaluation.

Response: Requirements for long term maintenance are discussed in general and included in the costs calculated for each alternative.

Action: None required.

SPECIFIC COMMENTS

OEPA - 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.

Response: Preliminary remediation goals, may be based on ARARs, "criteria, advisories guidance" since determination of preliminary remediation goals "is not intended to be lengthy undertaking" (55FR8713). If such guidance is not available, preliminary remediation goals will be risk based using the 10^{-6} point of departure. Preliminary goals may be changed based on risk concerns.

Action: No action in the ISA report. Further refinement of preliminary remediation goals will be available in the FS Report and the Proposed Plan and will account for site-wide risk concerns.

OEPA - 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."

Response: DOE agrees.

Action: Text has been added to clarify the acceptable risk range specified by the NCP and to clarify the hazard index concept.

OEPA - 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.

Response: DOE disagrees. Section 4.3.2 of the EPA guidance for conducting RI/FS under CERCLA States "... that comparisons during screening are usually made between similar alternatives (the most promising of which is carried forward for further analysis); whereas, comparisons during the detailed analysis will differentiate across the entire range of alternatives." In the case of Operable Unit 2, our removed alternatives were screened against each other, and removed alternatives likewise, in order to present the range of alternatives. How does the end of the paragraph imply more alternatives will be considered in Task 13 than in Task 12?

Action: None required.

OEPA - 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.

Response: The NCP stipulates a 1×10^{-4} to 1×10^{-6} acceptable risk range.

Action: Text and figure will be revised to reflect the 1×10^{-4} to 1×10^{-6} acceptable risk range.

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

Response: Typo noted.

Action: Text has been changed.

OEPA - 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.

Response: DOE agrees.

Action: Figure has been revised to read that preliminary remedial action goals will not exceed ARAR based or risk based values reported in Table 2-6.

OEPA - 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.

Response: DOE agrees. Treatment does not refer to the same processes in both paragraphs. In-situ stabilization is actually a containment technology, while waste treatment after waste removal is a different technology.

Action: Paragraphs 5 and 6 have been revised to more clearly define treatment and to differentiate between containment and treatment technologies.

OEPA - 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.

Response: The subsurface flow-control process options presented in section 2.0 could have been screened with one alternative formulated; however, two alternatives were developed. Stabilization of the Lime Sludge Ponds prior to capping is a requirement, not an option.

Please refer to the response to EPA comment 2. Additional alternatives have been developed, only one in-situ alternative with perched groundwater removal/treatment now exists.

Action: The last sentence of the second paragraph on page ES-7 has been revised to delete "the option of."

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

Response: Removed perched groundwater will be treated as indicated on page 3-17 of the ISA report. The revised document discusses perched groundwater treatment in detail.

Action: Perched groundwater treatment has been included in the summary for Alternatives where it is utilized.

OEPA - 10. Page ES-7, last paragraph: This paragraph states that attention to RCRA is given only in the event that higher concentrations of organic 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.

Response: The additional sampling proposed for the solid waste units specifies TCLP tests to be performed on Sanitary Landfill waste samples. This will determine if RCRA subtitle C is an ARAR.

Action: None required.

OEPA - 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.

Response: See response to OEPA comment 126.

Action: Refer to action taken for OEPA comment 126.

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

Response: DOE agrees.

Action: Text has been changed accordingly.

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

Response: DOE agrees.

Action: Text has been changed to reflect the correct number of appendices.

OEPA - 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 unacceptable to Ohio EPA. This additional waste area must be addressed along with the actual landfill cells. This 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.

Response: The additional waste area is addressed along with the actual landfill cells, in the FS.

Action: The last sentence of the third paragraph in section 1.5.2.1 has been revised to clarify the total area of the Sanitary Landfill that is considered in the FS Report.

OEPA - 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."

Response: DOE agrees.

Action: Figures 1-3 through 1-7 have been modified to indicate that contour elevations are with respect to mean sea level.

OEPA - 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?

Response: As stated in the response/action for comment EPA-14, the estimate for uranium contained in the waste oil is based on information contained in the DOE Environmental Survey Report.

Action: Reference has been made in the ISA report to the DOE Environmental Survey Report.

OEPA - 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.

Response: DOE agrees.

Action: The text has been revised to correctly describe the location of borehole No. 11.

OEPA - 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 percent 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.

Response: The preliminary remediation goals in the ISA Report are based on ARARs, "other criteria, advisories, or guidance". If it is determined that risk-based levels are necessary to supplement or supercede these preliminary goals, they will be used and included in the Proposed Plan.

Action: Retain current preliminary remediation goals in ISA. If the site-wide risk assessment suggests the preliminary goals lead to risk greater than the 10^{-4} to 10^{-6} range, they will be changed in the FS and Proposed Plan.

OEPA - 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.

Response: DOE agrees with the definition of "point of compliance"; however, DOE believes that immediate future land use and land use up to 100 years will include quite strict security controls measures, which is an integral part of the management of a DOE facility such as the FMPC. DOE believes this is a conservative assumption as laid out in DOE order 5820.2A. EPA was involved in developing the 100-year assumption for low level waste regulations.

Action: Change text in reference to points of compliance; no changes in reference to assumption that DOE will maintain control for 100 years.

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

Response: DOE agrees.

Action: Proper reference has been made to the OU2 Baseline Risk Assessment in the ISA Report.

OEPA - 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.

Response: "Slope factor" is the term that will be used in all FMPC documents.

Action: Cancer potency factor and CPF have been changed to "slope factor".

OEPA - 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.

Response: The 10^{-6} level is being used as the point of departure. Based on new RCRA regulations, we assume that the cumulative risk from all contaminants/pathways must meet the 10^{-4} level.

Action: Some clarification of the text has been made.

OEPA - 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.

Response: As stated in the response to general comment OEPA-G1, the RI Report is currently in draft form, and will be delivered to the EPA by February 11, 1991, as mandated by the Consent Agreement. The present list of potential contaminants of concern will be revised as required as additional source data becomes available.

Action: None required.

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

Response: Agreed

Action: Change cancer potency factor to slope factor.

OEPA - 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.

Response: See response for OEPA comment 22.

Action: Some clarification of text has been made.

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

Response: See response for 1, 8 and 25 above.

Action: None required.

EPA - 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.

Response: DOE has agreed to use HEAST for radionuclide potency when calculating risks for the baseline risk assessment. However, DOE maintains that cleanup levels should be developed using dose-based ARARs and TBCs.

Action: No action required.

OEPA - 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 OU2: organic compounds: 2-methylnaphthalene, pyrene; HSL inorganics: aluminum, calcium, iron, magnesium; and radionuclides: technetium (Tc-99). These constituents are not included in Table 2-1.

Response: DOE agrees. Concentrations of Aluminum and Tc-99 in the source terms were below available background levels; therefore, aluminum and Tc-99 are not considered contaminants of potential concern. As stated in the OU2 baseline Risk Assessment, essential elements required for human life (specifically, iron, calcium, potassium, sodium, and magnesium) should not be considered as chemicals of concern.

Action: 2-Methylnaphthalene and pyrene have been added to Table 2-1 of the ISA Report.

OEPA - 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.

Response: DOE agrees.

Action: Add the State regulation to the list of proposed ARARs.

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

Response: DOE Agrees.

Action: Text has been added to clarify the acceptable risk range specified by the NCP and to clarify the hazard index concept.

OEPA - 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 water 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.

Response: Livestock and vegetables in gardens are not considered environmental receptors. Groundwater is not expected to reach to GMR at significant concentrations based on preliminary model results.

Action: Preliminary remediation goals will continue to be based on human health/drinking water concerns.

OEPA - 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.

Response: EPA Headquarters recently recommended using dose-based ARARs for the Maxey Flats RI/FS. Further investigation into this issue is ongoing.

Action: None required.

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

Response: Use of a dose-based ARAR, by definition of the ARAR, forces the "sum" rule to be applied.

Action: Text will be clarified.

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

Response: Chemicals not listed in Tables 2-4 and 2-5 do not have EPA-evaluated toxicity data available with which to develop preliminary action levels.

Action: None required.

OEPA - 35. Page 2-9, Section 2.2.5.5, first sentence: Concern for past and present potential for constituents of OU2 to enter the underlying Great Miami Aquifer should be included.

Response: This concern is of great importance to the baseline risk assessment process for OU2. All chemicals detected in the source term are either chemical or potential current or future concern.

Action: This concern has been addressed and clarified in the text.

OEPA - 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.

Response: The paragraph refers to constituents of Operable Unit 2 being released to the Great Miami Aquifer.

Action: None Required.

OEPA - 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 Tetrachloroethane). Other compounds whose ingestion Reference Doses were not listed in Table 2-4 include: Acenaphthene (RfD = 0.06 mg/kg/day); Carbon disulfide (RfD = 0.1 mg/kg/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.

Response: MCLGs are considered TBCs. However, since, they are non promulgated TBCs, they are superseded by promulgated MCLs for developing preliminary remediation goals. Preliminary goals for organics are also based on MCLs.

Action: RfDs for mentioned organics have been included in the Table. MCLGs will be included in Table 2-2.

OEPA - 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.

Response: The inorganic compounds listed in this comments were not found to be chemicals of potential concern for OU2 in the baseline risk assessment process.

Action: No action required.

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

Response: DOE disagrees. Federal standards are more restrictive than Ohio standards therefore the Ohio Water Quality Standards are not listed in Table 2-6, page 2-16 in the OU-2 Task 12. A reference to Ohio's Surface Water Quality Standards (OAC3745-1-01(C)) has recently been added to the Table of Potential ARARs for Operable Unit 2 as a chemical specific ARAR.

Action: None required.

OEPA - 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/run-off control, and capping. Section 2.3.4 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 run-on/run-off 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, Figure 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.

Response: DOE agrees.

Action: The text has been revised to maintain consistency between sections.

OEPA - 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.

Response: DOE agrees.

Action: Groundwater treatment versus waste treatment has been more clearly defined in the ISA Report.

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

Response: DOE agrees

Action: "Potentially applicable" has been added as a screening comment for physical barriers on Figure 2-2.

OEPA - 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.

Response: DOE agrees. Other treatment technology process options such as chemical precipitation, activated carbon adsorption, and air stripping should be considered.

Action: Figures 2-2, 2-3, 2-4 will be revised along with appropriate text to include and discuss the additional process options.

OEPA - 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.

Response: DOE agrees that the rationale for screening is insufficient. In-situ vitrification is inappropriate for the Sanitary Landfill due to the heterogeneous nature of the wastes.

Action: The screening comments in Figures 2-2 and 2-4 for insitu stabilization have been changed to indicate that implementation of this technology is inappropriate.

OEPA - 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.

Response: DOE agrees. The additional sampling proposed for the solid waste units includes TCLP tests for the Sanitary Landfill waste samples.

Action: The third paragraph of section 2.4.1.1 has been revised to indicate the results of proposed TCLP tests that will be used to determine applicability of RCRA subtitle C.

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

Response: DOE agrees.

Action: Subsurface flow control has been added to Table 2-7.

OEPA - 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?

Response: Testing performed as part of the Weston CIS determined that characteristic hazardous wastes were not present in the Lime Sludge Ponds; however, hazardous constituents (aroclor-1248 and butyl benzyl phthalate) were detected in the North Lime Sludge Pond. Low concentrations of organics exist in the lime sludge, not the perched groundwater/wastewater.

Action: Section 2.4.1.2 of the ISA Report has been revised to differentiate between characteristic and listed hazardous wastes.

OEPA - 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?

Response: "Non-treatment" refers to all types of treatment. The data referenced are contained in the draft RI Report. The basis of non treatment has its origins in section 1.5 of the CERCLA guidance for conducting RI/FS.

Action: The report has been revised extensively to provide detail on the rationale for developing alternatives to include or not include treatment of waste.

OEPA - 49. Page 2-38, 2nd paragraph: This section states that thermal treatment is eliminated from consideration for the Southfield/Fly Ash area 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 suspected 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.

Response: DOE agrees. Although the draft RI Report, at its present stage, does indicate low levels of contamination within the source terms, uncertainties still exist due to insufficient source term data. The proposed additional source sampling will provide support for either substantiating or modifying existing conclusions.

Action: Certain remedial technologies and alternatives will be maintained until additional sampling data becomes available.

OEPA - 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 wastes.

Response: DOE agrees.

Action: As stated in the response to comment OEPA-48, the ISA report has been revised to consider additional treatment technologies.

OEPA - 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.

Response: The slurry walls and interceptor trenches are not as effective as pumping wells for the removal treatment/disposal general response action. There is no need for slurry wall to be constructed for a waste removal alternative. The wellpoint extraction system is favored for a removed action since excavation will occur and well points can be placed where needed in the event perched groundwater is encountered. This option of groundwater is more flexible and can be adapted to various situations encountered.

Action: The relative degree of effectiveness for slurry walls and interceptor trenches within the removal/treatment/disposal general response action has been modified on Figures 2-5 through 2-7.

OEPA - 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.

Response: Current data available does not indicate that organics in the Sanitary Landfill groundwater pose a significant risk to human health or the environment in either current or future land-use

conditions. Additional process options have been added in the initial screening of technologies and process options. See response to OEPA-43.

Action: Refer to Action OEPA-43.

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

Response: DOE agrees. Figures 2-2 through 2-7 follow recommendations in the EPA guidance for conducting RI/FS under CERCLA (section 4.2 and Figure 4-4) for screening technologies and process options.

Action: Text has been added to support the deletion of process options.

OEPA - 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.

Response: The purpose for referencing the old Task 12 Report is to maintain consistency with the alphanumeric designations for each alternative. Comment OEPA-28 asks for consistency between the reports.

Action: None required.

OEPA - 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.

Response: A more detailed description of alternatives for Operable Unit 2 will be provided in the Task 13 Report, Detailed Analysis of Alternatives. The Table of Potential ARARs for Operable Unit 2 includes OAC3745-66-11 relating to cap design and performance.

Action: The suggested applicable portion of OAC3745-27-10 through 3745-27-12 have been added. These additional ARARs are included in the revised Appendix A.

OEPA - 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.

Response: DOE agrees.

Action: Figures 3-2, 3-3, and 3-4 have been modified to label the flexible membrane liner.

OEPA - 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.

Response: The landfill area to be capped/remediated does include the wastes buried outside of the five existing cells. Reference the response/action for comment OEPA-14.

Action: None required.

OEPA - 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.

Response: This is correct. Implications of this condition are stated in section 3.1.3.1 and 3.1.4.1 of the ISA Report.

Action: None required.

OEPA - 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 would require the realignment of these drainage ways.

Response: DOE agrees.

Action: Text has been be modified to maintain consistency. Section 3.1.2.4 has been revised to read "would be required" in place of "may be required."

OEPA - 60. Page 3-11, Section 3.1.2.5: 49CFR173 should be listed in Appendix A as a potential action-specific federal ARAR.

Response: During the meeting held on August 7, 1990 between the ASI/IT ARARs Working Group and EPA and DOE, it was decided to exclude 49CFR173 which covers DOT shipping requirements. The rationale is that DOT regulations involve off-site actions and are therefore excluded.

Action: None required.

OEPA - 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 all alternatives which involve capping that result in the necessity for realigning Paddys Run.

Response: DOE disagrees. Under CERCLA 121(e), no Federal, State, or Local permits are required "for the portion of any removal or remedial action conducted entirely on site. However, substantive requirements of ARARs must be met by the alternatives which require realignment of Paddys Run or other drainages. These ARARs are included in the Table of Potential ARARs for Operable Unit 2. These ARARs are also included in Appendix A of the Task 12 Report. More specific information on how these alternatives will comply with these ARARs is provided in the Task 15 Report, Detailed Analysis of Alternatives. It should also be noted that current plans do not foresee the realignment of Paddys Run outside the FMPC boundry.

Action: None required.

OEPA - 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.

Response: DOE disagrees. Perched groundwater contamination is discussed in section 3.1.3.1 on page 3-17. The extent of perched groundwater contamination is discussed in detail in the draft RI Report.

Action: Alternative will be evaluated constant with OEPA comment 126..

OEPA - 63. Page 3-11, Section 3.1.3, 1st paragraph: The fourth sentence indicated that Figure 3-5 shows a well and well point 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.

Response: DOE agrees.

Action: Figure reference has been changed accordingly.

OEPA - 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.

Response: The figures are to scale in as much as the outlying landmarks (fences, roads, contours) are to scale, however, capped areas and lengths of walls are not to scale in the figure.

Action: Figures have been revised (note added) to clarify this.

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

Response: DOE agrees.

Action: The units for permeability have been changed to cm/sec.

OEPA - 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.

Response: The fence diagrams are an appropriate part of the RI Report and will remain in the RI Report. References to the RI Report have been eliminated from the ISA Report.

Action: References to the RI Report have been deleted.

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

Response: DOE agrees.

Action: The flexible membrane liner has been labeled in Figure 3-6 through 3-8.

OEPA - 68. Figures 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.

Response: The dashed line in section A-A of Figure 3-6 and 3-7 indicates a hidden view of the western portion of the slurry wall system. The well point system is not included in section A-A of Figures 3-6 through 3-8 in order not to "crowd" the section.

Action: None required.

OEPA - 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 µg/l for uranium represents a carcinogenic risk outside of the 10⁻⁴ to 10⁻⁶ risk range (30 µg/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.

Response: The uranium level is based on the 4 mrem TBC, and to some extent, the 4 mrem MCL for alpha-emitting radionuclides is relevant. Keeping in mind the potential risk level associated with this TBC/ARAR, EPA Headquarters suggested it be used to establish cleanup levels at the Maxey Flats RI/FS site. DOE is using HEAST to evaluate radionuclide risks in the baseline risk assessments.

Action: No action required.

OEPA - 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 1×10^{-6} risk level that the NCP uses as the point of departure for assessing long-term cleanup goals.

Response: The uranium level is based on the 4 mrem TBC, and to some extent, the 4 mrem MCL for alpha-emitting radionuclides is relevant. Keeping in mind the potential risk level associated with this TBC/ARAR, EPA Headquarters suggested it be used to establish cleanup levels at the Maxey Flats RI/FS site.

Action: None required.

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

Response: Reference response/action for comment EPA-31.

Action: None required.

OEPA - 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?

Response: Pumping rates are expressed as the maximum needed.

Action: Text has been clarified.

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

Response: DOE agrees.

Action: Section 3.1.3.4 has been revised to be consistent with section 3.1.2.4.

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

Response: DOE disagrees. Under CERCLA 121(e), no Federal, State, or local permits are required "for the portion of any removed or remedial action conducted entirely on site." However, substantive requirements of ARARs must be met by the alternatives. These ARARs are included in the Table of Potential ARARs for Operable Unit 2. These ARARs are also included in Appendix A of the Task 12 Report. More specific information on how these alternatives will comply with these ARARs is provided in the Task 15 Report, Detailed Analysis of Alternatives.

Action: None required.

OEPA - 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 to the potentially contaminated soils beneath these wastes units.

Response: The purpose of the interceptor trenches is to capture contaminated groundwater in the perched zones. Contaminated soils beneath the waste units are included in the volume of material to be removed as part of alternative 4 and 5. This is discussed in detail as part of the detailed analysis phase of the RI/FS process.

Action: None required.

OEPA - 76. Page 3-22, Section 3.1.4.1: The length 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.

Response: See response to OEPA comment 64.

Action: See action for OEPA comment 64.

OEPA - 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, and explanation should be included in the text to prevent a misinterpretation of the design.

Response: See response/action for comment OEPA-68.

Action: None required.

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

Response: DOE agrees.

- Action:** Figures 3-11 through 3-13 have been revised to label the flexible membrane liner in section A-A.
- OEPA - 79.** Figures 3-14: The on-site, above ground disposal facility depicted in Figure 3-14 is not described in detail in the text.
- Response:** Reference response/action for comment EPA-11.
- Action:** None required.
- OEPA - 80.** Page 3-27, Section 3.1.5: The substantive provisions of OAC3745-27 must be met for on-property disposal of any solid wastes as the term is defined under state law.
- Response:** DOE agrees.
- Action:** OAC3745-27 has recently been added to the Table of Potential ARARs for Operable Unit 2. This addition is included in the Revised Appendix A of the Task 12 Report. More specific information on how the alternatives will comply with this and other ARARs is provided in the Task 15 Report, Detailed Analysis of Alternatives.
- OEPA - 81.** Page 3-31, 2nd 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.
- Response:** Reference response/action for comment OEPA-66.
- Action:** Delete references to the RI Report.
- OEPA - 82.** Page 3-34; 1st full paragraph and page 3-44; 3rd paragraph: "Soil washing is effective in the removal of organic and volatile and nonvolatile metals." What volatile metals are present in this waste unit? Mercury? Typically, a distinction is made between volatile organic and nonvolatile organic. The distinction between volatile and nonvolatile metals here is not clear.
- Response:** Typically classified as volatile metals (i.e., low boiling point or high vapor pressure) are arsenic, bismuth, lead, mercury, tin, and selenium. Soil washing has shown to be potentially effective for removal of volatile and semi-volatile organics. The technology has also been demonstrated to remove metallic compounds of lead and may be viable for the removal of soluble uranium compounds.
- Action:** The descriptions of soil washing on pp 3-34 and 3-44 will be revised for clarification.

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

Response: DOE disagrees. Provisions for leachability testing of "stabilized" solid wastes would more appropriately be specific during a site characterization phase for an on-site disposal facility. This type of detail is not appropriate for the ISA Report.

Action: None required.

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

Response: Reference response/action for comment OEPA-83.

Action: None required.

OEPA - 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.

Response: DOE agrees.

Action: Tables 3-1 through 3-3 have been revised to include access restrictions and monitoring for alternative 5. The "runoff control" technology has been changed to read "run-on/runoff" in Tables 3-1 through 3-3.

OEPA - 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.

Response: DOE agrees.

Action: Factors have been placed in text.

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

OEPA - 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.

Response: Groundwater data has been included in the revised ISA.

Action: Groundwater data has been added to Section 1 of the revised ISA Report.

OEPA - 88. Page 5-2, last paragraph: Stating the "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 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.

Response: This comment addresses an issue that cannot be resolved in a comment response. There are major national policy decisions to be made in order to adequately respond to the comment. The primary reasoning behind the ranking methodology is the fact that approvals to ship and dispose of this waste may not be attainable. Also there is the possibility of increases in injuries and deaths to the public due to transport of waste off site over long distances which further decreases the favorability of an off-site option. In this case the rankings do not affect whether a removal alternative is dropped or retained, and at this time do not influence the selection of the remedial alternative.

In the case of COE approval, moving Paddys Run does not violate any ARARs; the action is necessary to provide for long term cap life. Refer to previous responses dealing with this issue.

Action: None required.

OEPA - 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.

Response: In the screening analysis NTS was not necessarily the preferred choice; in fact 3 sites were identified in the report (see page 3-48) all of which are located in the western United States. Although there is less rainfall, wind erosion at western sites is a significant factor in long term effects of a disposal facility. Also, because of the volume of waste shipped and disposed of, construction of a new or expanded facility is very likely. Due to the fact that multiple sites are possible for off-site disposal, it is difficult to evaluate off- and on-site locations to the level of detail contained in the comment.

Action: None required.

OEPA - 90. Top partial paragraph: See comment #91 above.

Response: See response to comment 89 above.

Action: None required.

OEPA - 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.

Response: DOE disagrees. Even if monitoring and maintenance described in the comment are committed for, the fact remains that these activities will be required at either location.

Action: None required.

OEPA - 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.

Response: See response to comment 49 and 99. There are no technologies that can prevent migration of contaminants to groundwater. Current technology can reduce the potential for migration by treatment and containment. As has been stated over and over throughout these comments, the analysis must be conducted in accordance with the NCP and EPA guidance, which requires alternatives to be protective of human health, not necessarily prevent migration of contaminants.

Action: Alternative rankings have been revised consistent with response/action for comment 126.

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

Response: Noted.

Action: The text has been revised to read "would require".

OEPA - 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.

Response: See response for comment 92.

Action: None required.

OEPA - 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.

Response: Noted.

Action: The statement has been revised to say that on- and off-site facilities for waste disposal are comparable since both employ underliners utilizing leachate collection/detection systems to reduce contaminant migration to an underlying aquifer.

OEPA - 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 comparison to the 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 and a "2".

Response: DOE agrees.

Action: The statement "Alternative 4 ranks slightly higher than alternative 5 as a result of these considerations," has been deleted and replaced with wording consistent with section 5.1.6.2.

OEPA - 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 off-site 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.

Response: Although the risks to workers are essentially the same, additional risks are incurred due to off-site transport of waste; therefore the lower ranking for alternative 5.

Action: None required.

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

Response: Noted.

Action: Wording has been changed to "ranks even with", or something equivalent.

OEPA - 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 Alternative 2 and 3 is necessary. Alternative 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.

Response: See response to OEPA comment 126.

Action: The ranking of alternatives 1, 2, and 3 are made to be consistent with comment 126.

OEPA - 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) constructibility, 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?

Response: See response to OEPA comment 99.

Action: None required.

OEPA - 101. Page 5-15, Section 5.3.6.2: Why doesn't the constructibility 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.

Response: Constructibility is considered equivalent for on- or off-site actions. There is not any significant difference with regard to location. Therefore Alternative 5 will rank even with Alternative 4 for construction.

Action: The second statement in section 5.3.6.2 has been revised to indicate that Alternative 5 may require construction at the off-site facility due to the large volume of waste to be transported.

OEPA - 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 ranking in Table 5-5 is necessary for the comparison of alternatives.

Response: See comment response for no. 86.

Action: Rankings have been placed in text.

OEPA - 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.

Response: See response to comment no. 99.

Action: None required.

OEPA - 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 to 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.

Response: Section 3.1.6.2 states that sand lenses were encountered at wells 2046 and 3049. 1000-series wells were installed and sampled. Other locations had wells installed but perched groundwater was not encountered (see figure 3-9). The concentrations detected in perched groundwater are shown in the report and are low. The statements made are true, however in order to remove the appearance of inconsistency, the sections have been rewritten to clarify.

Action: Text has been changed; the perched groundwater removal alternative is carried forward and text is extensively changed.

OEPA - 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?

Response: See response to comment 104.

Action: None required.

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

Response: See response to comment 92.

Action: None required.

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

Response: See response to comment 92.

Action: None required.

OEPA - 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.

Response: Section 5.1 discusses the alternatives for the Sanitary Landfill. Section 5.2 discusses alternatives for the Lime Sludge Ponds. The pattern continues for the remaining waste units. The statement discusses costs which apply to alternatives 4 and 5 which are common to each waste unit for sections 5.1 through 5.5. No clarification is needed.

Action: None required.

OEPA - 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.

Response: Rankings have been revised consistent with response to OEPA comment 126 and EPA comment 2. Alternatives have also been restructured.

Action: Text has been revised as stated in response.

OEPA - 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.

Response: See response/action to comment 86.

Action: None required.

OEPA - 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.

Response: See response to comment 86.

Action: None required.

OEPA - 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.

Response: The activities mentioned do not affect public health since activities are on site. There will be short term environmental impacts due to transportation; however it is questionable, at best, to say that this would affect public health.

Action: None required.

OEPA - 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.

Response: Short-term conditions favor no action, but long-term conditions do not. Therefore the rankings are consistent. The exact contribution of Operable Unit 2 contamination to the Great Miami Aquifer cannot be measured in groundwater wells because of other sources of groundwater contamination.

Equal scores for reduction of TMV are due to the fact that the waste itself has identical treatment specified for Alternatives 1, 2, and 3. Agency approval for alternatives 2 and 3 are ranked lower, because a permit will be needed to discharge treated water off site.

Action: None required.

OEPA - 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.

Response: DOE disagrees. The text repeatedly states that alternatives 4 and 5 are comparable for the criteria mentioned in the comment. The rankings are consistent with the text.

Action: None required.

OEPA - 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".

Response: DOE disagrees. Agency approval is defined as the ability to obtain permits for off-site actions. On-site actions have to meet the substantive requirements of regulations, but do not have to obtain the actual permit. The administrative requirements will be less for on-site actions; therefore the lower ranking for Alternative 5. The criteria isn't addressing whether an agency will approve of the no action alternative, but the ability to obtain permits for off-site actions. No off-site actions are required for the no action alternative, therefore the no action alternative has a high ranking.

Action: None required.

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

Response: See responses for OEPA comments 112, 114, and 115.

Action: None required.

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

Response: See responses for OEPA comments #112, 114, and 115.

Action: None required.

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

Response: See responses for OEPA comments #112, 114, and 115.

Action: None required.

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

Response: See responses for OEPA comments #112, 114 and 115.

Action: None required.

OEPA - 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.

Response: Alternative rankings will be revised consistent with OEPA comments 99 and 126.

Action: Tables have been changed.

OEPA - 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.

Response: Will revise text for consistency see OEPA comment response for #99, and see OEPA comment response for #120.

Action: Revise text.

OEPA - 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.

Response: See comment response no. 89.

Action: None required.

OEPA - 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 constructibility for Alternative 5, therefore, should improve from that of Alternative 4.

Response: Due to the high volume of waste to be shipped to an off-site facility, it is very likely that new facilities will need to be constructed, or existing facilities be expanded.

Action: None required.

OEPA - 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".

Response: The additional equipment used to extract perched groundwater requires additional maintenance. Given that Alternative 4 also requires removal of perched groundwater, the rankings will be revised to show an even ranking for this criteria comparing alternatives 2, 3, and 4.

Action: Rankings have been revised.

OEPA - 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 Constructibility 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.

Response: The text states that it is difficult to effectively implement alternatives 2 and 3 in the Fly Ash/Southfield Areas (see Section 5.3.2). This difficulty has its origins in the fact that there is an absence of perched groundwater zones over much of the area where the waste is. A cross section of this area is depicted on figure 3-9 of the report. Fence diagrams have been developed for this area and show a thin sand lens which pinches out to the southern part of the area. Figure 3-8 shows a cross section depicting the waste deposited over the side of the hill where the glacial overburden is eroded to expose the sand and gravel medium which characterizes the Great Miami Aquifer. This cross section is representative of the situation in the Inactive Fly Ash/Southfield areas.

There is no requirement to use weighted averages. None of the other Operable Unit reports (including the recently approved Operable Unit 5 Report) utilized weighted averages.

Action: The document has been revised to carry Alternative 3 into detailed analysis.

OEPA - 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.

Response: DOE disagrees that insufficient detail was presented in describing perched groundwater contamination and waste area geology. It is difficult to present all of the detail required for the RI report into a document presenting the screening of alternatives. Figures depicting geology were presented in the report, and much of the text was devoted to discussions of the waste area geology. DOE agrees, however, that a comparison between alternatives 1 and 2 or 3 is better suited in the detailed analysis of alternatives, therefore, this alternative is retained. See also EPA comment 2.

Action: Revised the document and carry Alternative 2 or 3 into detailed analysis. Alternative 2 differs from Alternative 3 only in the method for extracting perched groundwater.

OEPA - 127. Appendix A, page A-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..."

Response: DOE agrees. This statement has been revised as suggested.

Action: Appendix A, page A-5, second bullet - sentence revision to read, "OEPA has developed...."

OEPA - 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 OAC3745-1-07 in addition to water use criteria for all major surface water bodies.

Response: DOE agrees. OAC3745-1-07 has recently been added to the Table of Potential ARARs for Operable Unit 2. This ARAR is included in the revised Appendix A of the Task 12 Report.

Action: Include revised List of ARARs in Appendix A.

OEPA - 129. Appendix A, page A-5, fifth bullet: Not all portions of OAC3745-9 apply exclusively to new wells intended for human consumption. For example, OAC3745-9-10 covers the abandonment of test holes and wells and constitutes an action-specific state ARAR for remedial actions involving the installation of any 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.

Response: DOE concurs. OAC3745-9-10 has recently been added to the Table of Potential ARARs for Operable Unit 2. This ARAR is included in the revised Appendix A of the Task 12 Report.

Action: Include revise of ARARs in the Appendix A.

OEPA - 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.

Response: DOE agrees. MCLG's and proposed MCL's are listed as "To be considered" in the revised Table of Potential ARARs for Operable Unit 2. These TBC criteria are included in the revised Appendix A of the Task 12 Report. Also, "cancer potency factors" has been changed to "cancer slope factors" as suggested.

Action: Include revised list of ARARs in Appendix A.

OEPA - 131. Appendix A, Table A-1, page A-10: The description for OAC3745-81 only mentions limits set on radiological parameters and not one other organic 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.

Response: DOE agrees. A reference to OAC3745-81 for organic and inorganic parameters identified in Operable Unit 2 has been included in the revised Table of Potential ARARs for Operable Unit 2 and in the revised Appendix A of the Task 12 Report. Also Ohio's radiation protection standards are included in the revised Appendix A.

Action: Include revised list of ARARs in Appendix A.

OEPA - 132. Appendix A, Table A-1, page A-11: A location-specific state of Ohio ARAR which should be listed in this table is OAC3745-27-07 (gives location criteria for solid waste disposal facilities).

Response: DOE disagrees. OAC 3745-27-07 lists criteria for approval of solid waste disposal facility permit to install. Under CERCLA 122 (e) no Federal State, or Local permits are required for the portion of any removal or remedial action conducted entirely on site." However, several substantive ARARs must be complied with by the alternatives. The table of Potential ARAR's does include 40 CFR 257.3-1, location standards for Solid Waste Disposal Facilities, as well as OAC 3745-27, nonhazardous waste treatment and disposal facility denying considerations.

Action: None required.

OEPA - 133. Appendix A, Table A-1, page A-12: Again, OAC3745-27 should be cited here as an action-specific state ARAR for operation and closure of solid waste disposal facilities.

Response: DOE agrees. OAC3745-27 has recently been added to the Table of Potential ARARs for Operable Unit 2. This ARAR is included in the revised Appendix A of the Task 12 Report.

Action: Include revised list of ARARs in Appendix A.

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

Response: This appendix will be deleted. Information is contained in the discussion of Remedial Action Objectives in section 2, and has been revised.

Action: Appendix has been deleted.

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

Response: See response to OPEA comment 134.

Action: See action for comment 134.

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

Response: See response to OEPA comment 134.

Action: See action for comment 134.

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

Response: See response to OEPA comment 134.

Action: See action for comment 134.

OEPA - 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 OU2? Ohio EPA does not have access to this document.

Response: These constituents were not included on the list of chemicals of potential concern in the OU2 baseline risk assessment.

Action: Appendix B is being deleted from the document, and replaced with an ARARs appendix in the level 5 draft.

OEPA - 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) anthracene. Were these constituents determined to be not present in the July 1990 RI for OU2? Again, Ohio EPA does not have access to this document.

Response: These constituents were not included on the list of chemicals of potential concern in the OU2 baseline risk assessment.

Action: Appendix B is being deleted from the document, and replaced with an ARARs appendix in the level 5 draft.

OEPA - 140. Appendix B, Table 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 included 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 OU2? Again, Ohio EPA does not have access to this document.

Response: These constituents were not included on the list of chemicals of potential concern in the OU2 baseline risk assessment.

Action: Appendix B is being deleted from the document, and replaced with an ARARs appendix in the level 5 draft.