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**RESPONSE TO EPA COMMENTS WORK PLAN
FOR THE FEASIBILITY STUDY AUGUST 1990
DRAFT**

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**DOE-FMPC/USEPA
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REPORT**

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INTRODUCTION

The U.S. Department of Energy (DOE) submitted a Draft Work Plan for the Feasibility Study (Work Plan) for the Feed Materials Production Center Remedial Investigation/Feasibility Study (FMPC RI/FS) to the U.S. Environmental Protection Agency (EPA) on August 10, 1990. The Work Plan was prepared and delivered in response to the request of the EPA by its letter dated July 10, 1990 and in accordance with the terms of the Consent Agreement Under CERCLA Section 120 and 106(a) between the EPA and DOE (Consent Agreement). The EPA reviewed the Work Plan and provided comments to DOE by its letter dated September 10, 1990.

Many of the comments presented by the EPA concerned other documents previously submitted to the EPA. Specifically, the "Development of Alternatives for the Feasibility Study" report (which was submitted to the EPA in December 1988) and the "Initial Screening of Alternatives" reports for Operable Units 1 and 4 were cited in numerous comments on the Work Plan. To date, DOE has not received any comments from the EPA on the "Development of Alternatives" report, and, as stated in the Work Plan, DOE considers this task complete. The comments raised by the EPA on the "Initial Screening of Alternatives" reports have been addressed by DOE in separate comment responses for those reports. This process is consistent with the document review provisions of the Consent Agreement. Accordingly, the responses contained herein will only address those issues specifically related to the Work Plan as opposed to comments directed to the content of other reports.

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Since the preparation of the Work Plan, DOE and the USEPA have had several meetings to discuss ARARs development for the FMPC RI/FS. As a result of these meetings, several changes were made in the discussion of ARARs in Work Plan Sections 5.3, 5.4 and 5.5 and the list of ARARs provided as Table 5-1.

RESPONSE TO COMMENTS

GENERAL COMMENTS:

Comment 1: Generally, the FS work plan complies with the U.S. EPA guidance and the NCP. Most of the screening and alternative evaluation steps follow the U.S. EPA guidance. There are, however, a few areas such as the definition of operable units, establishment of remedial action objectives, and application of

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applicable relevant and appropriate requirements that are not consistent with the U.S. EPA FS guidance and the NCP.

Response to Comment 1: The responses to Specific Comments set forth below address the issues raised by the USEPA in this comment.

Comment 2: Much of preliminary work for the FS has been completed (Task 11 Development of Alternatives Report for all operable units and Task 12 Initial Screening of Alternative Operable Units 1 and 4 Reports). Therefore, many of the specific comments in this letter relate not only to the adequacy of the FS work plan, but also provide examples where either the FS work plan or U.S. EPA guidance was not followed.

The basic noncompliance with U.S. EPA guidance is that the FS work plan, Task 11 and Task 12 reports defer much of the alternative development (i.e., volumes of contaminated materials, specific remedial action objectives, preliminary remediation goals, and screening of process options) until late in the FS process (detailed analysis of alternatives). U.S. EPA guidance and NCP require these steps be sufficiently developed early in the FS process and to the extent possible, prior to the detailed analysis of alternatives.

The insufficient alternative development, as presented in the Task 12 reports for Operable Units 1 and 4, is a result of the Task 11 report not complying with the FS work plan or U.S. EPA guidance. Unless the noncompliances with U.S. EPA guidance is corrected in the Task 12 reports, the detailed analysis of alternatives may also lack sufficient detail and documentation to adequately support the selection of a preferred alternative.

Response to Comment 2: As stated above, the comments concerning other reports submitted to the EPA are being addressed by DOE in separate responses and the responses contained herein will only address specific comments on the Work Plan.

As the EPA is aware, the FMPC RI/FS has followed an accelerated schedule for preparation of the feasibility study. Because of this approach, the preferred method of completing the field investigation process prior to starting the feasibility study (as assumed in the guidance documents) has not been possible. In fact, the field investigation is continuing concurrent with the feasibility study. Much of the information, which would normally be available at the beginning of the feasibility study, has not yet been finalized and could not be included in the early feasibility study tasks. This does not mean that the overall

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technical approach and the performance of the later feasibility tasks are deficient. Rather, the feasibility study is utilizing the information as it becomes available and is incorporating that information in later tasks so that the feasibility study is technically complete and correct at its conclusion.

The importance of initiating remedial actions at the site as soon as possible, as evidenced by the commitments contained in the Consent Agreement, dictates that this approach continue, even though it does not follow the exact methodology of the guidance documents. At the conclusion of the feasibility study, DOE will comply with the technical and procedural requirements of CERCLA, the NCP and the guidance documents.

SPECIFIC COMMENTS

Comment 3: Section 2.2.1, Page 3: The FS work plan states that soils or perched ground water may eventually be included as part of Operable Unit 1. The FS work plan should specify when this determination will be made. The applicable U.S. EPA guidance requires the volumes and areas to be included in the potential remedy be determined early in the FS process; such as in the development of alternatives step or refined in the screening of alternative steps.

Response to Comment 3: The continuing nature of the remedial investigation for Operable Unit 1 (as evidenced by the recent sampling plan approval by the EPA) requires some flexibility in the feasibility study with respect to underlying soils and perched groundwater, and berm materials. This situation is not specific to Operable Unit 1 and in fact relates to the integration of Operable Units 1, 2, 3, and 4 and Operable Unit 5.

Operable Unit 5 differs from the other operable units (and other generic feasibility study scenarios) in that this operable unit is a collection of contaminated or potentially contaminated environmental media (principally surface water, stream sediments, soils, and groundwaters in geologic formations with varying hydraulic conductivities) without a waste source which would result in continuing (future) releases. Operable Units 1, 2, 3, and 4 include the sources of continuing releases, namely, concentrated waste materials (e.g. the silo residues, waste pit contents, solid waste units, etc). (An exception to this continuing release scenario would be contaminated soils and perched groundwater from prior production activities which have been included in Operable Unit 3.)

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While Operable Unit 5 specifically addresses environmental media, certain environmental media (most notably soils and perched groundwaters) have been included in the alternatives developed for the "source" operable units. This inclusion of environmental media in the remedial actions for the source operable units is in conformity with EPA guidance and is appropriate for both waste removal and source control remedial alternatives.

In the case of removal-type alternatives, the remediation of environmental media can be achieved cost-effectively in conjunction with removal of the waste. This is most apparent for the waste pits or "cells" of Operable Units 1 and 2 where surrounding berms, soils, and perched zones of groundwater are in contact with the wastes. It is also true for Operable Unit 4 given the structural relationship between the waste containment silo and the surrounding berm soils.

In the case of source control alternatives, the relationship between waste and surrounding environmental media is not as apparent. Generally, given the longevity of the contaminants of concern, if in situ options are acceptable from a risk perspective, the contribution to the risk from surrounding contaminated media will not represent an additional significant risk.

Another reason for including some environmental media in the source operable units is the uncertainty surrounding the quantities and concentrations of contaminants within environmental media near waste sources. This uncertainty will most likely continue until the remedial alternatives are selected for the "source" operable units. The inclusion of environmental media in the source operable unit allows Operable Unit 5 to continue concurrently with the source operable units.

Comment 4: Section 2.2.3, Page 4: The basic assumption of addressing releases, or potential releases, within Operable Unit 3 by complying with the Resource Concentration Recovery Act (RCRA) and other requirements instead of the remedial investigation/feasibility study (RI/FS) program is not consistent with Section VIII (a) and (b) of the 1990 Consent Agreement. These sections of the Consent Agreement states the intent of the activities are to achieve compliance with CERCLA and satisfy the corrective action requirements of Sections 3004 (u), 3004 (v), and 3008 (h) of RCRA. Additionally, the Consent Agreement states it is intended that remediation of releases covered by the Consent Agreement shall obviate the need for further corrective action under RCRA. Therefore, releases or potential releases

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from the production area (Operable Unit #3) must be addressed as part of the RI/FS program and not under separate programs. See U.S. EPA's September 10, 1990, letter for more information regarding Operable Unit #3.

Response to Comment 4: The definition of Operable Unit 3 was developed in conjunction with the technical approach of the Facilities Testing Addendum to the RI/FS Work Plan, which was submitted to the EPA in October 1989. Basically, the Facilities Testing program was an investigative approach to determine the nature and extent of contamination of environmental media underlying the Production Area and areas where contamination could be expected (Suspect Areas). The purpose was not only to define the contamination of the media but also to determine the source of such contamination. Consequently, the feasibility study for Operable Unit 3 was defined as remediating the discoveries of the Facilities Testing program, including the found sources.

The approach of the Facilities Testing program and the definition of Operable Unit 3 were also historically driven by the assumption that the FMPC would remain in operation and that existing waste management procedures, as contained in the existing and proposed permits, plant procedures (Best Management Practices Plan and Spill Prevention, Control and Countermeasure Plan) and internal DOE Orders, would adequately address releases or potential releases not covered by the Facilities Testing program. This assumption remains valid even though the plant is not in operation since DOE has maintained active management of the plant facilities and the procedures cited above are still legally applicable and are being enforced by DOE, the EPA and the Ohio EPA.

This strategy may need to be revised when a decision is made concerning the future disposition of the plant and its facilities. The decommissioning or demolition of plant structures represents an action that could generate potential releases to the environment. At the time this decision is made, DOE shall comply the provisions of CERCLA, the NCP and the Consent Agreement.

DOE shall provide further information to the EPA concerning the definition of Operable Unit 3 in a formal response to the letter of the EPA, dated September 10, 1990.

Comment 5: Section 2.2.3, Page 4: The scrap metal piles are not in Operable Unit #3, but rather are in Operable Unit #2.

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Response to Comment 5: Consistent with prior discussions with the EPA, DOE proposes to move the scrap metal piles from Operable Unit 2 to Operable Unit 3. Since the Work Plan becomes a part of the Consent Agreement when it is finalized, it was viewed as the most appropriate method to both formally propose and document the change. DOE interprets this comment as merely pointing out the discrepancy between the Work Plan and the Consent Agreement rather than as opposition to moving the scrap metal piles from Operable Unit 2 to Operable Unit 3. An approval of the Work Plan by the EPA would result in modifying the definition of Operable Unit 3 in the Consent Agreement. Therefore, the Work Plan will not be modified.

Comment 6: Section 2.2.3, Page 5: The first full sentence on this page is not consistent with the first sentence of this paragraph from the proceeding page or the 1990 Consent Agreement. All contaminated soil and ground water is subject to the RI/FS program as Operable Unit #3.

Response to Comment 6: The first sentence of the paragraph referenced in this comment includes all soils and perched groundwater underlying the Production Area and Suspect Areas in the definition of Operable Unit 3. The last sentence of this paragraph states that the continuing sources of contamination of the soils and perched groundwater will also be included in Operable Unit 3. DOE believes that this is a consistent and logical approach to Operable Unit 3.

See Response to Comment 4 for a further discussion on the definition of Operable Unit 3.

Comment 7: Section 3.3.1, Page 5: The establishment of remedial action objectives as part of Task 12 (Initial Screening of Alternatives) and Task 13 (Detailed Analysis of Alternatives) activities is not consistent with the NCP or U.S. EPA guidance. The NCP states the first step in the FS process involves developing remedial action objectives and preliminary remediation goals. These should specify contaminants and media of concern and potential exposure pathways. In accordance with the NCP (page 8713), remediation goals should set performance standards to be met during implementation as well as the points of compliance for attaining these remediation levels.

The remedial actions objectives set in the Task 12 reports for Operable Units 1 and 4 were not contaminant or pathway specific nor did they establish points of compliance for attaining the remediation levels.

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Establishing remedial actions objectives or preliminary remediation goals (which are initially set as ARARs) in the detailed analysis is not consistent with the U.S. EPA guidance, uses "ARARs that have been identified in previous stages of the RI/FS process."

Response to Comment 7: The Work Plan recognizes the progress of the FMPC RI/FS to date. As stated above, the "Development of Alternatives" report, Task 11 (formerly Task 12) was submitted to the EPA in December, 1988. Since no comments were received on this report, DOE proceeded with Task 12, "Initial Screening of Alternatives" based upon Task 11 as completed. Section 2.3 of the "Development of Alternatives" report contains general remedial action objectives. The report stated that more specific remedial action objectives would be established as the risk assessment progressed.

The guidance documents recognize that remedial action objectives are generally refined as the feasibility study is finalized, and that remediation goals should be determined on the basis of the baseline risk assessment and the evaluation of risks associated with each alternative. Compliance with the accelerated schedule of the FMPC RI/FS dictates that the feasibility study proceed prior to the completion of the baseline risk assessment, and the evaluation of risks associated with each alternative occurs as part of Task 13, "Detailed Analysis of Alternatives." In addition, the Consent Agreement acknowledges that the determination of ARARs is an iterative process that can continue even after the feasibility study is completed.

Accordingly, the postponement of establishing specific remedial action goals and ARARs until later tasks in the feasibility study process does not adversely affect the overall technical quality of the feasibility study and is consistent with the approach set forth in the guidance documents.

The comments directed toward the Task 12 reports for Operable Units 1 and 4 are addressed in response to comments on those documents. The issue of the "point of compliance" to ARARs is discussed in Response to Comment 21.

Comment 8: Section 3.3.2, Page 5: Although the FS work plan lists the types of response actions which should be considered, these were not considered in the Task 11 report (Development of Alternatives). The three general response actions considered in the Task 11 report were too narrow in scope and did not include the six general response actions specified in the original

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feasibility work plan or U.S. EPA guidance. Because only three general response actions were developed, the discussion on technologies and process options in the Task 11 reports is confusing and is not adequate to meet the screening requirements of U.S. EPA guidance. Furthermore, the development and subsequent screening of alternatives (Task 12 reports for Operable Units 1 and 4) is not well supported.

Response to Comment 8: The "Development of Alternatives" report considered all of the response actions listed in Section 3.3.2. The response actions were grouped under three general headings termed (i) no action, (ii) non-removal, including treatment and containment in-place response actions, and (iii) removal, including treatment, containment and disposal response actions.

The remainder of the comment deals specifically with the scope of the general response actions in the "Development of Alternatives" report and the subsequent effects on the "Initial Screening of Alternatives" (Task 12) reports. This issue is separately addressed in the response to comments on the Task 12 reports.

Comment 9: Section 3.3.5, Page 7: The evaluation of process options as presented in the FS work plan is in compliance with the U.S. EPA guidance. However, the evaluation of process options was not followed in the Task 11 report or Task 12 report for Operable Units #1 and #4. The Task 11 report discusses two removal technologies: hydraulic/pneumatic (with three associated process options) mechanical (with three associated process options). However, the Task 11 report does not screen the process options associated with these removal technologies for Operable Unit #4 with respect to effectiveness, implementability or cost. Furthermore, the Task 12 report for Operable Unit #4 uses three removal process options (mechanical auger, hydraulic dredge, and pneumatic dredge) which were not described or screened in the Task 11 report.

Comment 10: Section 3.3.5, Page 8: The evaluation of effectiveness as described in the FS work plan complies with U.S. EPA guidance. However, it was not followed in the Task 11 report. The effectiveness evaluation of process options was not specific to operable units.

Comment 11: Section 3.3.5, Page 8: The evaluation of cost as described in the FS work plan complies with U.S. EPA guidance. However, it was not followed in the Task 11 or Task 12 reports for Operable Unit #4. The cost evaluations did not include operation and maintenance costs.

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Comment 12: Section 3.3.6, Page 8: The assembly of alternatives as described in the FS work plan complies with U.S. EPA guidance. However, it was not followed in the Task 11 report for all operable units or Task 12 report for Operable Units #1 and #4. For example, the Task 11 report includes the technologies of waste stabilization and treatment of water as part of several assembled alternatives for Operable Unit 1. Specific process options representative of technology types were not assembled into alternatives in the Task 11 report. Furthermore, at the end of the Task 12 report of Operable Unit 1, specific process options representative of technology types were still not combined into remedial alternatives.

Response to Comments 9, 10 11, and 12: These comments specifically relate to the "Development of Alternatives" report and "Initial Screening of Alternatives" (Task 12) reports for Operable Units 1 and 4. As previously stated, these issues are separately addressed in responses to comments received on the Task 12 reports.

Comment 13: Section 3.3.6, Page 9: If an alternative is carried through to the detailed analysis of alternatives (Task 13) it is not usually appropriate to further evaluate between process options within a technology. If necessary, additional definition of process options is to be conducted during the Alternative Screening Process (Task 12) as outlined in Section 4.3 of the U.S. EPA guidance. After this additional alternative definition and screening it is appropriate to select one or two process options representative of a technology type for an alternative to be carried to the Detailed Analysis of Alternatives.

Response to Comment 13: The guidance document recognizes that more than one process option may be viable for a technology type where there is a significant difference in performance of the process options. As previously stated, the concurrent development of the remedial investigation and the feasibility study dictates that strict compliance with the guidance document may not be possible. Therefore, several process options may be carried forward pending the finalization of waste characterization. While a representative process may be used for screening purposes, DOE expects that further delineation among various process options will occur during the Detailed Analysis of Alternatives. The Work Plan merely recognizes this possibility.

Comment 14: Section 3.4.2, Page 10: The definition of volumes and areas of media of interest a described in the FS work plan

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complies with U.S. EPA guidance. However, the Task 12 report of Operable Unit #1 did not accurately define the volume for materials to be remediated (it excluded the 5 feet of soil surrounding and underlying the waste pits). In addition, the Task 12 report did not present specific definition on where Operable Unit #1 ended and it's interrelationship with Operable Unit #5.

Comment 15: Section 3.4.2, Page 11: The description of cost evaluation in the FS work plan complies with the U.S. EPA guidance; however, the Task 12 report for Operable Unit #4 did not include operation and maintenance cost.

Response to Comments 14 and 15: These comments specifically relate to the "Initial Screening of Alternatives" (Task 12) reports for Operable Units 1 and/or 4. As previously stated, these issues are separately addressed in responses to comments received on the Task 12 reports.

Comment 16: Section 3.5.1, Page 14: This step in the FS process is intended to define alternatives were appropriate so the evaluation criteria can be applied consistently and to develop a plus 50, minus 30 percent cost. However, it appears from the Task 12 reports for Operable Units #1 and #4 this step in the detailed analysis of alternatives is being used to further evaluate (not further define) process options. Additional alternative definition is appropriate when the assumed sizing of the process option (note singular use of process option) must be revised. Therefore, the guidance document implies that process options have been screened in the development and screening of alternative steps and that process options representative of technologies have already been assembled into alternatives carried forward into the detailed analysis.

Response to Comment 16: See Response to Comment 13.

Comment 17: Section 3.6, Page 18: While the relative weighing of the five balancing criteria is acceptable; it should be noted that the NCP (page 8731) places special emphasis on long term effectiveness and permanence, and reduction of toxicity, mobility, or volume through treatment, during the remedy selection process.

Response to Comment 17: The Work Plan will be modified to reflect the emphasis placed on long-term effectiveness and reduction in toxicity, mobility or volume through treatment as specified in the NCP [Section 300.430(f)(1)(ii)(E)].

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Comment 18: Section 4.1, Page 3: This section of the work plan omits the method of alternative definition. The level of alternative development in the Task 12 reports for Operable Units #1 and #4 is not sufficient to adequately evaluate the alternatives against the two threshold and five balancing criteria in the detailed analysis of alternatives. Therefore, extensive alternative definition, (or more appropriately in the alternative screening as outlined in Section 4.3 of U.S. EPA FS guidance) needs to be more completely addressed. For example, the Task 12 report for Operable Units #1 and #4 states this portion of the FS (Task 13) will be used to further screen out process options and more accurately define remedial action objectives and preliminary remediation goals. However, at this stage of the FS process, alternatives should already be assembled from process options representative of technology types. The U.S. EPA guidance states the definition step of the FS process should focus on incorporating treatability study data, sizing of a specific process option, or providing sufficient development of an alternative to provide a consistent level of detail to allow the evaluation criteria to be applied consistently.

Response to Comment 18: Section 3.5.1 of the Work Plan indicates that further alternative definition will occur as part of the Detailed Analysis of Alternatives. Section 4.0 will be modified to indicate this activity.

See also Response to Comment 13.

The remainder of the comment concerning the "Initial Screening of Alternatives" (Task 12) reports for Operable Units 1 and 4 is separately addressed in responses to comments received on those reports.

Comment 19: Section 4.4.1, Page 6: The second and third paragraphs on this page need further clarification. Both paragraphs present assumptions which are critical in the evaluation of alternatives and the interrelation between Operable Units. U.S. EPA guidance recommends that the interrelationship between media (in this case Operable Units #1 and #5) be evaluated early in the FS process (i.e., Alternative Screening Process).

Response to Comment 19: See Response to Comment 3 for a discussion on the integration of the remedial actions for environmental media.

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The second paragraph on the referenced page states that one exception is being taken from established EPA guidance for conducting risk assessments. The guidance states that the risk defined by the baseline risk assessment should be used as the basis for comparison of remedial action alternatives. That is, the "no action" alternative risk evaluation is essentially the same as the baseline risk assessment. This is not the case for Operable Unit 5.

Continuing sources from Operable Units 1, 2, 3, and 4 (source operable units) must be identified to allow evaluation of risks associated with future land-use scenarios in the Operable Unit 5 baseline risk assessment and to properly scope and evaluate the alternatives under consideration in the Operable Unit 5 feasibility study. Ideally, the baseline risk assessment would form the "no-action" alternative for Operable Unit 5 feasibility study. Doing so would, however, neglect the reduction in continuing releases from the source operable units following implementation of the remedial actions.

Therefore, the baseline risk assessment for Operable Unit 5 will be completed with all currently existing sources contributing to the environmental media. That is, the contaminants currently being released to the environment from the source operable units will be allowed to continue unabated into the future during the modeling of future risks for Operable Unit 5.

On the other hand, the "no action" alternative will be constructed for Operable Unit 5 based on the assumption that remediation of all source operable units results in continuing releases to the environmental media being evaluated under Operable Unit 5 (principally, the Great Miami Aquifer) equal to remedial action objectives for the source operable unit.

For example, the remediation of Operable Unit 1 would not result in continuing releases into the Great Miami Aquifer in excess of 25% of the contaminant MCL at the boundary of the waste unit. The "no action" alternative for Operable Unit 5 will only consider a continuing release to the Great Miami Aquifer equal to 25% of the contaminant MCL from Operable Unit 1. This assumption of no residual (continuing) release for the source operable units is the baseline for comparison of remedial action alternatives under the feasibility study risk assessment for Operable Unit 5.

Comment 20: Section 4.8.1, Page 16: Expenses associated with implementing a remedy (capital costs) do not include the costs incurred by temporary or permanent suspension of site operations.

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However, economic impact to the community is typically evaluated under community acceptance.

Response to Comment 20: DOE agrees with this comment. The Work Plan will be modified to remove the reference to costs associated with temporary suspension of plant operations.

Comment 21: Section 5.6.1., Page 18: ARARs are also applicable to contamination at the source as well as remote receptor and therefore are required to be evaluated.

Response to Comment 21: As indicated by the last sentence of Section 5.6.1, it is recognized that ARARs may apply directly to contamination at the source. However, under the concept of reasonable maximum exposure (RME) set forth in the NCP and in EPA Guidance (EPA, 1989a), the receptor may be located outside the source area if access to the source is precluded or is not reasonably expected to occur. Under current land use, DOE limits access to the FMPC; therefore, in most cases, the RME is located outside the FMPC property boundary.

Contaminant-specific (chemical or radiological) ARARs would apply at the location of RME to a real or potential receptor. Action- and location-specific ARARs may apply at the source. Further, the location of the RME may change with time and/or land use. Under future land use scenarios, the RME may be at or near the source. These considerations are also evaluated in determining the point of compliance. In any case, the point of compliance to ARARs will be determined and applied at the appropriate location, whether it is the source at or beyond the property boundary.

Comment 22: Section 5.6.2, Page 18: Specific references for U.S. DOE and U.S. EPA technical guidance must be cited.

Response to Comment 22: DOE agrees to add specific references to DOE and EPA guidances mentioned in the second "bullet" of Section 5.6.2 on Page 18 as follows:

- Differences in DOE technical guidance (DOE 1988, DOE 1989, DOE 1990) and EPA technical guidance (EPA 1988, EPA 1989a, EPA 1989b, EPA 1989c) regarding pathway analyses.

The following will be added to the reference list:

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DOE 1988. Radioactive Waste Management, DOE Order 5820.2A, September 26, 1988.

DOE 1989. A Manual for Implementing Residual Materials Guidelines, DOE/CH/8901, June 1989.

DOE 1990. Radiation Protection of the Public and the Environment, DOE Order 5400.5, May 8, 1990.

EPA 1988. Superfund Exposure Assessment Manual, EPA/540/1-88/001, April 1988.

EPA 1989a. Risk Assessment Guidance for Superfund -- Human Health Evaluation Manual, Part A (Interim Final), OSWER Directive 9285.7-01a, December 1989.

EPA 1989b. Exposure Factors Handbook, EPA/600/8-89/043, July 1989.

EPA 1989c. Exposure Assessment Methodology Environmental Impact Statement NESHAPS for Radionuclides, Background Information Document - Volume 1, EPA/520/1-89-005.

Comment 23: Section 5.6.2, Page 19: The statement "U.S. EPA guidance would typically establish the most critical receptor at the controlled boundary of the site..." is not accurate. The NCP (page 8710) uses the concept of the reasonable maximum exposure scenario applied to both current and future use conditions. Current land use scenarios presented in the base line risk assessment should consider both actual risk due to current conditions and potential risks assuming no remedial action. Future use scenarios are classified into one of these areas, (1) residential, (2) commercial/industrial, (3) recreational, as well as ecological use of the property such as agricultural. Future land use assumptions generally should consider the highest (most significant and therefore usually residential) risk to be protective.

Response to Comment 23: The example provided in the paragraph referred to in this comment was meant to illustrate the difference between the positions of the DOE and the EPA. Two important differences are the definition of the critical receptor and the use of institutional controls to limit access to a remediated site.

DOE defines the critical receptor as the hypothetical individual who typically is located at the boundary of the restricted area,

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but may become an intruder/future resident farmer. The EPA uses the reasonable maximum exposure (RME) scenario to determine and locate the critical individual. (See Response to Comment 21 for a discussion of RME.)

The NCP provides that institutional controls (such as deed restrictions and fencing) are a viable supplement to engineering controls. DOE, on the other hand, recognizes that active institutional controls related to access to a remediated site are inadequate after 100 years and that evaluation of an alternative that includes active institutional controls to limit access should recognize this exposure scenario (DOE Order 5820.2A).

Active institutional controls currently exist at the FMPC; therefore, the current land-use scenario would preclude access to the FMPC property and the RME [as defined by the NCP or EPA guidance (EPA 1989a)] would not occur at the source, but rather, beyond the FMPC property boundary. The RME could also vary under current land use scenarios. The future hypothetical receptor will normally be located at the boundary of the waste unit, if current land use conditions still prevail.