DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
9170 LATTY AVENUE
BERKELEY, MISSOURI 63134

REPLY TO
ATTENTION OF:

CEMVS-PM-M (200) 9 JULY 98

MEMORANDUM FOR: USEPA, (Dan Wall), Region VII, Superfund, 726 Minnesota Avenue, Kansas City, Missouri 66101

SUBJECT: EPA Region VII Comments and U. S. Army Corps of Engineers (USACE), St. Louis District Responses on the Record of Decision for the St. Louis Downtown Site, St. Louis, Missouri

1. References:
   a) Letter from Mr. Daniel Wall, USEPA, Region VII, Superfund to Ms. Sharon Cotner, USACE St. Louis District, dated 02 July, 1998, subject above.
   b) Letter from Mr. Gene Gunn, USEPA Region VII to Ms Sharon Cotner, USACE St. Louis District, dated June 19, 1998 subject above.

2. Enclosed are USACE, St. Louis District responses to comments addressed in reference 1a on the draft Record of Decision (ROD) for the St. Louis Downtown Site (SLDS) dated May 1998. These comments have been incorporated into the final draft SLDS ROD that were distributed for review on July 8, 1998.

3. Upon receipt of your comments on the final draft SLDS ROD, we will provide responses and make appropriate revisions as delineated in reference 1b.

4. Please contact myself at (314) 524-3212 if you require additional clarification.

Sharon R. Cotner
FUSRAP Program Manager

Enclosure

EPA REGION VII COMMENTS AND RESPONSES ON THE RECORD OF DECISION FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (July 1998)

Comments received 07/07/98 from EPA Region VII			
Comment No.	Spp/S/T	Comment	Response
1	General	The draft ROD tends to present narrative descriptions of information, such as the findings of the RI, when a table, with brief supplemental narrative, would seem to work better; and tables to present information which would best be presented in narrative form (e.g., the responses to written comments in the Responsiveness Summary.	Table 5-1 has been added to the ROD. The table presents detailed summaries, by plant location, of the most critical potential contaminants and their minimum, maximum, and average values. In addition, cross-sectional views of the radiological contamination (by isostope) have been added as figures 5-5 and 5-6 showing a north-south cross-section and an east-west cross-section through the SLDS, respectively. Additional textual information has also been added to the "Summary of Site Characteristics" and the "Summary of Site Risks" sections.
2	General	The draft ROD does not clearly and concisely present all the elements of the CERCLA decision-making logic. A ROD should focus on why a remedial action is necessary, what level of cleanup is needed to reduce site risks to an acceptable level, what alternative approaches might work to meet these cleanup goals, and which of these alternatives best satisfies CERCLA. The draft ROD is particularly obscure in its presentation of site characteristics and site risks which form the basis for taking remedial action. In this regard, the ROD should present (1) the scope of investigations; (2) the contaminants that were detected, the levels at which they were detected, and the media and locations in which they were detected; (3) the scenarios under which people or biota could be exposed to the contaminants; and (4) the calculated risks associated with these exposures. Probably the most straightforward approach to presenting most of this information would be to include summary tables similar to those found in the feasibility study.	Additional text has been added to describe the principal risk concerns at the site (i.e., exposure to radionuclides, particularly radium-226) and that future use scenarios show that unacceptable exposures may occur to industrial or construction workers. In addition, cadmium and arsenic have been identified as posing potential risk at the site and have been discussed in detail as to their distribution and contribution to risk. Description has been added as to how each COC has been evaluated relative to potential pathways and scenarios by which exposures could occur. The alternative analysis and discussion of the selected remedy has been supplemented with additional text describing how each remedy addresses the risk and the basis for selecting the preferred remedy relative to the criteria established by CERCLA. Tables have been provided which present the PRGs, the EPA point of departure criteria, and EPA risk range concentrations and activites for the COCS to improve the understanding of how the remedy addresses potential site risks.
3	General	Many of the more important and remedy defining conclusions provided in the draft ROD would be strengthened considerably if accompanied by more specific rationale that makes use of the available evidence. For example, the draft ROD uses general statements regarding the insolubility of metals and distribution coefficients to justify a conclusion that metals are co-located with MED/AEC radiological contaminants such that remediation of the MED/AEC radiological contaminants will result in appropriate remediation of the metals. Without suggesting that the ROD be unnecessarily repetitive of the RI/FS documents, this conclusion warrants the inclusion of more convincing evidence. Consider providing direct evidence from the available characterization and confirmation sampling data. Other examples are identified in the specific comments below.	Text, tables, and graphics have been added to more clearly describe how the COCs were determined, how metals are located relative to the principal radiological threat, and how the remedy addresses the COCs on a location by location basis. In addition, text has been added which clarifies how the USACE authority to address MED/AEC contaminants relates to the location of non-MED/AEC contaminants that may remain on the site.

EPA REGION VII COMMENTS AND RESPONSES ON THE RECORD OF DECISION FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (July 1998) (continued)

4	General	The ROD needs to make more clear the scope and role of this operable unit in terms of past and future FUSRAP actions, as well as actions to be carried out under other authorities. The remedy provided for in the draft ROD addresses only contamination resulting from MED/AEC processing activities, although environmental media at the Mallinckrodt facility and vicinity are impacted or potentially impacted by other waste handling activities. Introductory discussion on the scope and role of this action should be presented in this context. We suggest that general discussion on the status of RCRA facility investigation and NRC license investigation be included. It is Region VII's intent to work with the state, the Corps, and Mallinckrodt to ensure that response actions are coordinated such that all site threats are addressed.	Additional text has been added to several sections of the document to describe how this ROD relates to the remaining USACE Operable Unit to address buildings and inaccessible soils and to RCRA and NRC activities for the remainder of the site. The USACE will continue to cooperate with the EPA, the State of Missouri and Mallinckrodt, Inc. to ensure that response actions are coordinated so that all site threats are addressed.
5	General	A ROD must clearly address all components of the remedy necessary to maintain protectiveness over time. The draft ROD indicates that monitoring, maintenance, and institutional controls are necessary to ensure long-term protectiveness. Discussion needs to be added on what exactly needs to be monitored, maintained, or controlled, and in what manner and how these requirements will be carried out and enforced over time. Also, information on the handling of inaccessible soils should be provided. We recognize that final disposition of these soils will be addressed under a future ROD; however, the Corps will need to take steps in the interim to control inconsistent uses and to learn of anticipated changes in conditions that might make these soils accessible or increase the potential for exposure. How will this be achieved? Greater explanation or presentation of exactly where and how these soils are believed to be located and the anticipated life of the structures making them inaccessible would probably be helpful in this analysis. In presenting this analysis, however, make it very clear that final decisions on appropriate response action for these soils is deferred.	Text has been added which clarifies both the short and long-term monitoring and reviews that will take place as part of this remedy. In addition, additional description has been added to illustrate the institutional controls and other measures that are currently in place at the site, including land and groundwater use restrictions, industrial safety and health programs, fencing, 24-hour security, etc. As part of this remedy, a process is described for developing an agreement between Mallinckrodt and the federal government which will clearly define roles and responsibilities and will ensure that the site remains protective.

EPA REGION VII COMMENTS AND RESPONSES ON THE RECORD OF DECISION FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (July 1998) (continued)

6	General	The methodologies used to justify soil cleanup levels need modification to be consistent with CERCLA and the NCP. Clarification on these issues can be found in OSWER Directive 9200.4-25 "Use of Soil Cleanup Criteria in 40 CFR 192 as Remediation Goals for CERCLA Sites" and OSWER Directive 9200.4-18 "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination." These directives are appropriately considered TBCs for this action. Accordingly, we suggest the following modifications: Identify the 5/15 pCi/g soil standards as ARAR for the combined level of either radium-226 and radium-228 or thorium-230 and thorium-232 where the 5 criterion is a health-based standard, and the 15 criterion is a technology-based standard which is expected to achieve an actual subsurface cleanup of 5. This is appropriate where contaminants and their distribution is sufficiently similar to that at Title 1 sites under UMTRCA. Characterization data, actual post-cleanup confirmation data, and estimated residual soil concentrations should be presented as necessary to make this case. The effectiveness of the 15 pCi/g subsurface standard as a tool for achieving 5 pCi/g will continue to be evaluated during remedial action. Alternatively, subsurface remediation goals other than 5 pCi/g, including the 50/100 pCi/g site-specific subsurface criteria for radium and thorium, will need to be justified as supplemental standards (see 40 CFR 192.21 to 192.22) that are shown through site-specific risk assessment to be protective per the NCP risk range. For uranium and other contaminants of concern for which no relevant and appropriate cleanup standards exist, preliminary remediation goals should be derived through site-specific risk assessment per the NCP using 1×10^{-6} excess cancer risk as the point of departure. These goals may be revised to a different risk level within the acceptable risk range based on the consideration of appropriate factors including, but not limited to, exposure factors, uncertainty factors, and technical factors such as background levels of contaminants (see the preamble to the NCP). The remediation goals and the associated risk probabilities should be presented.	Additional discussion has been added which specifically shows how 40 CFR 192 (used as an ARAR) and the OSWER Directives mentioned in the comment were used (as TBCs) to develop the cleanup criteria for this remedy. Discussion has been added to show the similarity of the site to UMTRCA sites and how supplemental standards for soil at depth were developed based on the OSWER Directives and a site specific risk assessment to show how the remedy meets the NCP risk range. In addition, site specific characterization information presented in the FS shows that the residual soil concentrations of the radionuclides will be far lower than the actual values established by the criteria. *Note, the data from the Plant 10 cleanup will be incorporated in the final document and it clearly shows that the 5/15 criteria achieve sub-5 pCi/g actual soil concentration averages for soil cleaned to the composite criteria. In addition, uranium is reduced to residual values of approximately 10 to 15 pCi/g using the 50 pCi/g cleanup standard.*
7	General	The NCP sets forth program expectations to treat principal threats wherever practicable. Another expectation is to contain low level threats, because treatment of these larger volume lower toxicity wastes may not be cost-effective or practicable. The NCP also states that, for many sites, EPA will use a combination of treatment and containment. We recommend that the ROD include information and discussion indicating whether wastes at the site constitute principal threats (e.g., radiological hot spots) and an assessment of whether treatment would be practicable for any such wastes.	A great deal of additional text has been added which clarifies that the principal threat is due to exposure from radioactivity (specifically radium-226) and how the principal threat varies across the site. In addition, text has been added which notes that the toxic effects of radioactivity cannot be reduced by treatment, but retains the possibility that specific treatment technologies will continue to be evaluated and may be implemented as part of the design.

EPA REGION VII COMMENTS AND RESPONSES ON THE RECORD OF DECISION FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (July 1998) (continued)

8	General	Based on multiple discussions with the Corps on the subject of groundwater, it is our expectation that the draft ROD will be revised to include summary information on hydrogeological characterization, measured impacts from contamination, and risk analysis; as well as a clear strategy for long-term monitoring and evaluation of (1) the conditions under which monitoring will be discontinued, and (2) the conditions under which the need for response action will be reevaluated. The Corps may want to consider simple modeling or calculation to evaluate the potential effects of the post-excavation residual on groundwater. According to the NCP, different degrees of protection for groundwaters are appropriate based on their vulnerability, use, and value. Determinations as to the potential usability of groundwater units should consider rationale from Guidelines for Ground-Water Classification Under the EPA Ground-Water Protection Strategy (Final Draft, December 1986) as appropriate.	Extensive additional detail has been added to specifically address these concerns. *Note, the EPA classification system referenced in this comment has recently been acquired and the classification will be included in the final version of the ROD.*
9	17, §5.0, ¶ 3, 2nd sent.	This sentence indicates that MED/AEC-related radioactive contaminants "are readily identifiable because of the distinct suite of radionuclides used in the MED/AEC process and the location where the contaminants were found." Later in the draft ROD (§7.1.1, page 27), the MED/AEC-related contamination is described as having no distinguishing pattern and as having the same radioactive constituents as other non-MED/AEC activities. Please clarify and describe the factors used to distinguish impacts attributable to MED/AEC activities.	Text has been added to clarify that MED/AEC radionuclides must be distinguished based not only on their distinct characteristics, but also on where they are located relative to where MED/AEC ore digestion, processing, handling, and storage took place. Graphics, tables, and text have been added to clarify this issue.
10	Figures 5-1, 5-2, and 5-3	While these figures do a good job of conveying the areal distribution of contamination, we suggest added some cross-sectional figures that show distribution with depth. To the extent that the visualization model inaccurately shows significant volumes of radium and thorium contamination between 5 & 15 pCi/g at depth, discussion should be added to explain the limitations of the model in predicting actual conditions at the margins of the impacted areas.	A total of six graphics have been added to the document showing Ra-226, Th-230, and U-238 distribution with depth along a north-south cross-section and along an east-west cross-section. Discussion has been added to supplement the graphics.
11	21, top ¶	This paragraph should be replaced with information as to the specific organic compounds found at this site, where they were found, and at what concentrations. Explanations, and evidence as appropriate, should be provided as to why these specific organic compounds are/are not reasonably associated with MED/AEC processing activities. While it is true and important to note that PAHs are widespread in any urban area, this information has no bearing on whether any of these contaminants may derive from MED/AEC activities. No contaminant should be ruled out as a MED/AEC contaminant of concern solely on the basis that there are other probable/possible sources.	A more detailed discussion was provided of the constituents found at this site. Potential contaminants were not dismissed as COCs simply because they may have had multiple sources. Instead, an assessment was made as to whether there was direct evidence of an MED/AEC use of the compound, the distribution of the compound by location was evaluated, and the concentration of the compound was compared to the appropriate risk-based point of departure.

EPA REGION VII COMMENTS AND RESPONSES ON THE RECORD OF DECISION FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (July 1998) (continued)

12	21	Similarly, as in Comment 11, quantitative information on the nature and extent of metals contamination should be presented. An explanation as to why there were high detection limits on the metals analyses would be helpful because this condition apparently influenced the ability to draw meaningful conclusion about the metals found at the site. It would probably be appropriate first to identify the MED/AEC-related metals, based upon whatever factors were used to associated them (e.g., ore assays and process knowledge), then to present which of those MED/AEC-related metals were actually found at the site and at what levels. Then, in conjunction with the discussion of risk analysis (i.e., in a different section of the document), identify the subset of MED/AEC-related metals found to at the site which are of sufficient concentration, distribution, and toxicity to be considered COCs.	A more detailed discussion was provided of the constituents found at this site. Potential contaminants were not dismissed as COCs simply because they may have had multiple sources. Instead, as recommended by the comment, an assessment was made as to whether there was direct evidence of an MED/AEC use of the compound, the distribution of the compound by location was evaluated, and the concentration of the compound was compared to the appropriate risk-based point of departure and the NCP risk range.
13	21	Without any information as to where MED/AEC-related VOCs, PAHs, or metals were found, in what relationship to the sampling for TCLP analysis, and very little information about the levels at which they were found, it is difficult to evaluated the importance of a statement that soils within the radiologically contaminated areas do not exhibit RCRA hazardous waste characteristics.	At least thirty-five, well distributed, TCLP samples were collected from within the radiological contamination at the SLDS. Only one failed, and only for lead. On that basis, it is concluded that RCRA hazardous waste should not be present on a large scale at the SLDS. Text was added.
14	22, 2nd full ¶	The information and rationale presented here is not entirely clear. We suggest that information be presented as if to a reader who has no prior familiarity with the site. While FOD determinations should not generally rely on characterization which has yet to be performed, it is our understanding that the background analysis is now complete. This information should be helpful in further verifying what contaminants are due to MED/AEC impacts; however, this should not provide the sole basis for identifying COCs. In addition to being associated with the release, COCs should be identified based on being of sufficient concentration, distribution, and toxicity to be of significance from a risk standpoint. With regard to the matter of collocation, as discussed in Comment 3, we suggest inclusion of quantitative evidence supporting this general conclusion.	Text, tables, and graphics have been added to more clearly describe how the COCs were determined, how metals are located relative to the principal radiological threat, and how the remedy addresses the COCs on a location by location basis. In addition, text has been added which clarifies how the USACE authority to address MED/AEC contaminants relates to the location of non-MED/AEC contaminants that may remain on the site.

EPA REGION VII COMMENTS AND RESPONSES ON THE RECORD OF DECISION FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (July 1998) (continued)

15	§6.0	Summary of Site Risks. As has been commented on previously, this section lacks quantitative information about the risks posed at various locations, at various depths, and under various exposure assumptions. It is this information that forms the basis for concluding that response action is necessary and allows the scope and nature of the necessary response to be defined.	Additional text has been added to describe the principal threat at the site (i.e., exposure to radionuclides, particularly radium-226) and that future use scenarios show that unacceptable exposures may occur to industrial or construction workers. In addition, cadmium and arsenic have been identified as posing potential risk at the site and have been discussed in detail as to their distribution and contribution to risk. Description has been added as to how each COC has been evaluated relative to potential pathways and scenarios by which exposures could occur. The alternative analysis and discussion of the selected remedy has been supplemented with additional text describing how each remedy addresses the risk and the basis for selecting the preferred remedy relative to the criteria established by CERCLA. Tables have been provided which present the PRGs, the EPA point of departure criteria, and EPA risk range concentrations and activites for the COCS to improve the understanding of how the remedy addresses potential site risks and why the action is necessary.
16	§7.0	Description of Alternatives. The main premise of this section should be that, based on the conclusions reached in the previous section, specific contaminants posed unacceptable risks at the site which need to be minimized/eliminated, these are the alternatives we considered to accomplish that risk minimization/elimination. Thus, the introductory words in this section should say something to the effect that based on the unacceptable risks identified in the previous section, the following things need to be done to address those risks: (1) list the remedial objectives (e.g., eliminate direct contact of onsite industrial and construction workers and future residents with surficial contaminants above whatever level presents an unacceptable risk, etc.)	Please see the response to No. 15 above.
17	§7.0	This section also lacks the quantitative risk information to justify derived remediation goals, examine the risk reduction accomplished through implementation of the various alternatives based on estimated residual risks, and conclude that the selected remedy is protective under CERCLA/NCP requirements.	Please see the response to No. 15 above.
18	§7.1.1	Theoretical discussion that supports the conclusion that radioactive and nonradioactive COCs are collocated should be supplemented with actual data that indicates that the COCs are in fact collocated.	Text and graphics have been provided.
19	§7.1.1, ¶2	This paragraph is not entirely clear but seems to suggest that some of the areas which will be remediated may not be contaminated as a result of MED/AEC activities. An explanation of the basis for this concern and the factors used to determine which impacts are MED/AEC related would be appropriate.	This text was deleted.

EPA REGION VII COMMENTS AND RESPONSES ON THE RECORD OF DECISION FOR THE ST. LOUIS DOWNTOWN SITE ST. LOUIS, MISSOURI (July 1998) (continued)

20	58, Table 7-1	Also Statutory Determinations. The range of ARARs evaluated is incomplete. Chemical-, action-, and location-specific ARARs should be evaluated from all likely environmental laws. Requirements from the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, and the Resource Conservation and Recovery Act are most notably absent. Include determinations for all those requirements evaluated even if found not to be ARAR, particularly in the case where a requirement might be conspicuous by its omission. Note that the allowable dose limits set by the cited NRC rule are not considered by EPA to be sufficiently stringent to meet CERCLA/NCP requirements.	The ARARs discussion and tables have been extensively revised in response to this comment and comments received from the State of Missouri. Determinations were included in the discussion. The comment on NRC dose limits is noted. The remedy as described in the current version of the ROD is presented solely in a CERCLA context. Discussion of NRC issues were included in the FS and earlier versions of the ROD because it is relevant to on-going actions not related, but adjacent to FUSRAP areas of the site.
21	§7.2 and §7.3	The cleanup objectives described here are somewhat vague and, at least for groundwater, do not appear to be risk-based. For example, the first remedial action objective on page 33 is to mitigate direct contact with soils through ingestion and dermal contact. Factors such as which COCs at what concentration and at what depth present unacceptable risks are not readily discernable from this for previous sections. A second remedial action objective for soils is to mitigate external gamma radiation from surface soils; however, no information on what is an unacceptable level of gamma radiation and what levels of what contaminants result in this unacceptable level is provided. The discussion on groundwater is particularly unclear in that no potential exposures are identified, yet the stated objective is to eliminate or minimize potential exposures.	The text and rationale for the remedy for ground water has been extensively revised. In addition, extensive detail has been added relative to the concentration and distribution of the COCs and the expected residual risk on a location-by-location basis. Alternative 6 is the proposed remedy. It uses 4 or 6 feet of approved off-site borrow to backfill excavated areas. It is clear that these thicknesses of cover will attenuate gamma radiation to background levels at the surface.
22	61	Explanation of Significant Changes. The second paragraph says that Alternative 4 was not considered sufficiently protective of construction activities involving deep excavation. The Corps may want to make clear that this was a community perception rather than a determination per CERCLA/NCP. The third paragraph, second sentence, should say that inaccessible soils will be managed through institutional controls *until such time as they are otherwise* addressed under a future ROD.	The comment is noted and the text was clarified. The text on inaccessible soils and institutional controls was incorporated as recommended.