



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

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August 24, 2012

Ms. Sharon Cotner
FUSRAP Program Manager
U.S. Army Corps of Engineers
8945 Latty Avenue
Berkeley, MO 63134

RE: Remedial Investigation and Baseline Risk Assessment Report for the Inaccessible Soil Operable Unit at the St. Louis Downtown Site, Draft Final, dated July 26, 2012.

Dear Ms. Cotner:

The Missouri Department of Natural Resources has reviewed the USACE's responses to the Department's comments and the Draft Final Remedial Investigation Report and Baseline Risk Assessment. We received a Draft Final Read Ahead version and finished a preliminary review of the document, received July 5, 2012. The Department and the Missouri Department of Health and Senior Services (MDHSS) provided preliminary feedback on July 23. The Department then received the above referenced document July 30, 2012. Both the Department and MDHSS have finished reviewing the draft final document.

The Department makes the following comments:

- 1.) The Department appreciates that the USACE changed the Remedial Action Objects to include suggestions made by the Department. The Department did provide other comments to the USACE on July 23, 2012, where changes based on those comments were not made to the draft final document and the USACE did not provide a response. The Department requests a response to the comments and any appropriate changes made to the draft final document. The following comments from our previous correspondence have not yet been resolved:
 - a. Typically, the nature and extent and the fate and transport of the contaminants in the Operable Unit would be fully developed, understood, and documented in a Remedial Investigation Report. The Department understands the USACE's need to complete some final characterization sampling prior to the Feasibility Study, and can be flexible with that request. Therefore, the Department reiterates the statement that any additional surveying and/or characterization sampling (soil, radon, etc.) and associated risk analysis be completed prior to the finalization of the Feasibility Study if such surveying/sampling results or associated risk analysis has the potential to impact the remedy decision-making process. Please respond directly to how the USACE believes all relevant characterization has been completed.



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- b. The Department reiterates that all sampling and surveying deviations from the Remedial Investigation Work Plan should have detailed evaluations and discussions in the report that include which samples/surveys were changed, the reason for the deviation, and any impact upon the characterization, risk assessment, or RI conclusion. This process is typically documented using field variance forms or other preapproved methods of modifying work plans. Having this information in the document will allow the reader to easily view the changes in order to assess any impact on the RI conclusion. At a minimum, the USACE should have a statement within the text on whether or not any deviations from the Work Plan impacted the characterization or risk assessment.

- c. The USACE states on page 65 that:

Although individual elevated measurement areas will be addressed in the FS, several ISOU areas have average Ra-226 and/or Th-230 concentration levels exceeding the values listed above. However, the Rn-222 pathway is currently considered potentially significant only for Plant 1 Building 26 and the DT-4 South Storage Building. The other areas are either not beneath occupied or habitable buildings, or it will take more than 1,000 years for the Ra-226 to build-up from the decay of Th-230 to achieve significant levels.

The Five Year Review Report (2010) identified the need for radon monitoring at Plant 1 Building 25 within buildings. Although the inaccessible soils sampling indicated that Building 25 at Plant 1 did not have concentrations that currently exceed or will exceed the 40 CFR 192.12(a) values, two other areas (Plant 1 Building 26 and the South Storage Building at DT-4) did show concentrations exceeding those values, which warranted radon monitoring by the USACE. The Department believes these results are needed to understand the nature and extent of the contamination and to fully characterize the Operable Unit, and request that this be completed within this Remedial Investigation Report. By any means, radon monitoring, sufficient to make a remedy decision and to determine future monitoring needs, must be completed prior to the finalization of the Feasibility Study.

The Department also sees the need for the USACE to define how future potential risks to radon will be quantified and addressed where buildings or other structures may be built on areas where concentrations exceed (or in the future will exceed) the 40 CFR 192.12 (a) levels, but are not currently beneath occupied or habitable buildings.

- d. For comment #40 (page K-50 of the Read-Ahead document), the USACE stated:

While burrowing animals could be exposed to contaminants if they burrowed into the inaccessible soils area, the pathway that would likely be the biggest concern is inhalation, and VOCs have not been identified as PCOCs at the SLDS ISOU. Worms and insects would only be exposed to contaminants in the 0- to 1-ft interval. This is the top of the levee and essentially uncontaminated, so birds would not be at risk from consuming these invertebrates.

The Department has resubmitted the preliminary comments provided informally to the USACE on June 5, 2012. How did the USACE come to the conclusion that, "the pathway that would

likely be the biggest concern is inhalation?" Although inhalation is one possible pathway for burrowing animals, ingestion of contaminated soils appears that it would be an equally, if not more, significant pathway. Why did the USACE not evaluate this pathway? Additionally, why were VOCs the only concern for inhalation? Is inhalation of radiological PCOCs not also a concern?

Additionally, the USACE stated that "worms and insects would only be exposed to contaminants in the 0- to 1-foot interval." Inaccessible soils have been found deeper than the 0-1 foot interval. According to the USDA (http://soils.usda.gov/sqi/concepts/soil_biology/earthworms.html), earthworms can inhabit surface soils, upper surface soils, and subsurface soils (that may extend several meters in the soil). Why, then, does the USACE state that earthworms can only be exposed at the 0-1 foot interval, thus assuming birds would not be at risk?

- 2.) The Department requests that the information contained in the USACE response to MDNR comment #5 regarding Plant 7W is included in the draft final document. An appropriate place to add this additional information is in the third bullet on page 6. Additionally, for the sixth bullet describing Plant 7N, please include a similar statement within the text on the process for including any inaccessible information into this report and subsequent documents.
- 3.) Page K-25, Section K2.4.1 Radiological Toxicity Assessment, first paragraph, second sentence states, "Because radiological exposures result in cancer..." Merely being exposed to radiation will not result in cancer but may increase the risk of developing it. This statement needs to be rewritten to state, "Because radiological exposure may increase the risk of developing cancer..." or similar verbiage.
- 4.) Page 125, Section 7.4.1, Data Limitations and Recommendations for Future Work. There is no mention of radon sampling at Building 26 at Plant 1, or the Storage building at DT-4 (Gunther Salt). This information should be added to this paragraph along with a statement that radon sampling, sufficient to make a remedy decision and to determine future monitoring needs, will be completed prior to the finalization of the Feasibility Study.

MDHSS makes the following comments:

- 1.) MDHSS did provide preliminary comments to the USACE on July 23, 2012, where changes based on those comments were not made to the draft final document and the USACE did not provide a response. MDHSS requests a response to the follow up comments and any appropriate changes made to the draft final document.
- 2.) Section S2.2.2, *Identification of Potential Receptors*, states that residential exposures are not likely to occur in the impacted area. However, to be consistent with the 1998 ROD, a residential risk assessment should be performed for the vicinity properties.
- 3.) MDHSS questions the use of the activity fraction presented in Table S-8, *The St. Louis Downtown Site-Specific Activity Fractions*. MDHSS commented on this issue on July 23, 2012. For many of the sites, thorium-230 and radium-226 were the dominant radionuclide present. MDHSS has yet to receive response to comment.

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- 4.) MDHSS would like to make note of a potential error in Appendix S. Referencing Table S-6, *Individual Radionuclide Derived Concentration Guideline Levels Equivalent to 25 mrem/year and 1.0E-6 Risk – Industrial Worker*, the risk-based DCGLs based on 1.0E-06 risk appear to be set to 1.0E-05. For example, when MDHSS performs the calculation, the actinium-227 DCGL of 37 dpm/100 cm² set to 1.0E-06 comes out to 3.7 dpm/100cm² instead. If this is an error, then please correct accordingly.

The Department understands the USACE's need to have a final document by the end of August, and would like to work with the USACE as much as needed (e.g., meetings, conference calls, etc.) in order to resolve these outstanding items.

If you or your staff have any questions or need further clarification, please contact me at (314) 877-3251. Written correspondence can be directed to my attention at Missouri Department of Natural Resources, 917 N HWY 67, Suite 104, Florissant, MO 63031.

Sincerely,

HAZARDOUS WASTE PROGRAM

Tiffany D Burgess

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