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DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
8945 LATTY AVENUE
BERKELEY, MISSOURI 63134

July 18, 2011

REPLY TO
ATTENTION OF

Formerly Utilized Sites Remedial Action Program (FUSRAP)

SUBJECT: Iowa Army Ammunition Plant (IAAAP) – Responses to the US Department of Energy (DoE) Comments on the FUSRAP Feasibility Study for the IAAAP dated March 31, 2011 and the FUSRAP Proposed Plan for the IAAAP dated March 31, 2011

Mr. Christopher Clayton
Office of Policy and Site Transition
US Department of Energy
EM51/Forrestal Building
1000 Independence Ave SW
Washington, DC 20585

Dear Mr. Clayton:

Reference Federal Facilities Agreement (FFA) under CERCLA Section 120, Administrative Docket Number CERCLA-07-2005-0378 between the US Environmental Protection Agency (EPA), the State of Iowa, Department of Energy and the US Army Corps of Engineers (USACE) for the Iowa Army Ammunition Plant.

This letter acknowledges the receipt of the DoE comments to the FUSRAP Feasibility Study (FS) for the IAAAP dated April 22, 2011 and the FUSRAP Proposed Plan (PP) for the IAAAP dated April 22, 2011. Enclosed you will find responses to the DoE comments submitted to USACE on May 17, 2011.

If you have any questions or concerns, please contact me at (314) 260–3915.

Sincerely,

Sharon Cotner

Sharon R. Cotner
FUSRAP Program Manager

Enclosure

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Enclosures

Comments from the Department of Energy, Office of Legacy Management

Comment 1: The remediation goal (RG) for depleted uranium (DU) is based on exposure of a site worker over a 25-year period. Based on 25 millirem per year (mrem/yr) and a 10^{-6} excess cancer risk (CR), it was determined that the industrial exposure soil RG of 150 pCi/g DU is appropriate. It is noted that since the RG does not allow unlimited use/unrestricted exposure (UUUE), that 5-year reviews will be required and industrial use status maintained.

Response 1: USACE agrees that cleanup of DU-contaminated soil to the industrial RG of 150 pCi/g DU will achieve the 25 millirem/yr dose limit. However, this industrial RG achieves a 1.0E-04 excess cancer risk, which is the upper limit of USEPA's target risk range. Long-term management obligations will depend upon the results of the final status surveys.

Comment 2: DOE notes that USACE conducted field scanning to identify areas of elevated radioactivity. With the exception of FS-12, only a few isolated occurrences of DU were found. DU was more prevalent at FS-12, but it appears that USACE adequately defined the extent of contamination, which is the focus of the proposed soil remediation. From the limited data presented in the Remedial Investigation, uranium concentrations occur in a bimodal distribution—the locations either exceed the proposed cleanup goal (usually significantly), or meet unrestricted use criteria (although the free-release criterion is not presented in the referenced documents, so this is based on what was used elsewhere).

Response 2: Comment noted.

Comment 3: DOE notes in the feasibility study (FS) that the DU is often present in discrete pieces that could be detected by field measurements. This suggests that the characterization was biased. It is not clear if the characterization and the proposed remediation would be compliant with the protocols presented in the *Multi-Agency Radiological Site Survey and Investigation Manual (MARSSIM)*. There is no discussion about conducting a final status survey.

Response 3: In general, soil samples collected during the RI were biased toward areas judged to have higher potential for contamination than surrounding areas. Language has been included in the ROD to clarify that final status surveys consistent with MARSSIM will be conducted to ensure that excavations meet the industrial RG for DU. The final status surveys will also determine if levels appropriate for UUUE are achieved.

Comment 4: At a large number of FUSRAP sites where contamination is present in discrete pieces, cleanup of these pieces results in actual cleanup levels that are much lower than site-specific RGs—often levels that are similar to background. It is possible that cleanup of the DU at the Iowa Army Ammunition Plant (IAAP) could achieve levels well below the RG, especially if the objective is to remediate to levels that are as low as reasonably achievable (ALARA). It is not clear if the ALARA concept has been incorporated into the cleanup approach.

Response 4: Because of the bimodal distribution of the DU, USACE suspects that cleanup of the DU-contaminated soil to the industrial RG may achieve DU levels well below the industrial RG. An ALARA analysis will be performed as part of the final status survey. Additionally, a post-remedial dose/risk assessment will be conducted to confirm that target dose and risk levels have been achieved by residual conditions for industrial land use.

Comment 5: The referenced documents state that an estimated 20 percent of treated soil (Alternative 4) that meets the RG can be used as backfill "as appropriate." DOE suggests that the average concentration in this soil might be stated (i.e., either well below or close to the RG of 150 picocuries per gram [pCi/g]) and provide a more clearly defined description of how the treated soil will be used. This data should be captured on radiological as-build drawings that will become part of the permanent site record for the long-term custodian.

Response 5: Material meeting the DU RG may be used as backfill, as appropriate. Material excavated from the site will be sorted, segregated into discrete piles, and sampled. The results of the sampling, the placement of material and its average concentration, and as-built drawings showing the remediated and backfilled areas, will be clearly documented in the Post-Remedial Action Report. Prescribing an average concentration reduces field flexibility and is difficult to predetermine, given the bimodal distribution and natural excavation process. The USACE intends to make every effort to leave the lowest concentration possible within the authority of the ROD.

Comment 6: If an ALARA approach is taken to the DU cleanup, it is likely that UUUE levels could be met for radiological contamination, which would remove any future FUSRAP postclosure care requirements except records management. USACE did not consider RGs other than the industrial use level for DU because of the known use of the site. If Alternative 3 (excavation and off-site disposal) can meet cleanup levels that allow UUUE, it may be more cost effective in the long run (i.e., in terms of site life-cycle costs) than Alternative 4 (soil treatment and backfilling of soil meeting the RGs). DOE acknowledges that reasonable future land use is unlikely to change but suggests that at a minimum a notification in real property records is appropriate to disclose radiological conditions and hazards from residential use. Note that DOE takes the industrial use assumption to be a *de facto* restriction.

Response 6: USACE has considered RGs other than industrial RGs in pre-remedial investigation radiological work plans; however, the decision was made to use the industrial use scenario in the remedial investigation. The industrial land use basis for the FUSRAP RI/BRA and FS is consistent with past and on-going investigations and remedial actions conducted at other IAAAP sites under the IRP. Due to the much higher magnitude cost of disposal for DU, USACE believes soil sorting under Alternative 4 is inherently more cost effective than Alternative 3. The USACE will provide a Memorandum to the File for the Army property records which will include a copy of the PRAR documenting the remaining radiological concentrations.

Comment 7: DOE submits that USACE may wish to include radiological verification surveys (including measurements and biased sampling) as part of the cleanup that can serve as a final status survey for DU. If there is no need for restrictions based on DU (which appears likely), and because testing with DU is no longer conducted, DOE would have no long-term obligation for management of radiological material, regardless of future site use. If USACE does not conduct a verification survey following remediation, the issue is likely to come up in the future.

Response 7: Final status surveys consistent with MARSSIM will be conducted to ensure that response actions meet the soil RG for DU. Long-term management obligations will depend upon the results of those surveys.