

Umetco Minerals Corporation



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February 7, 2006

Mr. William von Till, Project Manager
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety and Safeguards
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Subject: Request for Deviation from Ra-226 Topsoil Criteria for C-18 Pit

Reference: License SUA-648, Docket No. 40-0299, License Condition 58

Dear Mr. von Till:

Umetco Minerals Corporation (Umetco) is requesting a license amendment to License Condition 58, U.S. Nuclear Regulatory Commission (NRC) Materials License Number SUA-648, for Umetco's Gas Hills Uranium Mill Site. The purpose of this amendment is to allow the Ra-226 content for the final 1 foot of cover materials used for topsoil placement on the C-18 Pit to exceed the 5 pCi/g criterion specified in the plan entitled *Design for Enhancement of the Previously Approved Reclamation Plan for the A-9 Repository* (Applicable Amendments 42, 53).

The rationales supporting this request are documented in the attached Technical Memorandum. Although addressing a different license condition and submitted under separate cover (also dated February 7, 2006), the document entitled *Report Amending Final Design and Reclamation Plan for GHP No. 2/Mill Area* addresses a number of issues related to Ra-226 background and borrow area characterizations that are germane to this request.

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Based on the findings discussed in the attached memorandum and supporting documents, the deviation requested above will not adversely impact health, safety, or the environment. Furthermore, public access will be limited because the C-18 Pit is located within the site transfer boundary. If you or your staff have any questions or need additional information, please contact me at (970) 256-8889 or by e-mail at gieckte@dow.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Raph B/Gieck for".

Thomas E. Gieck
Remediation Leader

TEG/SDK/jfc
Attachment: As stated

Technical Memorandum
Rationales Supporting Proposed Change to License Condition 58

License Condition 58 (LC58) states:

"For the A-9 cover, the top 2 feet of frost protection soil will contain an average Ra-226 that does not exceed the NRC-approved Ra-226 value based on data for surface soil surrounding the site. Reclamation of the A-9 repository, C-18 pit, and of the north and south evaporation ponds, and the site grading shall be in accordance with the "Design for Enhancement of the Previously Approved Reclamation Plan for the A-9 Repository" in the licensee's submittal dated October 27, 1998, as modified by submittals dated December 10, 1998 and March 29, 1999."

The reclamation plan for the C-18 pit is included in Section 7.0 of the design plan document cited in LC58, part of which is paraphrased below:

"In accordance with 10 CFR 40, Appendix A, Criterion 6(5), the near surface materials will not include waste or rock that contain elevated levels of radium, and will be essentially the same radiologically as that of surrounding surface soils.... The top 3 feet will consist of a 2-foot thick layer of soil with a radium concentration that is less than 10 pCi/g covered by 1-foot of growth medium with a radium concentration of less than 5 pCi/g."

It is important to identify that the plan cited above—*Design for Enhancement of the Previously Approved Reclamation Plan for the A-9 Repository* [(Shepherd Miller, Inc. (SMI) 1998)]—was prepared two years before Umetco submitted their *Background Characterization Report* (September 2000) to their NRC. In the latter document, a site-wide background level of 10 pCi/g Ra-226 was established for surrounding soils. This value is twice that specified in SMI's Design Plan for the C-18 topsoil Ra-226 content.

As documented extensively in subsequent submittals (e.g., Umetco 2003a, 2003b, 2004)—including the report submitted under separate cover entitled *Report Amending Final Design and Reclamation Plan for GHP No. 2/Mill Area* (Umetco 2006)—background Ra-226 concentrations in the surface soils surrounding the Gas Hills site vary widely. Although difficult to determine due to the wide variation in the background data, background levels of 15 to 20 pCi/g could be supported. This finding has been corroborated by the NRC. For example, in the September 2004 Technical Evaluation Report (TER), the NRC states:

"Background Ra-226 and uranium values are difficult to quantify because the site is on land containing natural deposits of uranium, open pit uranium mines are on and adjacent to the site, and the Wyoming Abandoned Mines Program has used mine overburden (spoils) to fill some adjacent open pit mines so that surface soil contains up to 20 pCi/g Ra-226."

Given the factors discussed above, Umetco is requesting that the average allowable Ra-226 content for C-18 topsoil be increased from 5 to 10 pCi/g. This value is well within the range of natural variability established for surrounding (background) surface soils. Furthermore, analysis of samples collected from five topsoil pile sources in May 2005 indicated an average Ra-226 content of 9.8 pCi/g (9 samples ranging from 6.3 to 11.9 pCi/g). Based on Umetco's recent experience with borrow area soils for GHP-2 (see Umetco 2006)—i.e., the difficulty in finding background/borrow soils with lower radium content—it is not feasible for Umetco to meet the conservative 5 pCi/g criterion specified in the 1998 design plan.

References

- Shepherd Miller, Inc. (SMI). 1998. *Design for Enhancement of the Previously Approved Reclamation Plan for the A-9 Repository*. October 1998.
- Umetco Minerals Corporation. 2000. *Final Background Characterization Report, Gas Hills, Wyoming Site*. September 2000.
- Umetco Minerals Corporation. 2003a. *Final Design and Reclamation Plan for GHP No.2/Mill Area*. Gas Hills Reclamation Project, Docket No. 40-0299, License No. SUA-648. Report submitted on September 11, 2003, Revision 1 of preceding May 2003 document.
- Umetco Minerals Corporation. 2003b. *Final Status Survey Report, Gas Hills Wyoming Site*. October 2003.
- Umetco Minerals Corporation. 2004. *Final Status Survey Report Addendum 1, Gas Hills Wyoming Site*. April 2004.
- Umetco Minerals Corporation. 2006. *Report Amending Final Design and Reclamation Plan for GHP No. 2/Mill Area. Gas Hills, Wyoming Site*. February 2006.
- U. S. Nuclear Regulatory Commission (NRC). 2004. *Technical Evaluation Report for Umetco Minerals Corporation's Status Survey Report for the Gas Hills Uranium Tailings Site*. September 21, 2004. Submitted by letter from G.S. Janosko (NRC) to T. Gieck (Umetco) dated September 27, 2004.