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Colorado Department
of Public Health
and Environment

January 4, 2006

Ms. Janet Schlueter
Director, Office of State and Tribal Programs
United States Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Room 3C-10
Rockville, Maryland 20852

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STP

Re: Colorado Radioactive Materials License # 317-02 for the Hecla Durita Site- Response to Nuclear Regulatory Commission (NRC) Letter Received December 5, 2005 Regarding Ground-Water Monitoring

Dear Ms. Schlueter:

In your letter dated December 5, 2005 regarding the decommissioning of the Hecla Durita Site, you have indicated three specific concerns regarding the discontinuance of groundwater monitoring:

First, NRC staff concluded that they should have been consulted prior to well abandonment.

Second, NRC staff does not believe that an Agreement state is allowed to terminate groundwater monitoring at a uranium milling site, but this must be done by the NRC.

Third, NRC technical staff does not understand the technical basis for the discontinuation and insists that a new groundwater monitoring system and process be implemented.

Colorado radiation staff and I disagree with the NRC that ground water detection monitoring was prematurely terminated by the licensee with our approval. However, we regret our failure to consult with you prior to discontinuing the monitoring program. We also challenge your conclusion that our agreement with NRC prohibits us from terminating groundwater monitoring when we have a sound and well documented basis for doing so.

Your staff have stated that the monitoring should have continued until the Completion Review Report (CRR) was completed and a draft LTS was submitted to NRC for review. Our staff believes that NRC has gone beyond the scope of its review as described in Section V. E. *Scope of NRC review of*

SISP Review Complete

STP-006 Complete
AIDS: SP08

CRR of SA-900: Termination of Uranium Milling Licenses in Agreement States (SA-900) in requiring that five detection monitoring wells be reinstalled at the site. Staff believes that it is not necessary to reinstall these wells and the reason to abandon these wells is discussed in the Draft Completion Review Report Section 7.2.3 *Well Closure*. This report was submitted October 1, 2004 and commented on by NRC staff on February 10, 2005.

NRC staff concluded in your letter that there was not an adequate regulatory or technical basis to terminate the groundwater detection-monitoring program at the Durita site and to plug all of the monitoring wells. It should be noted that SA-900 Section V.D. 1. indicates that "This report should document the State staff's bases in summary form for its conclusion that all applicable standards and requirements have been met." Appendix A –COMPLIANCE WITH APPENDIX A OF PART 18 of the Colorado Rules and Regulations Pertaining to Radiation Control (Regulations) of the draft CRR does this and concludes that all of the applicable standards have been met. In addition, over 4 pages of references are included with the draft CRR for more detailed information than is required by the CRR. Section V. E. of SA-900 indicates that the level of detailed information contained in the CRR should be similar to that contained in the sample CRR's which can be found in Appendices B and C. Staff believes that information in the Hecla draft CRR contains much more information than in the examples given in SA-900.

A detection ground water monitoring system was implemented in 1976 (Criterion 7 of Appendix A of Part 18 of the Regulations) and a compliance groundwater monitoring program (Criterion 5B(1) was implemented in 1997 per a license condition, even though there was no evidence of leakage contamination after 21 years of monitoring (see Criterion 5B (5) of Appendix A of the draft CRR). The purpose of the detection monitoring system is to detect leakage of hazardous constituents and to demonstrate compliance with established protection standards. A ground water corrective monitoring program was never initiated because there was no leakage detected.

NUREG -0706 *Final Generic Environmental Impact Statement on Uranium Milling*, September 1980, discusses the purpose of long-term funding regarding any monitoring at mill tailings sites (Section 8.2.2). "The purpose of this surveillance would be to confirm that no unexpected erosion was occurring and that there were no disruptive human activities at the site. Therefore, the primary component of the surveillance would be periodic visual inspection at each site." The NUREG goes on to indicate that monitoring requirements at a particular site should be determined on a site-specific basis. "The preoperational, operational, and compliance determination monitoring programs will be extensive both from the point of view of what is done and the period of time covered (15 to 30 years). These programs will be sufficient, therefore, to determine if there are any potential ground water problems at the sites." After 22 years of monitoring, no ground water problems were determined.

In addition, the facility operations, reclamation, meteorology, geology and hydrology were taken into account before allowing plugging of the wells. These are discussed in the draft CRR. To summarize: the facility was a heap leach operation designed to capture all liquids for processing. The site was located in a geologically and hydrologically preferred area (within the Mancos Shale Formation) and constructed with a clay liner to prevent leakage. The three leach tanks were dewatered and constructed with a five-foot engineered cap to prevent infiltration and a sloped top surface to enhance runoff. The closure cell was constructed of solidified, neutralized, evaporation pond material, placed as an engineered fill with specific lift thickness, compaction and moisture requirements. There are no

saturated liquids to leach from the solidified materials in the closure cell. In addition a compacted clay cap was placed and the top surface was sloped to enhance surface runoff and limit infiltration.

The CRR mentions that the evaporation rate in the area is 49 inches and that precipitation is 12 inches per year. The HELP (version 3.3) Model was used to evaluate infiltration. Percolation infiltration was determined to be 0.00043 inches per year for the closure cell and 0.000103 inches per year for the leach tanks. Your letter indicates that the leach tanks may leach contaminants into ground water. There are minimal, if any, free liquids in the heap materials in the repositories to leach and infiltration or recharge is not an issue at this site.

In the unlikely scenario that liquids did leak from the repositories, they would encounter the Mancos Shale. This geologic formation consists of low permeability shales having a high attenuation capacity that is over 50 feet thick before reaching the first usable aquifer. Permeability of the formation decreases with depth. It is an alkali rich formation and if acid solutions somehow leached from the heap materials in the leach tank and encountered the Mancos shale, they would become neutralized inhibiting further movement of the hazardous constituents. The materials in the closure cell were neutralized before placement.

The Mancos Shale Formation is relatively impermeable and not a good conductor of ground water. The direction of ground water flow is north/northeast and has a gradient of 0.034 ft/foot. The water bearing units in the Mancos Shale produce very low yields (approximately 1 gpm) due to low permeabilities (10^{-5} to 10^{-8} cm per second). In the U. S. Geological Survey Professional Paper 451, (1965) the Mancos shale is described. "When wet, the surface of the Mancos becomes sticky and very slippery, even though the very low permeability of the shale generally permits wetting to a depth of only a small fraction of an inch." Groundwater flow calculations determined that it would take 22,000 years for ground water to reach the site boundary from the leach tanks.

In your letter, you also mention evaluating the well user at the Coke Oven Ranch. As discussed in the draft CRR, the well at that property is cross-gradient and would not be impacted by any leakage from the site. The well is also located in the Dakota Sandstone Formation below the impervious shale Mancos Formation. Any water present in the Mancos formation is generally not used for drinking water because of its high bicarbonate content and high sulfate, which exceeds the Colorado secondary drinking water standard.

It should also be noted that in two previous reviews of the draft CRR, NRC reviewers never commented on the plugging of the wells (Section 7.2.3 Well Closure). The current concern was initiated after NRC received the Long-term Surveillance Monitoring plan from DOE. CDPHE staff discussed plugging of these wells with DOE before implementing the well closure. DOE concurred with this approach because of their knowledge of the site, the available data, and their familiarity with the climate and geohydrology of the area.

We disagree with your interpretation of Criterion 7A of 10 CFR Part 40, Appendix A which requires detection monitoring, but does not specify how long this monitoring should continue. Criterion 7 states, "At least one full year prior to any major site construction, a preoperational monitoring program must be conducted to provide complete baseline data on a milling site and its environs. Throughout the construction and operating phases of the mill, an operational monitoring program

must be conducted to measure or evaluate compliance with applicable standards and regulations; to evaluate performance of control systems and procedures; to evaluate environmental impacts of operation; and to detect potential long-term effects.” It specifically mentions when monitoring must occur (preoperational, construction, & operating) and mentions nothing about any monitoring required during reclamation/closure. Reviews of NRC guidances do not mention continuous monitoring until license termination, unless leakage is detected. Other documents indicate that monitoring can end at the end of construction activities. In addition NUREG- 0706 indicates that ground water monitoring can cease after 15-30 years of monitoring and no leakage is detected.

In the enclosure to your letter, Guidance Document NUREG-1620 is quoted. “ The first strategy [of protection groundwater resources] is to prevent the spread of contaminants from disposal and processing sites into ground water or surface water.” Staff believes that the reclamation activities taken at the site and discussed above meet this requirement. The reviewer also indicated that NUREG –1620 (June 2003) was used for this review and is used for all Title II groundwater reviews. The wells had already been plugged and mill closure had been completed prior to issuance of this document. In addition, in the Sample Completion Review Report (Conventional) example in Appendix B of SA-900 Section 4.1.4 Conclusion, it is indicated that the facility should be in compliance “with the State groundwater regulations at uranium mill closure”, not at license termination.

In addition, Colorado as an agreement state underwent an IMPEP review in 2000 by NRC and other agreement states. SA-900 Section V. D. 2. indicates that during the IMPEP periodic review adherence to necessary program procedures be looked at including the license termination process for uranium milling, which also serves as a basis to show that all applicable standards and requirements are met. The State of Colorado radiation program was determined to be satisfactory.

SA-900 Section V.E. describes the scope of the NRC review of the CRR. “NRC staff should not duplicate the State’s review or conduct an independent detailed technical review of the proposed license termination or of any of the specific documentation submitted by the Agreement State licensee. Rather, NRC staff should examine whether the CRR has documented the State staff’s bases in summary form for its conclusion that all applicable standards and requirements have been met.” The CRR presents a detailed justification for the decommissioning of these wells. We believe that this should be sufficient for NRC to make a determination required above and that the NRC comments that refute this justification constitute the type of duplicative effort that is prohibited by SA-900.

In the same section of SA-900, it says “Unless there are obvious flaws identified in the CRR related to the State-approved reclamation, decommissioning and/or groundwater restoration plan, NRC staff will focus its review on whether the State has provided adequate bases in summary form to confirm that closure activities were performed according to the approved plans and specifications.” During two reviews in February 2005 and July 15, 2005 e-mail response by NRC staff, the issue of the abandoned wells was never addressed until we received your letter dated December 2, 2005. State staff believes that they have given the basis for plugging the wells in the CRR and that all applicable standards and requirements have been met. The State does not believe that decommissioning a well with over a 20-year history of compliance/non-detection meets the criteria of being an obvious flaw. Two reviews by NRC personnel of the NRC did not indicate that well closure was an obvious flaw.

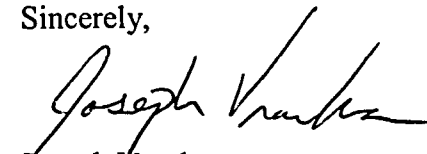
Ms. Janet Schlueter
04 January 2006

NRC should only address whether the well decommissioning was in compliance with the rules and regulations and was protective of health and the environment. It should be noted that there was no need for a ground water restoration plan at the Hecla site, as leakage from the leach tanks was never detected during the detection monitoring. Addition of new wells would serve no purpose.

It is our contention that Colorado staff have completed due diligence in overseeing activities at the Hecla site with regards to approved plans and designs and that work done meets the Colorado requirements of the *Rules and Regulations Pertaining to Radiation Control*. We would be happy to meet with you and your staff to resolve the need to install wells, that our staff has determined after extensive regulatory and technical evaluation, to be unnecessary. Please let us know what further steps we can take if this matter cannot be resolved between us.

If you have any questions about the report, please call me at 303-692-3402 or e-mail me at joe.vranka@state.co.us.

Sincerely,



Joseph Vranka
Program Manager
Radiation Control Program

CC: File RML-317-02-3.2
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