November 10, 2004

Mr. Lawrence J. Corte
Western Nuclear, Inc.
Union Plaza, Suite 300
2801 Youngfield Street, Suite 340
Golden, CO 80401

SUBJECT: LICENSE AMENDMENT REQUEST - MODIFICATIONS TO GROUND WATER AND SURFACE MONITORING PROGRAM - REQUEST FOR ADDITIONAL INFORMATION SPLIT ROCK, JEFFREY CITY, WYOMING, SOURCE MATERIAL LICENSE SUA-56

Dear Mr. Corte:

By letter dated May 24, 2004, Western Nuclear, Inc. (WNI), formally requested amendments to License Conditions 24 and 74 of its Source Materials license SUA-56. The requested amendments included modifying the compliance monitoring network to reduce the number of monitoring wells, reduce the number of parameters to be analyzed, reduce sampling frequencies, and increase the number of surface water samples. Prior to reviewing this request, the Nuclear Regulatory Commission (NRC) requested additional information regarding ground water contaminant plumes and well locations. WNI submitted the requested materials by letter dated June 17, 2004.

The NRC has reviewed the information contained in both aforementioned submittals, as well as supporting information found in the document, “Site Ground Water Characterization and Evaluation,” dated 1999. Based on our review, it appears that certain issues require clarification, including the number of wells in the proposed network, sampling frequencies, and mapping information. Toward that end, we are providing this Request for Additional Information (RAI) that poses specific questions and comments regarding the aforementioned issues. Questions and comments in this RAI are grouped according to major topic.

If you have any questions regarding this letter or the NRC staff review, please contact the Project Manager, William von Till, at (301) 415-6251 or via e-mail to rwv@nrc.gov.

In accordance with 10 CFR 2.390 of the NRC's Rules of Practice, a copy of this letter will be available electronically from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Sincerely,

/RA/

Gary S. Janosko, Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 40-1162
License No.: SUA-56

Enclosure: Request for Additional Information

cc: Mark Thiesse, Wyoming DEQ
J. Wagner, WDEQ
Art Klienrath, DOE
Nicol M. Thompson, Esq.
Heather Jacobson, Esq.
Earl and Wallace Jamerman

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WESTERN NUCLEAR, INC.
SPLIT ROCK SITE, JEFFREY CITY, WYOMING
SOURCE MATERIAL LICENSE SUA-56
RESPONSE TO LETTERS DATED MAY 24, 2004 AND JUNE 17, 2004
REQUEST FOR ADDITIONAL INFORMATION

1. PROPOSED MONITORING NETWORK

Comment No. 1A. Monitoring Well SWAB-29. The document, "Site Ground Water Characterization and Evaluation, Volume 1 of 1" (SGWC), indicates that uranium concentrations in this well (0.134 mg/l) approached the ground water protection standard (0.16 mg/l) during the 1996/97 site characterization program. Although this 1996/97 concentration is below the ground water protection standard, ground water in this area is clearly impacted by site-derived contaminants. Furthermore, it is reasonable to expect that higher ground water uranium concentrations could migrate toward this well based on the hydrogeologic and contaminant transport data presented in the aforementioned report.

Therefore, sole use of Well SWAB-29 along the southern edge of the uranium plume is insufficient because the downstream edge of the uranium plume would remain undefined leaving the Red Mule subdivision at risk. More downgradient wells would be required to confirm that contamination in excess of the ground water protection standard is not migrating toward Red Mule subdivision or areas south of US Route 287. These wells could be located in the vicinity of Well SWAB-31, with at least one well located south of US Route 287.

Basis: According to 10 CFR Part 40, Appendix A, Criterion 7A, "The purpose of the compliance monitoring program is to determine that the hazardous constituent concentrations in ground water continue to comply with the standards set by the Commission." Compliance with this criterion would not be possible without the additional wells discussed in Comment 1A.

Comment No. 1B. According to the June 17, 2004 submittal, two wells (WN-21 and SWAB-2) would serve to monitor contaminant migration from the southwest valley and southeast of the hydraulic divide. However, the uranium concentration and ground water elevation maps, dated June 2004, indicate that contamination would migrate both north and south from the hydraulic divide. More wells would, therefore, be required to monitor uranium contamination, migrating north from the hydraulic divide to properly track the plume as it continues toward the Sweetwater River.

Basis: According to 10 CFR Part 40, Appendix A, Criterion 7A, "The purpose of the compliance monitoring program is to determine that the hazardous constituent concentrations in ground water continue to comply with the standards set by the Commission." Compliance with this criterion would not be possible without the additional wells discussed in Comment 1B.

Comment No. 1C. According to the June 17, 2004 submittal, it appears that WNI proposes to replace point of compliance (POC) Well 4R with Well 5. The NRC has two issues regarding this particular proposal. First, once ground water contamination is detected and a ground water protection standard has been established, the term "point of compliance" is no longer applicable. Instead, all wells contained in License Condition 74 A become part of a compliance monitoring network, and these wells are considered compliance wells. WNI must, therefore, label all wells compliance wells; however, future maps should denote those wells that were previously POC wells.

Second, a review of the ground water data for the first half of 2004 indicates that concentrations exceeding the ground water protection standard still persist at the location of Well 4R. Therefore, removing this monitoring location at this point in time would be premature. However, the addition of a well near the mouth of the northwest valley would be required to properly track a zone of relatively high uranium concentrations (>4 mg/l) on the north side of the site. Therefore, WNI should keep Well 4R in the compliance monitoring network in addition to adding Well 5.

Basis: 10 CFR Part 40, Appendix A, Criterion 7A, states that, "The purpose of the compliance monitoring program is to determine that the hazardous constituent concentrations in ground water continue to comply with the standards set by the Commission." Both Well 5 and Well 4R are necessary for tracking ground water pollution, which, in-turn, is necessary for maintaining compliance with this criterion. Therefore, both Wells 4R and 5 should be included in the compliance monitoring network.

Comment No. 1D. WNI proposes to exclude Well 1 from the future monitoring network leaving WN-21 as the nearest downstream well from the closed impoundments. However, a review of data for Well 1 indicates that uranium levels have increased from 2.57 mg/l (1996/97) to a current 2004 mean of 3.71 mg/l. Well 1 provides important ground water quality information nearest to the disposal units; consequently, WNI should include Well 1 in the future compliance monitoring network.

Basis: 10 CFR Part 40, Appendix A, Criterion 7A, states that, "The purpose of the compliance monitoring program is to determine that the hazardous constituent concentrations in ground water continue to comply with the standards set by the Commission." Well 1 is an important ground water monitoring point because it provides direct information regarding the quality of seepage originating from the disposal units. Therefore, Well 1 should be included in the ground water monitoring network.

Comment No. 1E. According to a 1996/97 uranium isoconcentration map, the meander near Surface Water A appears to be a significant ground water contamination discharge point. Consequently, Surface Water A should be moved to within the meander instead of within the adjacent riffle section. Sampling from the meander would provide a more accurate depiction of ground water contamination entering the stream system.

Basis: 10 CFR Part 40, Appendix A, Criterion 5B(6)(b), dictates that the NRC must consider potential adverse effects on hydraulically-connected surface water quality including the current and future uses of surface water in the area when addressing alternative concentration limit applications. Sampling from the meander would provide better information regarding surface water impacts from ground water pollution discharges.

Comment No. 1F. A comparison of the uranium concentration map, dated June 2004, and the uranium plume map from 1996/97 indicates that the uranium plume has migrated northwest in a more direct trend toward the Sweetwater River. However, WNI is not proposing monitoring wells west of WN-42A. Because the plume appears to be spreading to the west-northwest, additional monitoring wells would be required to define and monitor the uranium plume.

Basis: 10 CFR Part 40, Appendix A, Criterion 7A, states that, "The purpose of the compliance monitoring program is to determine that the hazardous constituent concentrations in ground water continue to comply with the standards set by the Commission." Without additional wells west of WN-42A, the edge of the plume in this area cannot be defined. As a result, the proposed monitoring program would not comply with this criterion and should be modified accordingly.

Comment No. 1G. It appears from a review of the hydraulic cross-sections that a potential exists for dissolved contamination to migrate under the Sweetwater River to Grieve Ranch. However, the hydraulic cross-sections from the SGWC do not incorporate the Sweetwater River or stratigraphy north of the river; therefore the NRC cannot confirm this condition. Please provide revised hydraulic cross-sections that incorporate the full range of flow conditions in the Sweetwater River (i.e., low, mean, high flows) and extend the cross-sections north of the river. If the NRC determines that contamination could migrate under the Sweetwater River, additional monitoring wells near Grieve Ranch would be required and incorporated into the compliance monitoring network.

Basis: 10 CFR Part 40, Appendix A, Criterion 7A, states that, "The purpose of the compliance monitoring program is to determine that the hazardous constituent concentrations in ground water continue to comply with the standards set by the Commission." Compliance with this criterion is not possible without determining the potential for contaminant migration under the Sweetwater River.

Comment No. 1H. WNI proposes to amend License Condition 74 A to reduce the ground water sampling frequency from semiannual to annual. At this point in time, annual sampling would not be appropriate because it would not provide the necessary level of protection for potential receptors in the Red Mule subdivision and potential users of, and organisms in, the Sweetwater River. Also, ground water contamination is still emanating from the disposal area, a condition which requires sufficient monitoring and documentation. Furthermore, WNI intends to discontinue active ground water remediation allowing ground water contamination to migrate freely. Considering the potential of receptor exposure to contaminated ground water and the potential environmental impacts from contaminant discharge into the Sweetwater River, quarterly sampling, *in-lieu* of annual or semiannual sampling, would be required for this monitoring program.

Basis: 10 CFR 40, Appendix 5B(6), requires that the NRC consider potential impacts to ground water quality and "the potential health risks caused by human exposure to waste constituents" when addressing alternative concentration limits. Reducing the sampling frequency interferes with the NRC's ability to perform this function.

Comment No. 1I. WNI proposes to amend License Condition 74 A by sampling the compliance monitoring wells for only uranium and sulfate instead of the full list of parameters currently included in License Condition 74 A. The NRC cannot agree to such an amendment because we would be unable to assess the concentrations over time of each hazardous constituent listed in License Condition 74 A, as required by 10 CFR 40, Appendix A, Criterion 7A. All ground water samples would, therefore, be analyzed for the complete list of parameters provided in the current License Condition 74 A.

Basis: 10 CFR Part 40, Appendix A, Criterion 7A, states that, "The purpose of the compliance monitoring program is to determine that the hazardous constituent concentrations in ground water continue to comply with the standards set by the Commission." The NRC requires information regarding each hazardous constituent listed in the current License Condition 74 A to assure compliance with this criterion. In addition, 10 CFR 40, Appendix 5B(6), requires that the NRC consider potential impacts to ground water quality and "the potential health risks caused by human exposure to waste constituents" when addressing alternative concentration limits. Reducing the analytical parameters list interferes with the NRC's ability to perform this function. Therefore, an abbreviated analytical parameters list is not acceptable.

Comment No. 1J. WNI proposes to amend License Condition 24 by reducing the frequency of surface water sampling from semiannual to annual and proposes to sample for only uranium and sulfate. The NRC cannot agree to such an amendment. As stated in Comment No. 1H, WNI intends to discontinue active ground water remediation; consequently, ground water contamination will freely enter the surface water system. The NRC is required to monitor conditions such as these to ensure that public health and the environment are protected. Therefore, NRC would require quarterly monitoring of all surface water sampling points and analysis of each sample for the complete parameters list currently specified in License Condition 74 A.

Basis: 10 CFR 40, Appendix 5B(6), requires that the NRC consider potential adverse effects on hydraulically connected surface water quality when addressing alternative concentration limits. Reducing the analytical parameters list and sampling frequency interferes with the NRC's ability to perform this function. Therefore, an abbreviated analytical parameters list and reduced sampling frequency would not be acceptable to the NRC.

2. MAPPING

Comment No. 2A. Isoconcentration maps for uranium and sulfate distributions, dated June 2004, only show one or two contours, respectively. Please provide isoconcentration maps with more contours so the NRC may thoroughly review the current spatial distribution of

contamination within the site aquifer system. Also, please utilize, to the extent possible, the most recent ground water contamination data when constructing isoconcentration contour maps.

Basis: 10 CFR Part 40, Appendix A, Criterion 5B(6)(a), requires that the NRC must consider the potential adverse effects on ground water quality including the existing ground water quality when addressing alternative concentration limit applications (Item vi). An insufficient number of isoconcentration contours does not provide the NRC with the information required to review ground water quality on the site, as a whole.

Comment No. 2B. Ground water elevation contours shown in the Figure "Ground water Elevations," dated June 2004, do not appear to be accurate. The contours presented in the aforementioned figure show ground water flowing parallel to the Sweetwater River. Assuming that the Sweetwater River is a ground water sink, ground water flow would be perpendicular or semi-perpendicular to stream flow not parallel in the immediate vicinity of the stream. This is supported by the fact that uranium contamination appears to be spreading west and northwest toward the river, a condition that would otherwise not be possible if ground water was flowing parallel to the river. It appears that the contouring package has not accounted for this hydraulic boundary; therefore, the figure should be corrected. Correcting this problem will likely affect the shape of the ground water contours in the floodplain and may modify the interpretation of ground water flow and contaminant migration.

Basis: 10 CFR Part 40, Appendix A, Criterion 5B(6)(a), requires that the NRC must consider the potential adverse effects on ground water quality including the ground water flow direction when addressing alternative concentration limit applications (Item iii). Without proper ground water contours, the NRC cannot evaluate ground water flow and contaminant migration.

Comment No. 2C. According to mapping provided in the SGWC, a diversion dam and associated ditch are located immediately downstream of the Split Rock Site. WNI should confirm the existence and status of these structures. If they exist and are in use, a surface water sampling point should be added immediately upstream of the diversion dam.

Basis: 10 CFR Part 40, Appendix A, Criterion 5B(6)(b), dictates that the NRC must consider potential adverse effects on hydraulically-connected surface water quality including the current and future uses of surface water in the area when addressing alternative concentration limit applications. Because the aforementioned diversion dam is immediately downstream of this site, more information regarding the status of the dam and ditch is required to assess potential future impacts. If these structures are still in use, providing an upstream sampling point will serve to protect the surface water users.

Comment No. 2D. The site boundary should be added to the attached maps.

Basis: Site boundaries provide a necessary frame of reference to the extent of ground water contamination migration.