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April 12, 2005

Mr. Gary S. Janosko, Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
United States Nuclear Regulatory Commission
Washington D. C. 20555-0001

RE: DOCKET NO. 40-1162, LICENSE NO. SUA-56; Resolution of Groundwater Issues at the Western Nuclear, Inc. Split Rock Facility

Dear Mr. Janosko:

On March 12, 2004 you received a letter from the Wyoming Department of Environmental Quality (WDEQ) regarding the proposed closure plan for the Split Rock facility. There are many issues raised in the letter regarding the resolution of the groundwater issues at the site. We would like to take this opportunity to discuss some of the issues that were raised in an attempt to clarify the closure plan and to make the record clear that the proposed plan does protect public health and the environment and provides a strategy that provides protection that is as low as reasonably achievable (ALARA).

The WDEQ comments that are included in the March 12, 2004 letter are in narrative format throughout the body of the report. Therefore, the response to the WDEQ issues will address the major issues that are raised. The issues that are attributed to the Wyoming State Engineer's Office (WSEO) are specific and will be addressed accordingly. The format of the report will include the WDEQ or WSEO comment followed by our response.

WDEQ comment:

The site is also bounded by the Sweetwater River, a Class 1 surface water, on the north.

Response:

The site is bounded by the Sweetwater River to the north. However, the river is not classified by the WDEQ as a Class 1 surface water. The Sweetwater River, according to the published standards by the Wyoming DEQ, is classified as a Class 1 water above Alkali Creek and Class 2 water below Alkali Creek. Alkali Creek is approximately 25 miles upstream of the site.

WDEQ comment:

Provisions for allowing technical impracticability and alternative groundwater restoration standards at similar sites in Wyoming are established in Wyoming Statute (W.S. §35-11-1605) and should be thoroughly considered by the NRC.

Response:

The Wyoming Statute cited in the WDEQ Comment provides for site-specific, risk-based standards very similar to those utilized by the NRC. For instance, it provides that any remedy shall "Be protective of human health, safety and the environment. A remedy shall be considered to be protective of human health if it reduces risk to human receptors of acute and chronic toxic exposures to contaminants to levels that do not pose a significant risk to human health." W.S. §35-11-1605 (a) (i). WNI's proposed remedy eliminates human receptors of contaminated groundwater.

Moreover, the Wyoming Statute grants blanket regulatory compliance for meeting federal standards at a site. "A remedy shall be considered to attain standards for...water if it: (A) Meets any applicable media standards established under federal or state law or rule or regulation."

WDEQ comment:

For these reasons we believe that allowing uncontrolled migration, or dilution, as a final remedy over such a long period of times requires the highest degree of scrutiny, analysis and certainty, and should never be accepted unless provisions are made to ensure periodic and regular assessment of emerging remedial technologies and the economic factors applied to remedial cost/benefit analyses.

Response:

First, the site closure plan does not allow uncontrolled migration of groundwater constituents from the tailings impoundment. Reclamation that has been conducted at the site has and will continue to provide significant control of groundwater seepage from the site. Extensive efforts were made to evaporate as much standing water as possible from the impoundment prior to reclamation. That included the construction and operation of large-scale spray evaporation systems that were used and modified until surface reclamation precluded the operation of the systems.

Extensive surface water diversion channels were constructed around the reclaimed tailings impoundment to route water away from the tailings. Over three miles of diversion channel were constructed and lined with riprap to ensure their long-term stability.

In addition, the entire tailings impoundment has been covered with between six and 44 inches of low-permeability compacted clay. The clay was obtained from a borrow source approximately 10 miles from the site and was moisture conditioned and compacted using very elaborate and expensive processes. The cover system has and will continue to minimize infiltration through the cover and therefore minimize seepage from the tailings impoundment. While the cover and the diversion channels serve to meet multiple reclamation objectives, it is wrong to suggest the there has not been anything done to control seepage.

We agree that a high degree of scrutiny and analysis is necessary for the closure plan and we believe that the site characterization, analysis and development and selection of the preferred alternative meet this test. As the WDEQ stated in their letter dated July 12, 1999, "We must complement Western Nuclear on providing a well designed, comprehensive report." "The report provides a tremendous amount of data on the site as evidenced by the almost five (5) feet of the report. The report provides a good description and understanding of the site geology and hydrogeology, and the installation of 110 additional borings and monitoring wells and 99 piezometers in 1996 and 1997 have very effectively defined the mature and extent of the soil and groundwater contamination." "As acknowledged, the

report provides a very thorough presentation of the Split Rock Mill site data and appears to include all possible information that would be required to evaluate the risk to human health and the environment at the site, and to select an acceptable remedial alternative."

Furthermore, WNI has obtained even more data and done subsequent analyses in response to NRC requests since the submittal of the 1999 Closure report. All of the additional data and subsequent analyses confirm that the original closure plan is appropriate and would provide the necessary level of protection of public health and the environment. In fact the only change that resulted from subsequent analyses was the reduction in size of the long-term restricted area boundary as new data and analyses indicated that the initial analysis was overly conservative.

In response to the comment that periodic and regular assessment of the site is necessary, the United States Department of Energy (DOE) will remain the long-term custodian and licensee at the site. Should additional steps become necessary, the DOE will be required to institute those changes.

WDEQ Comment:

One aspect of the Closure plan that remains of particular concern to us is the approach, or lack of one, used to establish the value of the state's groundwater resources which become unusable or degraded if NRC accepts the proposed remedial option. In its analysis, WNI applied a value of $15 per acre to estimate this value, which we believe is unrealistically low. We are aware that in other areas near the site, irrigators currently pay approximately $7.50 per acre-foot for groundwater.

Response:

First, the approach to valuing groundwater is clearly described in the 1999 Site Closure Plan. See pages 92 and 93 of the main text and Appendix H in the 1999 Closure Plan. As stated therein, the value of groundwater in the vicinity of the site was determined by the market value that the surface owners were willing to take to sell WNI protective covenants that effectively precluded groundwater use in the area.

Second, there is little or no current demand for groundwater for irrigation in the area. However, the water quality in the restricted area, outside the immediate area of the tailings impoundment, is such that it could be used for agricultural or stock watering purposes. In fact the only use of groundwater that would have to be precluded from a risk standpoint would be long-term human consumption of groundwater.

It should also be noted that the water is only restricted while it is in the long-term control boundary. Adsorption and dilution cause the concentration of constituents to be at acceptable levels once the water flows outside the boundary. No water is lost or consumed under the proposed alternative.

In addition, it should be noted that the other options that were evaluated consume groundwater resources. Each of the other three alternatives that were evaluated either need large volumes of water from outside the area, or evaporate large volumes of water. Table 15 and Section 3 of the main text of the 1999 Closure Plan summarize the water uses for each alternative.

In summary, the cost of the groundwater in the area has been determined in a rational manner and the evaluation of the alternatives, while not sensitive to the actual cost of groundwater, was done in a standard systematic manner and resulted in the selection of an alternative that not only protected

human health and the environment but did it in a manner that minimized other impacts and provided a solution that was ALARA.

WDEQ Comment:

On a related matter, we also believe that the proposed costs associated with the two more expensive alternatives evaluated seem excessive, given that there are technologies available that could reduce the amount of water generated.

Response:

We conducted an extensive evaluation of available technologies and selected the technologies that provided the best, most cost effective solutions. Pubic hearings were held, one of which was specifically held to solicit input regarding technologies that might have not been considered. The only input received was in regards to in-situ technology suggested by the WDEQ in their letter dated July 12, 1999.

A discussion of the general approach to evaluating relevant technologies as well as the specific response to the WDEQ request to evaluate in situ treatment was included in a letter to WDEQ dated August 19, 1999. Both the July 12, 1999 and the August 19, 1999 letter are included in Appendix K of the October 29, 1999 Closure Plan.

The cost estimates for each alternative were developed using industry standard techniques. If the WDEQ were specific regarding any specific item that they believe is improperly estimated or any new technology that they believe might be relevant at the site, we would certainly consider any input.

WDEQ Comment:

In our review, the Site Closure Plan does not clearly discuss which three target levels were applied, their basis, nor whether the "as low as reasonably achievable" (ALARA) analyses is appropriately applied toward those levels.

Response:

Four alternatives were developed and evaluated relative to their ability to protect human health and the environment as well as to provide protection that is ALARA. A complete discussion of the alternatives and the ALARA evaluation is included in the October 29, 1999 Site Closure Plan. Specifically, Section 3 of the main text and Appendix H are devoted to the development and evaluation of the alternatives. The chosen alternative was shown to be protective of human health and the environment as well as providing protection that is ALARA.

WDEQ Comment:

We also have concerns with the ability of the site caretaker (DOE) to monitor and enforce institutional controls, particularly covenants associated with private properties within the Long Term Control Boundary (LTCB).

Response:

Legally enforceable rights to prohibit drilling wells for domestic purposes (the only activity that has the assessment showed should be restricted) have been obtained from private landowners inside the restricted area. These rights are transferable to the DOE and are as enforceable as any ownership right. The DOE is charged by the federal government to provide long-term custodianship for this site as well as for more than 50 other similar sites across the nation and they have a comprehensive program in place that has worked at other sites and will work at the Split Rock site.

WDEQ Comment:

We do not see any restrictions that would prohibit pumping from the aquifer in ways that could adversely alter the direction and velocity of contaminate plume movement. Given the longevity of the proposed remedy and unknown limitations to the future value of Wyoming's groundwater resources, we believe such controls are necessary to prevent problems from developing over the life of the proposed remedy.

Response:

There will be restrictions within the long-term care boundary regarding groundwater pumping. There will not be any restrictions on pumping outside the long-term care boundary. Normal use associated with the historic use of groundwater resources in the area, primarily for stock and domestic use would not impact the direction or velocity of groundwater within the long-term control boundary.

It has been postulated that a large-scale utilization of groundwater in the area could be used to supplement surface water flow in the regional river system. It is possible that very large scale pumping at the edge of the long-term boundary could alter flow within the restricted area. However, two important issues need to be understood relative to this hypothetical situation.

First, there is nothing unique about the aquifer near the site. The impacted area represents approximately 0.01 percent of the entire Split Rock Aquifer system (Appendix H of the 1999 Closure Plan). If a large-scale groundwater extraction were to be instituted, there is no reason to assume that it would occur near the site. The Split Rock aquifer system covers over 1,500 square miles and holds many trillions of gallons of groundwater of similar quality.

Second, it must be recognized that the water quality in the projected plume is only slightly elevated over background water quality. Further, the modeling indicates that the contaminant plume would be shallow and impact only the very upper portion of the aquifer. Any large scale pumping program would mix the shallow slightly contaminated water with deeper uncontaminated water and uncontaminated water from areas outside the restricted area. This mixing of waters would lead to water quality that would be essentially background. Further, even if only the contaminate plume were to be pumped, the concentrations would have no adverse environmental impact to the Sweetwater River and would not have any adverse impact to any potential human receptor down stream as the water quality would be diluted with other surface water to levels that would be protective under a human drinking water scenario.

WDEQ Comment:

In the case of private properties in the Red Mule subdivision, we are not aware of how it will be possible to prevent residents from using the water as they wish, including drinking the water. Given the critical application of institutional controls to the successful implementation of a remedy at the WNI site we feel that it's especially incumbent upon the NRC and the DOE to ensure that Wyoming is provided an opportunity to review and comment on the LTSP before the Site Closure Plan is accepted by the NRC.

Response:

There is currently only one private property in the long-term care area lacking institutional controls. That property is on the very edge of the long-term care area and consists of less than five acres. WNI has made a good faith effort to acquire that property and has been unsuccessful. WNI has proposed several alternatives to the NRC for alternative water supplies to the private property owner if groundwater monitoring indicates the plume from the site is approaching the private property. Modeling indicates that it is possible for site-derived constituents to approach the private property in 500 to 1,000 years.

It should be noted that the existing water quality in the groundwater that is being used by the resident in Red Mule is naturally elevated in uranium to values that are approximately 3 times the site background value and 10 times the value that the EPA has set as a drinking water value. While the residents have been informed of the naturally elevated concentrations of uranium in the well, they have not chosen to do anything about it.

The LTSP will be developed after the site closure plan has been approved and prior to the site being transferred to the DOE. Wyoming will have an opportunity to comment on the LTSP at that time.

WSEO Comment:

The controlled area must be defined so as to provide adequate safety to adjoining properties and associated groundwater uses, wherever they could exist

Response:

As stated above, groundwater use within the long-term care boundary is controlled. While groundwater use outside the boundary is not restricted, historic uses would not impact the groundwater flow within the boundary.

There is nothing unique about the immediate area that would cause any extraordinary groundwater extraction from the aquifer to occur adjacent to the site. Even if a very large groundwater extraction were to occur next to the site boundary, the mixed and diluted water quality resulting from the combination of the small volume of contaminated water with very large volumes of uncontaminated water and the mixing that would occur in the Sweetwater River would make any use of the water acceptable.

WSEO Comment:

Provisions for conducting future modeling, should a large future groundwater use be developed, must be included in the Site Closure Plan.

Response:

See responses to comments above regarding the potential future groundwater use outside the long-term care boundary. In regards to future actions, the DOE will be responsible for the site. Their activities will be documented in the LTSP not the Site Closure Plan.

WSEO Comment:

An adequate groundwater sampling and analysis programs must be established to verify the accuracy of the modeled predictions, over time. The groundwater sampling and analysis programs should also serve as a warning mechanism to protect groundwater users such as those in the Red Mule Subdivision.

Response:

WNI has proposed a modified groundwater monitoring program, which will verify the accuracy of the model as well as monitor immediately up-gradient from the Red Mule area. The groundwater monitoring program that is used long-term by the DOE will be specified in the LTSP.

WSEO Comment:

Funding must remain in place and available to mitigate future impacts, should they occur, to existing water uses.

Response:

The DOE, as the long-term custodian of the site, will be responsible for any unforeseen impacts from the reclaimed facility.

WSEO Comment:

(Note: In addition to the issues attributed to the WSEO in the WDEQ letter dated 12, 2004 we understand that the WSEO had a comment regarding the cost estimate for the alternative water supply proposed for the Red Mule area. Specifically, we understand that there was a concern that the replacement system would cost more than $113,869, which was included in the amount that was proposed to be added to the long-term surveillance fund.)

Response:

The actual cost of the replacement water system utilizing a new well was calculated to be $307,993 in Appendix H of the 1999 report. It was assumed that the system would be needed in 100 years. From that and an interest rate at 1 percent above inflation - a present value of $113,869 was determined.

As part of the cost estimate, two alternatives were reviewed. One alternative involved a new well while the other utilized the existing Jeffrey City system. The costs associated with utilizing the Jeffrey City system were slightly less than the costs associated with developing a new system with a new well. It was decided that it could not be assumed that the Jeffrey City system would be in operation when it might be required. Therefore, the more expensive system, utilizing a new well, was assumed.

In any event, the Red Mule area will not need an alternate water supply system. There remains only one Red Mule lot not acquired by WNI. WNI has proposed installing a well and pipeline to that lot from a source of background quality groundwater that could be accomplished on a current basis.

We appreciate the opportunity to address the concerns raised by Wyoming and trust that these responses will aid you in your response to their comments.

Sincerely,

MFG, Inc.

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