August 13, 2012

April Gil, Ph.D, Program Manager
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Office of Legacy Management
2597 B ¾ Road
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SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION STAFF REVIEW OF U.S. DEPARTMENT OF ENERGY REPORT ENTITLED "EVALUATION OF GROUNDWATER CONSTITUTENTS AND SEASONAL VARIATION AT THE RIVERTON, WYOMING, PROCESSING SITE" (WM-60)

Dear Dr. Gil:

I am writing to provide U.S. Nuclear Regulatory Commission (NRC) staff comments on the U.S. Department of Energy report entitled, "Evaluation of Groundwater Constituents and Seasonal Variation at the Riverton, Wyoming Processing Site" dated February 2012. The NRC staff comments and recommendations are summarized below.

The report states that the supplemental risk assessment will be a tool to assess current risks to human health and the environment using the existing, extensive data set compiled over the past 16 years (page 2, Section 2.1). However, it is unclear how Step-3 of the 7-step process used for excluding constituents from long-term monitoring and for inclusion in the supplemental risk assessment is either conservative or relevant to determining current risk. Forty-three of the 47 constituents evaluated were based only on a historic data set in this step, which does little to assess current risk. Using a mean concentration of historic data sets compared to a maximum background value is typically not considered conservative for purposes of a risk assessment due to potential exposure at a well containing a maximum constituent concentration.

The following tables contain constituents that were eliminated by Step-3 of the process. NRC staff reevaluated the constituents using procedures similar to Step-5 and Step-6 of the report. Table 1a contains constituents that were sampled by the Wind River Environmental Quality Commission (WREQC) in 2011 and Table 1b contains constituents that were not sampled by WREQC in 2011.

Constituents in Table 1a were evaluated by comparing the maximum value observed in 2011 by WREQC to the 2011 WREQC background value observed at well 0710. A constituent was included if the maximum value exceeded both the background and standard/benchmark value. For constituents that were designated as not applicable, a value of zero was used. Based on this comparison, dissolved organic carbon should not be excluded from long-term monitoring and should be included in the supplemental risk assessment.

Table 1a

Constituent	2011 WREQC Data Maximum (mg/l)*	2011 WREQC Data Background (0710)	Standard or Benchmark Concentration	Include (I) or Exclude (E)
Dissolved Organic Carbon	24.0	3.8	NA	I
Ammonia	0.42	1.4	NA	E
Arsenic	0.006	0.002	0.05 mg/l[1]	E
Iron	0.12	0.03	0.3 mg/l[2]	E
Vanadium	<0.01	<0.01	NA	E
Radium-226	0.11 pCi/l**	-0.05 pCi/l	NA	E
Radium-228	5.6 pCi/l	7.3 pCi/l	NA	E
Radium-226 + Radium-228	5.7 pCi/l	7.3 pCi/l	5 pCi/l[2]	E

*milligram per liter
**picocurie per liter

Table 1b contains constituents not sampled in 2011 by WREQC. For these constituents, the historic maximum concentrations were compared to the historic maximum background concentration (Table 1, pg. 4). A constituent was included if the maximum value exceeded both the background and standard/benchmark value (NA = 0). Based on this comparison, Polonium-210 should be included in the supplemental risk assessment.

Table 1b

Constituent	Table 1 Historic Maximum Value (mg/l)	Table 1 Historic Maximum Background Value (0710-0715)	Standard or Benchmark Concentration	Include (I) or Exclude (E)
Nitrate as NO_3	8.4	7.1	45 mg/l[1]	E
Phosphate	1.8	0.3	4.4 mg/l[4]	E
Silica	33.8	50	NA	E
Barium	0.2	0.3	1.0 mg/l[1]	E
Cadmium	0.005	0.01	0.01 mg/l[1]	E
Copper	0.04	0.02	1.0 mg/l[2]	E
Lead	0.03	0.01	0.05 mg/l[1]	E
Silver	0.03	0.01	0.05 mg/l[1]	E
Polonium-210	2.4 pCi/l	1.4 pCi/l	NA	I

[1] 40 CFR 192, Subpart A, Table 1 (45mg/l Nitrate as NO_3= 10mg/l Nitrate as N)
[2] EPA National Primary and Secondary Drinking Water Regulations
[3] EPA Drinking Water Health Advisory, January 2004
[4] Department of health UK, The Expert Group on Vitamins and Minerals

The comparison between the historic mean concentration to the background and benchmark concentrations in Step-4 prematurely eliminated two constituents (fluoride and magnesium), which exceeded the background and benchmark values when compared to samples taken in 2011 by WREQC. Fluoride and magnesium reported

values of 1.8 mg/l (0707) and 441 mg/l (0789) in 2011, respectively, and would not have been eliminated from Step-6.

Constituent	2011 WREQC Data Maximum	2011 WREQC Data Background (0710)	Standard or Benchmark Concentration (Table 1)	Location Code
Fluoride	1.8 mg/l	0.2 mg/l	0.9 mg/l	0707
Magnesium	441 mg/l	37 mg/l	174 mg/l	0789

Based on the above, the NRC staff recommends that Dissolved Organic Carbon (DOC), polonium-210, fluoride, and magnesium be included in the supplemental risk assessment. It is recommended that further monitoring be performed prior to commencing the supplemental risk assessment in order to obtain a complete and current data set of all the constituents included in the supplemental risk assessment. Resampling of these constituents will determine the current maximum concentrations and will provide a conservative risk assessment approach.

In accordance with 10 CFR 2.390 of the NRC "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions concerning the staff's review or recommendations on this report please feel free to contact me at 301-415-6749, email Dominick.orlando@nrc.gov.

Sincerely,

/RA/

Dominick A. Orlando, Senior Project Manager
Special Projects Branch
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Docket No.: WM-60

cc: Riverton dist. list

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