

Status of Incomplete RAI Responses for the Marsland Expansion Area License Amendment Application

Updated 11/13/14

NRC Request for Information (RAI)	Status of Applicant Response to RAI
<p>RAI 8.B. The Scottsbluff station has only 15 years of data. This is not consistent with the RG 3.63 recommendation for long-term analysis (e.g., 30 years). Please provide justification for using only 15 years of data.</p>	<p>Cameco 12/23/2014 Reponse: In the public meeting dated September 4, 2013, NRC requested additional justification for using 15 years instead of 30 years for the long-term analysis. In addition to the new Appendix S submitted by Cameco on June 26, 2013, further justification for use of 15 years data is provided in revisions to Appendix S.</p> <p>Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: No update. Cameco 8/5/2014 Status: No update.</p> <p style="color: red;">NRC 9/11/2014: NRC awaiting meteorologist to review. No action is expected from Cameco at this time. NRC anticipates issuing meteorology RAI(s) – Mid. Nov.2014</p>
<p>RAI 8.C.1. TR Figures 2.5-30 and 2.5-31 provide a statistical analysis of the 15-yr and baseline-year wind speed and wind direction for the Scottsbluff meteorological station. Please provide the following information on these analyses:</p> <ol style="list-style-type: none"> 1. NUREG-1475, Rev.1, <i>Applying Statistics</i>, US NRC 2011, describes linear regression as a model that relates a dependent variable to a single, or multiple, independent variable(s). Please explain the validity of the proposed linear regressions when there appears to be no independent variable and it is unclear to staff what the regression equations in Figures 2.5-30 and 2.5-31 represent. 	<p>Cameco 12/23/2014 Response: In the public meeting dated September 4, 2013, NRC expressed concern that the regression analysis failed to include both dependent and independent variables. To that end, in addition to the new Appendix S submitted by Cameco on June 26, 2013, further discussion of the regression analysis is provided in revisions to this appendix.</p> <p>Cameco 5/22/2014 email to NRC: "Cameco's response to RAI 8.C.1 was provided in the first paragraph of redline text in the version of Appendix S submitted in December 2013."</p> <p>Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: No update. Cameco 8/5/2014 Status: No update.</p> <p style="color: red;">NRC 9/11/2014: NRC awaiting meteorologist to review. No action is expected from Cameco at this time. NRC anticipates issuing meteorology RAI(s) – Mid. Nov.2014</p>
<p>RAI 8.C.2. TR Figures 2.5-30 and 2.5-31 provide a statistical analysis of the 15-yr and baseline-year wind speed and wind direction for the Scottsbluff meteorological station. Please provide the following information on these analyses:</p> <ol style="list-style-type: none"> 2. p-values for the linear regression equations presented in TR Figures 2.5- 	<p>Cameco 12/23/2014 Response: No response required. In the public meeting dated September 4, 2013, NRC stated the RAI had been resolved by the revisions submitted by Cameco on June 26, 2013. This was confirmed in the NRC letter dated October 23, 2013.</p>

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<p>30 and 2.5-31.</p>	<p>Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: No update. Cameco 8/5/2014 Status: No update. NRC 9/11/2014: No further action is expected from Cameco. NRC anticipates issuing meteorology RAI(s) – Mid. Nov.2014</p>
<p>RAI 11 Description of Deficiency The information provided in TR Section 2.9.3.2 does Cameco Resources Responses to NRC Technical Report RAIs December 23, 2013 not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 2.7.2 and acceptance criteria in Section 2.7.3 of NUREG 1569. <u>Basis for Request</u> NUREG-1569, Acceptance Criterion 2.7.3(5), states: "The applicant has provided an assessment of seasonal and the historical variability for potentiometric heads and hydraulic gradients in aquifers and water levels of surfacewater bodies. This assessment should include water levels or water potentials measurements over at least one year and collected periodically to represent any seasonal variability." The applicant indicated that water level measurement events were conducted at Brule and Basal Chadron monitoring wells on February 22, 2011, and on August 12, 2011. Potentiometric maps were provided for the February 22, 2011, water levels measurements. Consistent with NUREG-1569, Acceptance Criterion 2.7.3(5), staff did not find one year of seasonal water level data in the application.</p> <p><u>Request for Additional Information</u> Please provide one year of seasonal water level data for the Brule and Basal Chadron monitoring wells. For each monitoring event, please provide potentiometric maps of the potentiometric surface. Additionally, please provide time period when irrigation wells near MEA are active and their rates of groundwater extraction. NRC additional clarification dated October 23, 2013: Staff indicated that the number of sampling wells that CBR has identified may not be adequate to demonstrate hydraulic effects from agricultural water wells.</p>	<p>Cameco expects to submit the requested information by 11/28/14</p>
<p>RAI 12.A <u>Description of Deficiency</u> Staff can't complete its evaluation of NUREG-1569, Acceptance Criterion 2.9.3(1). <u>Basis for Request</u> 10 CFR Part 40, Appendix A, Criterion 7, requires: "At least one full year prior to any major site construction, a preoperational monitoring program must be conducted to provide complete baseline data</p>	<p>Cameco 12/23/2014 Response: In the public meeting dated September 4, 2013, NRC requested additional siting justification for the air monitors, specifically, consideration of where maximum concentrations are expected. To that end, in addition to the revisions to Section 2.9.2.1 submitted by Cameco on June</p>

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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.”

RG 4.14 provides guidance on preoperational environmental monitoring at uranium mills. NUREG-1569, Acceptance Criterion 2.9.3(1), states:

“Monitoring programs to establish background radiological characteristics, including sampling frequency, sampling methods, and sampling location and density are established in accordance with pre-operational monitoring guidance provided in Regulatory Guide 4.14, Revision 1, Section 1.1 (NRC, 1980). Air monitoring stations are located in a manner consistent with the principal wind directions reviewed in Section 2.5 of the standard review plan.”

During its review, staff found multiple examples of gaps in data presentation on the proposed preoperational effluent environmental monitoring program for the MEA. Staff requires additional information on, or clarification of, noted deficiencies in the background radiological section to draw its safety conclusions.

Request for Additional Information Please address the following issues regarding the proposed preoperational environmental monitoring program for the MEA:

- A. Please provide criteria consistent with RG 4.14, Regulatory Position 1.1.1, used for determining air monitoring locations, or indicate where this information can be found in the application.

26, 2013, further siting justification is provided in Section 2.9.2.1 as well as revisions to Figure 7.3.2 depicting the locations and the estimated doses.

Cameco 5/6/2014 Status: Awaiting NRC review.

Cameco 5/16/2014 Status: Please also see the response to RAI 37A1. Because Cameco is updating Mildos to reflect a higher flow rate, we have also instructed our contractor to assess where the highest dose may be expected. Cameco will reassess the current Monitor locations and will relocate accordingly. We expect to submit the update Mildos estimate and associated monitor locations by June 1, 2014.

Cameco 5/27/2014 Status: Cameco will provide a dose estimate for ranchers using property between the monitor well ring and license boundary for grazing and haying. We will include the underlying dose assumptions, particularly the estimated annual hours ranchers will be present in that vicinity.

Cameco 7/11/2014 Status: Attached please find a Mildos assessment for a 6000gpm production/1500 gpm restoration plant. Consistent with Figure 5, for operational air monitoring, Cameco will relocate air monitor station MAR-2 on Figure 2.9-2 to a location approximately 1.5 km SE of the Satellite Plant. In addition, the text in Section 7.3.3.3 of the TR has been revised to reflect the dose to a rancher if the rancher grazed cattle and cut hay approximately 1.5 km SE of the Satellite Plant.

Cameco 8/5/2014 Status: No update.

NRC 9/11/2014: dealing with the public dose to ranchers, “invited member of the public”. Cameco is expected to make clarifications and editorial changes to the application as discussed in 9/9/14 call. Future clarifications could possibly be necessary based on MILDOS calculations review.

NRC 9/24/2014: In addition to the above, Cameco is going to provide additional information justifying why new preoperational data does not need to be provided for the new location for MAR-2. In addition, they are going to send us the

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	<p>new location of MAR-2 or justify the alternative. In addition, they are going to provide us information on the type of dosimeter used to measure dose at the air monitoring stations.</p> <p>NRC 9/29/2014: In 9/26/14 PM to PM Cameco indicated that they wish to leave MAR-2 in its original location and add a new monitor inside mine unit B (where they initially planned to move MAR-2 to). I'm going to tell Cameco that they should provide an explanation for why MAR-2 is so far away from the site boundary and explain their approach for adding the 6th monitoring point during operation. In addition, they removed the word "invited" from in front of member of the public in the 9/26/2014 response.</p> <p>NRC 10/16/2014: In the administrative response dated 10/10/14, the applicant indicated that MAR-2 was located at its location based on land owner preference. In addition, they indicated that they will be adding a MAR-6 (inside MU-B) instead of moving MAR-2, in order to have a sampling station at the location of the highest expected radon concentration. In addition, as indicated in the NRC 9/29/2014 update, the term "invited" member of the public has been removed.</p> <p>Cameco expects to submit the above-referenced information by 11/14/2014</p>
<p>RAI 12.D. <u>Description of Deficiency</u> The information provided in TR Section 2.69 does not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 2.6.2 and using acceptance criteria in Section 2.6.3 of NUREG-1569.</p> <p><u>Request for Additional Information</u> Please address the following issues regarding the proposed preoperational environmental monitoring program for the MEA:</p> <p>D. Please provide the calibration records for the air samplers used during the first year of monitoring.</p>	<p>Cameco 12/23/2013 Response: The calibration records for the first year of monitoring for air samplers are included in Appendix V-1.</p> <p>Cameco 8/5/2014 Status: Cameco is evaluating potential errors in the presentation of %deviation versus full scale deviation in Appendix D.1 and will revise that appendix appropriately.</p> <p>NRC 9/11/2014: Cameco is in the process of re-checking calibration data and ensuring that any errors in the deviation and full scale deviation are corrected.</p> <p>Cameco expects to submit the above-referenced information by 11/14/2014</p>
<p>RAI 12.E. <u>Description of Deficiency</u> The information provided in TR Section 2.6 does not meet the applicable requirements of 10 CFR Part 40, using the</p>	<p>Cameco 12/23/2014 Response: All of the radiological baseline monitoring results for air, surface water, groundwater, sediment</p>

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review procedures in Section 2.6.2 and using acceptance criteria in Section 2.6.3 of NUREG-1569.

Request for Additional Information Please address the following issues regarding the proposed preoperational environmental monitoring program for the MEA:

E. Please provide the laboratory reports for all radiological baseline monitoring results.

and fish tissue were reported in the Cameco 6/26/2013 submittal. The laboratory analytical reports for groundwater samples were included in Appendix J. Laboratory analytical reports for air (particulates, radon and gamma), Niobrara river surface water, Niobrara River and ephemeral sediments, and Niobrara River fish tissue were not included in the 6/26/2013 submittal. Therefore, these analytical reports are now included in: Appendices U (air particulate), V-2 (2), and V-3 (gamma); Appendix W-1 and W-2 (surface water and sediments, respectively) and Appendix X (fish tissue) of the current December 2013 submittal.

Cameco 5/6/2014 Status: Awaiting NRC review.

Cameco 5/27/2014 Status: LLDs exceedances for fish and surface water baseline sampling are being addressed by collecting a new round of data which, as described in the response to RAI 12.H. The data will be submitted in the fourth quarter of 2014.

Cameco 7/11/2014 Status: No update.

Cameco 8/5/2014 Status: In Appendix U Cameco is evaluating the appropriateness of the references to waste and water sampling methods and will revise the appendix appropriately

NRC 9/11/2014: Based on calls and information submitted, Cameco has the following actions. 1. Provide approximate height of radon air sampling points at outdoor monitoring stations in TR. 2. Review references in Appendix U and determine if they are appropriate references to use for air sampling. 3. Provide complete data and/or revised data (as appropriate) for preoperational direct gamma sampling, river samples, sediment samples, fish, ephemeral drainages, vegetation, livestock, crops (alternative method using soil samples, note, Cameco is supposed to provide samples from several (I believe 7) different gardens), and soil. Unless an alternative approach is provided (which it is for crops and a few others), the sampling should be consistent with RG 4.14, meet

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the sampling frequencies in RG 4.14, and the data provided should not contain errors and meet the LLDs. Staff notes possible erroneous data in Uranium data and problems with LLDs in Table 2.9-5, and LLD problems in Table 2.9-9, 2.9-11, 2.9-27, 2.9-29, 2.9-30. Therefore, please ensure that all radiological data in 2.9 is accurate and LLDs are met (or provide alternative approach). 4. The TR should be updated appropriately to reflect how samples have actually been (or are going to be) collected, for example, Section 2.9.8.1 clearly needs to be updated. 5. For livestock, Cameco needs to provide a rationale for not collecting samples from other livestock and game animals in the Marsland area. Will they focus on collecting samples downwind.

NRC 10/16/2014: Follow up of the status of the issues identified in the 9/11/2014 update. 1. Resolved. This information was provided in the 10/7/2014 response from Cameco (approx. 80 inches above ground surface). 2. The applicant indicated that the lab just lists the references indicated for all samples. The applicant is in the process of providing an explanation in the application or remove the references instead of providing false references in the application. 3. Still waiting on various samples. In addition, RG 4.14 indicates that the subsurface soil samples should be to a depth of one meter and divided into three equal sections for analysis. It is unclear why for the center soil sample there appears to be two samples to the depth of 33 cm and one from 33 to 66 and from 66 to 100. Also, for Pb-210 there are a few samples that were ND, and the RL as not as low as RG 4.14 indicates that it should be. Other errors and LLD problems in Section 2.9 tables are being corrected by the applicant. Also the equation they developed for estimating Rs-226 concentrations in the Tetra Tech report is written incorrectly. Finally, 5 cm samples were taken at the 40 radial grid directions and only 10 15 cm samples were taken at points, 9 of the 10 were located at the north and south ends of site. They also took 15 cm samples at the 5 air monitoring station. The applicant is in the process of

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	<p>taking more samples or provide better justification for why the current number of samples is sufficient to provide background data for the entire site. The applicant also is going to explain how they are planning to use the data in the report and make other corrections and make other clarifications. 4. Cameco is in the process of doing this. 5. Cameco is in the process of doing this.</p> <p>Cameco expects to submit the above-referenced information by 11/28/2014</p>
<p>RAI 12.F. <u>Description of Deficiency</u> The information provided in TR Section 2.6 does not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 2.6.2 and using acceptance criteria in Section 2.6.3 of NUREG-1569.</p> <p><u>Request for Additional Information</u> Please address the following issues regarding the proposed preoperational environmental monitoring program for the MEA:</p> <p>F. In TR Section 2.9.6, the applicant stated that transects will be made across the MEA to collect surface and subsurface soil samples in areas of the proposed well field. While general guidance in RG 4.10 was followed in preparing the proposed baseline soil sampling program, staff cannot determine that the full extent of operations within the proposed MEA will have the necessary baseline soil sampling performed to meet 10 CFR Part 40, Appendix A, Criterion 7, requirements. Please provide a more detailed description of where surface and subsurface oil sampling will be performed.</p>	<p>Cameco 12/23/2014 Response: A sampling plan with details on where and how surface and subsurface soil sampling will occur will be submitted for NRC review in January 2013. Following resolution of any issues, the application will be revised to highlight the elements of that plan. Sampling will be conducted in late spring or early summer of 2014, prior to construction. Section 2.9.6 has been revised accordingly.</p> <p>Cameco 5/6/2014 Status: The sampling plan was submitted as a supplemental RAI response on January 24, 2014 and is attached below for your information. Dependent on the variability detected during initial transects, the scan speed and transect spacing may be increased to utilize ATVs and up to a maximum of 50 meter spacing respectively. The gamma surveys and soil sampling will be performed in June and a report submitted by September 1, 2014.</p> <p>Cameco 5/16/2014 Status: Weather permitting the gamma survey will occur the week of May 26th. It takes 30 days for sample results, and our contractor expects to prepare a final report for submission in mid-July 2014.</p> <p>Cameco 5/27/2014 Status: The survey and sampling are underway.</p> <p>Cameco 7/11/2014 Status: Cameco now anticipates submission in early August.</p> <p>Cameco 8/5/2014 Status: No update.</p> <p>NRC 9/11/2014 Status: NRC is awaiting the following from</p>

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	<p> Cameco: 1. Cameco has previously stated that 5 subsurface samples will be collected to a depth of 1 meter, to be consistent with RG 4.14. The TR should be updated to accurately reflect how samples are taken, and the results should be provided when available. 2. Cameco indicated that 5 cm samples will be collected at the 5 air monitoring stations. The TR should be updated to accurately reflect how samples are taken, and the results should be provided when available. 3. The response to this RAI indicates that TR Section 2.9.6 has been updated, however, I haven't seen an update to 2.9.6. 4. The TR should be updated to accurately reflect how samples were taken, etc. For example, if ATVs were not used doing the gamma surveys, the TR should not have a discussion about how ATVs were used.</p> <p> NRC 10/16/2014: 1. Samples for Pb-210 do not all meet the LLDs in RG 4.14, as discussed above. The applicant is in the process of updating the TR as appropriate. TR 2.9.6 will be updated by the applicant to reference the Tetra Tech report. 2. Issue resolved. 3. Cameco to make sure this section accurately reflects what was done in Tetra Tech report or reference report in 2.9.6, as appropriate. 4. Cameco is going to update TR accurately to reflect walkdown of site that was done, etc. Cameco expects to submit the above-referenced information by 12/31/2014</p>
<p>RAI 12.G.1. <u>Description of Deficiency</u> The information provided in TR Section 2.6 does not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 2.6.2 and using acceptance criteria in Section 2.6.3 of NUREG-1569.</p> <p><u>Request for Additional Information</u> Please address the following issues regarding the proposed preoperational environmental monitoring program for the MEA:</p> <p>G. In TR Section 2.9.8, the applicant described its baseline direct radiation monitoring program. Please provide the following:</p> <p>(1) As noted in staff's review of the baseline soil sampling program, staff cannot determine that the full extent of operations within the proposed</p>	<p> Cameco 12/23/2014 Response: A sampling plan with details on where and how direct radiation monitoring will occur will be submitted for NRC review in January 2013. Following resolution of any issues, the application will be revised to highlight the elements of that plan. Sampling will be conducted in late spring or early summer of 2014, prior to construction. Section 2.9.8.1 was revised accordingly.</p> <p> 5/6/2014 Status: The sampling plan was submitted as a supplemental RAI response on January 24, 2014 and is attached below for your information. Dependent on the variability detected during initial transects, the scan speed and transect</p>

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<p>MEA will have the necessary baseline direct radiation monitoring performed to meet 10 CFR Part 40, Appendix A, Criterion 7, requirements. Please provide a more detailed description of where direct radiation monitoring will be performed.</p>	<p>spacing may be increased to utilize ATVs and up to a maximum of 50 meter spacing respectively. The gamma surveys and soil sampling will be performed in June and a report submitted by September 1, 2014.</p> <p>Cameco 5/16/2014 Status: Weather permitting the gamma survey will occur the week of May 26th. It takes 30 days for sample results, and our contractor expects to prepare a final report for submission in mid-July 2014.</p> <p>Cameco 5/27/2014 Status: The survey and sampling are underway.</p> <p>Cameco 7/11/2014 Status: Cameco now anticipates submission in early August.</p> <p>Cameco 8/5/2014 Status: No update.</p> <p>NRC 9/11/2014 Status: Please ensure information in the TR is updated with accurate information.</p> <p>NRC 10/16/2014: Cameco is going to describe soil sampling and kriging method, etc, in TR and/or reference the Tetro Tech report, as appropriate.</p> <p>Cameco expects to submit the above-referenced information by 12/31/2014</p>
<p>RAI 12.G.2. <u>Description of Deficiency</u> The information provided in TR Section 2.6 does not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 2.6.2 and using acceptance criteria in Section 2.6.3 of NUREG-1569.</p> <p><u>Request for Additional Information</u> Please address the following issues regarding the proposed preoperational environmental monitoring program for the MEA:</p> <p>G. In TR Section 2.9.8, the applicant described its baseline direct radiation monitoring program. Please provide the following:</p> <p>(2) In TR Section 2.9.8, the applicant stated: "The type of survey instrument and procedures would be as described below..." However, there is no text provided that addresses these issues. Please provide the type of survey instrument used for performing baseline direct radiation monitoring and the procedures used, as indicated in TR Section 2.9.8.</p>	<p>Cameco 12/23/2014 Response: A sampling plan with details on where and how surface and subsurface soil sampling will occur will be submitted for NRC review in January 2013. Following resolution of any issues, the application will be revised to highlight the elements of that plan. The plan will provide details on the type of instrumentation and procedures used.</p> <p>5/6/2014 Status: The sampling plan was submitted as a supplemental RAI response on January 24, 2014 and is attached below for your information. Dependent on the variability detected during initial transects, the scan speed and transect spacing may be increased to utilize ATVs and up to a maximum of 50 meter spacing respectively. The gamma surveys and soil sampling will be performed in June and a report submitted by September 1, 2014.</p>

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	<p>Cameco 5/16/2014 Status: Weather permitting the gamma survey will occur the week of May 26th. It takes 30 days for sample results, and our contractor expects to prepare a final report for submission in mid-July 2014.</p> <p>Cameco 5/27/2014 Status: The survey and sampling are underway. Cameco will be performing sampling at a 1m depth in accordance with RG 4.14, Section 1.1.4 c., at that time.</p> <p>Cameco 7/11/2014 Status: Cameco now anticipates submission in early August.</p> <p>Cameco 8/5/2014 Status: No update.</p> <p>NRC 9/11/2014 Status: RG 4.14 indicates that one of the reasons for collecting preoperational radiological data is to establish baseline data to aid in evaluation of decommissioning operations and decontamination following any unusual releases. The Ludlum Model 44-10 detector used by the applicant does not have an energy range low enough to detect Uranium 238, therefore, it is unclear how the background direct radiation data will be used during decommissioning or following unusual releases to determine the extent of spills and to ensure that appropriate cleanup action is taken, when the primary radioactive material in the luxiviant is Uranium. Also, as discussed, it is unclear how spills will be detected when the instrumentation proposed for decommissioning does not have an energy level low enough to detect Uranium 238. NRC is awaiting this information.</p> <p>NRC 10/16/2014: NRC is waiting on the above information from Cameco (see NRC 9/11/2014 status). The applicant is going to update TR section 6.4 accordingly.</p> <p>Cameco expects to submit the above-referenced information by 12/31/2014</p>
<p>RAI 12.H. <u>Description of Deficiency</u> The information provided in TR Section 2.6 does not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 2.6.2 and using acceptance criteria in Section 2.6.3 of NUREG-1569.</p>	<p>Cameco 12/23/2014 Response: <i>Table 2.9-5-</i> On June 26th Cameco provided a revised Table 2.9-5 which included another additional round of sampling for Well 723.</p>

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Request for Additional Information Please address the following issues regarding the proposed preoperational environmental monitoring program for the MEA:

H. RG 4.14 provides recommended values for the lower limit of detection (LLD) for radionuclides in various environmental media. The applicant provided a description of its laboratory measurements in regards to significant figures reported for environmental media measurements in TR Appendix Q. Several reported LLD values are not within RG 4.14 recommended values, even after taking into account the applicant's rationale described in TR Appendix Q (i.e., reporting LLD values with one significant figure, consistent with RG 4.14).

The following examples are not consistent with RG 4.14 recommended LLD values:

	Recommended Reported	
Table 2.9-5 – Radiological Analysis for Private Water Supply Wells		
March 2011 Well 723, Pb-210 (pCi/L) (dissolved)	1	
1.6		
Table 2.9-26 – Niobrara River Dissolved Radiological Water Quality		
March 2011 sample at N1 for Th-230 (pCi/L)	0.2	
0.3		
April 2011 sample at N1 for Pb-210 (pCi/L)	1	
1.6		
July 2011 sample at N2 for Th-230 (pCi/L)	0.2	
0.4		
October 2011 sample at N1 for Th-230 (pCi/L)	0.2	
0.3		
Table 2.9-27 - Niobrara River Suspended Radiological Water Quality		
June 2011 sample at N1 for Pb-210 (pCi/L)	1	
9		
Table 2.9-33 – Total Radionuclides and Metals in Tissue of Northern Pike		
Ra-226 (microCi/kg)	5×10^{-8}	2 x
10^{-7}		
Th-230 (microCi/kg)	2×10^{-7}	8 x

The well was not operational in the first and second quarter of 2012 and could not be sampled. Like Well 723, Well 721 is also completed in the Brule and is across the road, several hundred feet away. Data are available from the spring of 2013 for Well 721 which provides adequate seasonal Brule characterization in this area.

Cameco 5/6/2014 Status: Awaiting NRC review.

Table 2.9-26 (Table 2.9-29 in the revisions) and Table 2.9-27 (Table 2.9-30 in the revisions)-

The relocation of surface water sampling location N-2 requires 1 year of concurrent sampling at both locations. See revised Figure 2.9-1 for the schedule.

Cameco 5/6/2014 Status: All baseline radiological sampling with be submitted by the fourth quarter of 2014.

Table 2.9-33 (Table 2.9-37 in the revisions)-

Additional fish tissue samples will be collected during the winter of 2013/2014 and early summer 2014. See revised Figure 2.9-1 for the schedule.

Cameco 5/6/2014 Status: All baseline radiological sampling with be submitted by the fourth quarter of 2014.

Cameco 5/27/2014 Status: No update.

Cameco 7/11/2014 Status: No update.

NRC 9/11/2014 Status: Cameco is expected to provide data that meets the LLDs, including the Tables in section 2.9 (as discussed in the status update for 12E). The NRC is awaiting this data.

NRC 10/16/2014: NRC is still awaiting this information.

Cameco expects to submit the above-referenced information by 11/28/2014

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<p>10⁻⁶ Please provide all environmental media samples with measured values that have an LLD consistent with RG 4.14 or justification for an alternate program.</p>	
<p>RAI 13 <u>Description of Deficiency</u> Staff cannot complete its evaluation of NUREG-1569, Acceptance Criterion 2.9.3(2). <u>Basis for Request</u> 10 CFR Part 40, Appendix A, Criterion 7, requires: "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." RG 4.14 provides guidance on the preoperational and operational aspects of effluent and environmental monitoring at uranium mills. NUREG-1569, Acceptance Criterion 2.9.3(2), states: "Soil sampling is conducted at both a 5-cm [2-inch] depth as described in Regulatory Guide 4.14, Section 1.1.4 (NRC, 1980) and 15 cm [6 in] for background decommissioning data." During its review, NRC staff found no 15-cm soil samples proposed in the TR. <u>Request for Additional Information</u> Please provide justification for not performing soil samples at 15-cm depths, or indicate where this can be found in the TR.</p>	<p>Cameco 12/23/2014 Response: A sampling plan with details on where and how surface and subsurface soil sampling will occur will be submitted for NRC review in January 2013. Following resolution of any issues, the application will be revised to highlight the elements of that plan. Sampling will be conducted in late spring or early summer of 2014, prior to construction. Section 2.9.6 has been revised accordingly.</p> <p>Cameo 5/6/2014 Status: The sampling plan was submitted on January 24, 2014 and is attached below for your information. The gamma surveys and soil sampling will be performed in June and a report submitted by September 1, 2014.</p> <p>Cameco 5/16/2014 Status: Weather permitting the gamma survey will occur the week of May 26th. It takes 30 days for sample results, and our contractor expects to prepare a final report for submission in mid-July 2014.</p> <p>Cameco 5/27/2014 Status: The survey and sampling are underway.</p> <p>Cameco 7/11/2014 Status: Cameco now anticipates submission in early August.</p> <p>Cameco 8/5/2014 Status: No update.</p> <p>NRC 9/11/2014 Status: Cameco has stated that they will perform 5 cm soil samples at the air monitoring stations, both during pre-operation and operation. In addition, Cameco has stated that five preoperational soil samples are expected to be taken to a depth of 1 meter to be consistent with RG 4.14. The NRC is awaiting the soil sample data.</p> <p>NRC 10/20/2014: See notes related to 12E, above.</p> <p>Cameco expects to submit the above-referenced information by 11/28/2014</p>
<p>RAI 14 Description of Deficiency The information provided in TR Section 2.9.3</p>	<p>Cameco expect s to commit to providing the requested</p>

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<p>does not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 2.9.2 and acceptance criteria in Section 2.9.3 of NUREG 1569, and using Regulatory Guide 4.14.</p> <p><u>Basis for Request</u> TR Section 2.9.3 (p. 2-394) states: "Water quality analyses for private water wells provided in this section is for March 25 to December 20, 2012. Groundwater samples for the CBR monitor wells were collected from March 4 to May 3, 2011 for the Brule monitor wells and March 12 to April 11, 2011 for CBR Chadron monitor wells. Quarterly groundwater sampling will continue until 1 year of data have been obtained and reported to the NRC." Staff has not received the above-referenced quarterly groundwater sampling results for private wells consistent with RG 4.14.</p> <p><u>Request for Additional Information</u> Please provide one year of quarterly sampling results for private wells consistent with RG 4.14. For private wells located at or within 2 km of the MEA that have not been included in this sampling program, please sample these wells quarterly for one year or provide justification for not sampling these wells.</p>	<p>information in a submittal of replacement text for the TR.</p>
<p>RAI 15(a) Description of Deficiency The information provided in TR does not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 3.1.2 and acceptance criteria in Section 3.1.3 of NUREG 1569.</p> <p><u>Basis for Request</u> In accordance with NUREG 1569, Section 3.1.3 Criterion (5)(f), the application did not provide an acceptable analysis of the ground water hydraulic effects of nearby agricultural wells. Specifically, (a) Considering the possible occurrence of regulated material releases to the overlying aquifer (e.g., from a potential surface spill or a potential well casing failure) within the MEA, the application does not provide an analysis of the possible ground water hydraulic effects that nearby agricultural wells (well locations are shown in TR Figure 2.7-6 as indicated by TR Table 2.2-11 and TR Appendix A) may have on the migration of potential MEA regulated material releases in the overlying ground water zone toward these wells. Thus, staff cannot confirm whether the applicant's monitoring, containment, corrective action programs for potential MEA regulated material releases into the overlying aquifer will be protective of the agricultural wells and other private wells (located between MEA operations and the agricultural wells).</p>	<p>Cameco expects to submit the requested information by 11/28/14</p>

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<p><u>Request for Addition Information</u> (a) Please provide an analysis of the hydraulic effects that nearby agricultural wells may have on the migration of potential MEA regulated material releases in the overlying ground water zone toward these wells. This analysis should further define the hydrostratigraphy within the Arikaree and Brule formations and should be centered on the protection of agricultural wells and other private wells (located between MEA operations and the agricultural wells) from potential MEA regulated material releases to the overlying aquifer. Results of this analysis should be used to demonstrate the effectiveness of the applicant's proposed monitoring, containment, and corrective action programs for addressing possible MEA regulated material releases into the overlying groundwater zone.</p>	
<p>RAI 15.(b) Description of Deficiency The information provided in TR does not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 3.1.2 and acceptance criteria in Section 3.1.3 of NUREG 1569.</p> <p><u>Basis for Request</u> In accordance with NUREG 1569, Section 3.1.3 Criterion (5)(f), the application did not provide an acceptable analysis of the ground water hydraulic effects of nearby agricultural wells. Specifically, (b) Staff is uncertain whether active agricultural wells (locations shown in Figure 2.7-6 as indicated by TR Table 2.2-11 and TR Appendix A) tap an unconfined or confined aquifer. Staff observes that if confining conditions exist, the application will need to demonstrate that the downward hydraulic influence of active agricultural wells (e.g., private well 732 shown in TR Figure 2.7-6) will not have an adverse effect of hydraulic containment of MEA production fluids in the Basal Chadron Formation beneath the MEA.</p> <p><u>Request for Addition Information</u> (b) Please further demonstrate that the ground water hydraulic influence of nearby agricultural wells will not have an adverse effect on the hydraulic containment of MEA production fluids within the Basal Chadron Formation beneath the MEA.</p>	<p style="color: red;">NRC understands that Cameco is in the process of evaluating supplementing their response (seen, in part, within TR Section 2.9.3.2) with additional information. NRC anticipates that the additional information will include the effects nearby ground water extraction on the vertical hydraulic gradient (i.e., a projection of the effect of groundwater extraction from nearby agricultural wells on the vertical hydraulic gradient observed between the Arikaree/Brule water-bearing unit and the underlying Basal Chadron).</p>
<p>RAI 17 Description of Deficiency The information provided in TR Section 3.1 and 6.1 Cameco Response: Consistent with the email to does not meet the applicable requirements of 10 CFR Part 40, using the review Thomas Lancaster at the NRC dated 8/27/2013, a procedures in Section 3.1.2 and</p>	<p>Cameco Response: Consistent with the email to does not meet the applicable requirements of 10 CFR Part 40, using the review Thomas Lancaster at the NRC dated 8/27/2013, a procedures in Section 3.1.2 and acceptance criteria in Section 3.1.3 of NUREG-</p>

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<p>acceptance criteria in Section 3.1.3 of NUREG-1569. discussion of the drawdown analysis and resulting</p> <p><u>Basis for Request</u> Staff cannot confirm drawdown-distance estimates that are based estimates for the MEA is provided in Section 7.2.5. In on the estimated volumes of water that will be pumped during ground water sweep the NRC letter dated October 23, 2013, NRC stated that operations. This information is necessary to determine the impact of operations on the response was satisfactory pending staff's ground-water flow patterns and aquifer levels consistent with NUREG-1569, Section independent verification of the estimate. 3.1.3.</p> <p><u>Request for Additional Information</u> Please provide drawdown-distance estimates that are based on the estimated volumes of water that will be pumped during ground water sweep operations and compare to the information from existing operations.</p>	<p>1569. discussion of the drawdown analysis and resulting Basis for Request Staff cannot confirm drawdown-distance estimates that are based estimates for the MEA is provided in Section 7.2.5. In on the estimated volumes of water that will be pumped during ground water sweep the NRC letter dated October 23, 2013, NRC stated that operations. This information is necessary to determine the impact of operations on the response was satisfactory pending staff's ground-water flow patterns and aquifer levels consistent with NUREG-1569, Section independent verification of the estimate.</p> <p style="color: red;">NRC Staff is in the process of finishing their independent analysis.</p>
Section 4 - Effluent Control Systems	
<p>RAI 21 <u>Description of Deficiency</u> The applicant did not provide specific information regarding accident conditions related to the ventilation systems. In addition, it did not provide safety impacts of system failures or identify contingencies for such occurrences related to the ventilation systems.</p> <p><u>Basis for Request</u> NUREG-1569, Acceptance Criterion 4.1.3(4), states: "The application demonstrates that the effluent control systems will limit exposures under both normal and accident conditions. The application also provides information on the health and safety impacts of system failures and identifies contingencies for such occurrences. In TR Section 4.1.3, the applicant refers to its SHEQMS, Volume VIII, Emergency Manual, for responses to emergency situations that could occur at the site in the event of effluent system failures, but neither provides details on the safety impacts from these failures nor identifies contingencies for such occurrences.</p> <p><u>Request for Additional Information</u> Consistent with NUREG-1569, Acceptance Criterion 4.1.3(4), please provide details on accident conditions related to the ventilation systems. Specifically, please provide information on the health and safety impacts of ventilation system failures and identify contingencies for such occurrences for staff to evaluate NUREG-1569,</p>	<p>Cameco Response: First, some basics attributes of the ventilation system are important to this discussion. The ventilation system at the CPF and the one proposed for the MEA are not complex, and in this simplicity, the potential for significant problems are greatly reduced. Fundamentally, all ventilation fans run continuously and are inspected daily. Failures are rare and are readily observable. Replacement fan motors can be quickly sourced and failures can be quickly remedied. When a fan fails, or is shut down for maintenance, negative pressure remains within the building by virtue of the many other fans that continue to operate. Failure of the largest single fan (#5 Duct) at the CPF would result in only a 13 percent reduction in total capacity. SOP P.16 for the CPF addresses repair and maintenance of current ventilation systems. This SOP will be revised to also address MEA ventilation. A copy of the SOP and associated inspection form has been provided under separate cover for NRC information, under a request for confidentiality. In response to shutdown of a fan, Cameco</p>

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<p>Acceptance Criterion 4.1.3(4), or indicate where this information can be found in the application.</p>	<p>immediately begins a process to return the fan to service. In the meantime, Cameco can respond with additional personal protective equipment, fans and by setting up radon progeny monitoring in the vicinity to detect real time radon progeny levels during the maintenance or repair process. In summary, elevated radon levels are the primary health and safety impact of ventilation system failure. Given the redundant fans and Cameco's use of additional PPE and engineering controls, the dose impacts from system failures are maintained ALARA. Section 4.1.3 of the application has been revised accordingly. Cameco 8/5/2014 Status: Consistent with the response to RAI 30 dated 5/27/2014, Cameco withdraws the non-disclosure request and asks that the documents be retained by NRC for Staff use only or destroyed. Cameco will revise the text of the application to summarize these documents in response to the RAI. NRC 9/11/2014: NRC is awaiting Cameco's summary. NRC 9/29/2014: NRC needs to review Cameco's 9/25/14 response. NRC 10/16/2014: NRC is in the process of reviewing the recently submitted recent information (for RAI 29) for a reinstatement of the ALARA statement that was removed from their response. Cameco going to revise incorrect regulation citation (10 CFR 20.1701(a)(3)).</p>
<p>RAI 23 Description of Deficiency The application did not contain 10 CFR 20.2002 Cameco Resources Responses to NRC Technical Report RAIs December 23, 2013 analysis of the deep disposal well consistent with NUREG-1569, Acceptance Criterion 6.1.3(13). <u>Basis for Request</u> NUREG-1569, Acceptance Criterion 6.1.3(13), states, in part: "Proposals for disposal of liquid waste from process water by injection in deep wells must meet the regulatory provisions in 10 CFR 20.2002 and demonstrate that doses are ALARA and within the dose limits in 10 CFR 20.1301. The injection facility should be described in sufficient detail to satisfy the NRC need to assess environmental impacts. Specifically, proposals must include: (i) a description of the waste, including its physical and chemical properties important to risk evaluation; (ii) the proposed manner and conditions of waste disposal; (iii) an analysis and evaluation of pertinent</p>	<p>The response received is unsatisfactory. NRC is waiting for Cameco to complete the requested analysis.</p>

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<p>information on the nature of the environment; (iv) information on the nature and location of other potentially affected facilities; and (v) analyses and procedures to ensure that doses are ALARA, and within the dose limits in 10 CFR 20.1301."</p> <p><u>Request for Additional Information</u> Please provide 10 CFR 20.2002 analysis of the deep disposal well that is consistent with NUREG-1569, Acceptance Criterion 6.1.3(13).</p>	
<p>RAI 24 Description of Deficiency The information provided in TR Section 4.2 does not meet the applicable requirements of 10 CFR Part 40 that will be protective of human health and the environment. The application indicates that surface impoundments (i.e., ponds) will not be constructed at the MEA and a series of six storage tanks (each 50,000 gallons in capacity) will be used to provide surge capacity between the satellite plant and the MEA deep disposal well (DDW). The applicant also identified trucking contaminated wastewater off-site for disposal in an emergency situation. Considering that page 3-10 of the application identifies an annual DDW flow rate of 35,500,000 Cameco Resources Responses to NRC Technical Report RAIs December 23, 2013 gallons per year (approximately 67.5 gallons per minute) and Figure 3.1-5 identifies a 120 gpm flow rate to the DDW, the 300,000 gallons of surge capacity would provide between 1.5 and 3 days of backup. It is not clear to the staff whether the proposed volume of the tank storage (300,000 gallons) will provide adequate surge capacity. Based on the above referenced conflicting DDW flow rates, staff is also unclear on the DDW disposal rate estimated for MEA. Additionally, the application does not provide engineering and design aspects of the surge tanks and associated infrastructure (tank construction, secondary containment and any radiation protection implications). This information is necessary to determine if CBR's MEA operation will be protective of human health and the environment.</p> <p><u>Request for Additional Information</u> Please provide: (a) better clarity of the anticipated DDW disposal. (b) additional information that demonstrates that the tanks provide adequate surge capacity. (c) a further discussion of other options for disposal of wastewater if the DDW suddenly is not available for an extended period of time. (d) additional information concerning the engineering and design aspects of the tanks and associated infrastructure (e.g., tank construction, secondary containment, and any radiation</p>	<p>NRC is in the process of finishing their independent analysis.</p>

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protection implications).	
Section 5 – Operations	
<p>RAI 27 <u>Description of Deficiency</u> The applicant did not provide details on its ventilation equipment related to minimum performance specifications and frequencies of tests and inspections. <u>Basis for Request</u> NUREG-1569, Acceptance Criterion 5.7.1.3 (4), states, in part: “The applicant describes minimum performance specifications for the operation of the effluent controls and the frequencies of tests and inspections to ensure proper performance to specifications...” The applicant stated in TR Section 5.7.1.1 that ventilation equipment will be inspected for proper operation as recommended in RG 3.56 and that this equipment will be inspected during radiation safety inspections as discussed in TR Section 5.3.1. Staff observes that RG 3.56 does not specifically address ventilation systems and only provides a general description of maintenance and testing, relying on manufacturer’s recommendations and minimum timeframes. In addition, the applicant does not address ventilation systems operations in its radiation safety inspections discussed in TR Section 5.3.1. <u>Request for Additional Information</u> Please provide details on the applicant’s testing, maintenance, and inspection program for ventilation systems at the Marsland satellite facility, including wellhouse ventilation units. Specifically, please provide minimum performance specifications and frequencies of tests, inspections, and maintenance activities for these ventilation systems or indicate where this information can be found in the application. Consistent with RG 3.56, please also describe any specialized training for those performing inspections on the ventilation systems.</p>	<p>Cameco 12/23/2014 Response: As noted above, the ventilation systems in use at the CPF are not complex. Like the CPF, the MEA ventilation system will be designed with a combination of doors, wall fans and hard-piped ventilation systems that will achieve four to five air exchanges per hour. This may be supplemented with box fans when needed. Consistent with the CPF, this will ensure reduction of radon progeny to ALARA levels. The 10 foot by 30 foot well houses are continuously ventilated using 800 CFM wall or ceiling fans. The fans are visible from the door so that operability is verified prior to entry. Daily inspections identify fans that require maintenance or have failed. Testing is not routinely performed as function is readily observable and the fans at the CPF are proven to have very long life expectancy. Specialized training is not required to assess the operational status of the ventilation units. As noted in response to RAI 27, Cameco has provided a copy of SOP P.16 and the associated inspection form as well as updates to Section 4.1.3. Cameco 5/6/2014 Status: Awaiting NRC review. Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: No update. Cameco 8/5/2014 Status: Consistent with the response to RAIs 29 and 30 dated 5/27/2014, Cameco withdraws the non-disclosure request and asks that the documents be retained by NRC for Staff use only or destroyed. Cameco will revise the text of the application to summarize these documents in response to the RAI. In addition, Cameco will revise the text of the application and commit to pre-operational verification of the as-constructed number of air exchanges at the Marsland satellite plant. NRC 9/11/2014: 1. Cameco is expected to provide an update to the TR with a commitment to perform preoperational testing to ensure that the system can meet the design criteria specified and regulatory requirements. 2. NRC is awaiting Cameco’s summary. NRC 9/24/2014: Since the applicant</p>

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	<p>monitors for radioactivity in the facility during operation, preoperational testing is not required. Operational monitoring will ensure that the ventilation system functions as indicated. NRC 9/29/2014: The applicant’s 9/26/2014 responses to RAI 21 and RAI 27 provides additional information related to inspections, maintenance, and testing of fans. I need to determine if the commitment to ensure 4 or 5 air exchanges occurs in an hour is sufficient to resolve this RAI. Also, how do we know that 4 or 5 air exchanges an hour is sufficient to limit worker dose? What about the dose to unrestricted areas, how does that play into this? NRC 10/16/2014: 4 or 5 air exchanges is equivalent to the main facility. The MEA is not licensed to extract as much Uranium as the main facility and some of the ion exchange columns at the main facility are upflow columns which may release more radon. In addition, the drying and packaging of yellowcake is not performed at the MEA, so 4 or 5 air exchanges is sufficient. Cameco expects to update the TR according after it is resolved by the License Renewal for the main facility.</p>
<p>RAI 28 Description of Deficiency The applicant did not provide information on beta survey instruments. Basis for Request NUREG-1569, Acceptance Criterion 5.7.2.3(3), states: “Monitoring equipment is identified by type, sensitivity, calibration methods and frequency, availability, and planned use to protect health and safety. The ranges of sensitivity for the proposed external radiation monitors are consistent with those appropriate to the facility operation.” In TR Section 3.3, the applicant discusses various survey equipment but does not address equipment for performing beta surveys. In TR Section 5.7.2, the applicant discusses beta surveys, but does not discuss instruments for performing these surveys. Request for Additional Information Consistent with NUREG-1569, Acceptance Criterion 5.7.2.3(3), please provide a description of beta monitoring equipment for the applicant’s external radiation monitoring program identified by type, sensitivity, calibration methods and frequency, availability, and planned use to protect health and safety, or indicate where this information can be found in the application.</p>	<p>Cameco 12/23/2014 Response: This issue is currently being addressed in the context of Draft License Conditions to the underlying license for the Crow Butte facility. Cameco will revise the Marsland application to comport with the revisions to the underlying license prior to operations. Cameco 5/6/2014 Status: No later than May 30, 2014, Cameco will submit Marsland-specific information regarding survey instrumentation. Cameco 5/16/2014 Status: Please see the 12/23/2014 response. Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: No update. Cameco 8/5/2014 Status: No update. NRC 9/11/2014: NRC is waiting for Cameco to submit Marsland-specific information (as indicated in Cameco’s 5/6/2014 status) and/or to update the response to indicate what LC from the main facility resolves this issue and update the application accordingly. NRC 10/16/2014: Cameco is going to send Marsland specific information after this issue is resolved by the License</p>

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<p>RAI 29 <u>Description of Deficiency</u> The applicant did not provide any specifics on its ALARA policy. <u>Basis for Request</u> NUREG-1569, Acceptance Criterion 5.7.2.3(7), states: "Radiation doses will be kept as low as is reasonably achievable by following Regulatory Guide 8.10 (NRC, 1977) and Regulatory Guide 8.31 (NRC, 2002b)." RG 8.10, Regulatory Position C.1.a, recommends that plant personnel should be made aware of management's commitment to keep occupational exposures ALARA and that the commitment should appear in policy statements, instructions to personnel, and similar documents. In TR Section 4.1.4, the applicant stated that it maintains a strict ALARA policy to keep exposures to all radioactive materials as low as possible as defined in SHEQMS, Volume IV, Health Physics Manual. However, the applicant did not provide any specifics from this reference or others, such as ALARA exposure goals and action levels associated with exposures to radioactive materials. <u>Request for Additional Information</u> Consistent with NUREG-1569, Acceptance Criterion 5.7.2.3(7), please provide specific information on the applicant's ALARA policy statements, instructions, or other similar documents, including goals and action levels, as it relates to exposures to radioactive materials.</p>	<p style="color: red;">Renewal for the main facility.</p> <p> Cameco 12/23/2014 Response: CBR is providing Volume IV, SHEQMS Health Physics Manual under separate cover and under a request for confidentiality. Specifically, the management commitment to ALARA is evidenced by: • Management ALARA responsibilities are required reading during initial training, §2.5.3 • Documented annual ALARA audit §2.5.4.2 • Topic and possible test question in initial and annual radiation safety training In the interest of ALARA exposures, CBR has established action level at 25 percent of the exposure limit for: • Facility equipment and design, §2.5.10 • Radon progeny, §3.7 • Surface contamination control, §5.4 • Bioassay, §8.5.6 • Yellowcake slurry shipment (50 percent of action levels requires resurvey), §9.6.4.4 Cameco 5/6/2014 Status: Awaiting NRC review. Cameco does not wish that these proprietary documents be disclosed. NRC has reviewed the program repeatedly over may years and can use the inspection reports as a basis for both compliance and licensing determinations. If necessary, Cameco will withdraw the documents from ADAMs, and provide a very brief summary in lieu of disclosure. Cameco 5/27/2014 Status: Cameco withdraws the non-disclosure request and asks that the documents be retained by NRC for Staff use only or destroyed. Cameco will revise the text of the application to summarize these documents in response to the RAI. Cameco 7/11/2014 Status: The text summaries will be provided by the end of July 2014. Cameco 8/5/2014 Status: As part of the text summaries Cameco will provide an express commitment to an action level of 25 percent of the exposure limit as noted above and will incorporate relevant elements of RG 8.10. NRC 9/11/2014: 1. NRC is awaiting Cameco's summary. 2. NRC is awaiting Cameco to provide the text summaries indicated in the 8/5/2014 status update. 3. NRC is awaiting Cameco to incorporate the missing information in RG 8.10 into their TR. <b style="color: red;">NRC 10/26/2014: NRC is still awaiting the above information (see Cameco 7/11/2014,</p>
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	<p>8/5/2014, and NRC 9/11/2014). NRC 10/31/2014: Staff has not yet to complete its review of Cameco's responses.</p>
<p>RAI 32 <u>Description of Deficiency</u> The applicant did not provide information on beta survey instruments. <u>Basis for Request</u> NUREG-1569, Acceptance Criterion 5.7.3.3(3), states: "Monitoring equipment is identified by type, sensitivity, calibration methods and frequency, availability, and planned use to protect health and safety. The ranges of sensitivity for the proposed external radiation monitors are consistent with those appropriate to the facility operation." In TR Section 3.3, the applicant discusses various survey equipment but does not address equipment for performing beta surveys. <u>Request for Additional Information</u> Consistent with NUREG-1569, Acceptance Criterion 5.7.3.3(3), please provide a description of beta monitoring equipment for the applicant's airborne radiation monitoring program identified by type, sensitivity, calibration methods and frequency, availability, and planned use to protect health and safety, or indicate where this information can be found in the application.</p>	<p>Cameco 12/23/2014 Response: Please see response to RAI 28, which appears identical to RAI 32. Cameco 5/6/2014 Status: Awaiting NRC review. Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: No update. Cameco 8/5/2014 Status: Where appropriate, Cameco will provide information on monitoring equipment used for airborne beta surveys. NRC 9/11/2014: This RAI is not identical to RAI 28. NRC is awaiting the above information. Cameco expects to update the TR according after it is resolved by the License Renewal for the main facility.</p>
<p>RAI 33 <u>Description of Deficiency</u> Staff cannot complete its evaluation of NUREG-1569, Acceptance Criterion 5.7.6.3(4). <u>Basis for Request</u> NUREG-1569, Acceptance Criterion 5.7.6.3(4), states: "Monitoring equipment by type, specification of the range, sensitivity, calibration methods and frequency, availability, and planned use is adequately described. The application demonstrates that the ranges of sensitivity for monitoring equipment will be appropriate to expected facility operation." In TR Section 5.7.6, the applicant provides a description of survey equipment to be used in its contamination control program. However, it does not address the issues related to NUREG-1569, Acceptance Criterion 5.7.6.3(4). <u>Request for</u></p>	<p>Cameco 12/23/2014 Response: This issue is currently being addressed in the context of Draft License Conditions to the underlying license for the Crow Butte facility. Cameco will revise the Marsland application to comport with the revisions to the underlying license prior to operations. Cameco 5/6/2014 Status: No later than May 30, 2014, Cameco will submit Marsland-specific information regarding survey instrumentation. Cameco 5/6/2014 Status: Cameco again proposes to resolve this in the context of the license renewal. Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: No update. Cameco</p>

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<p><u>Additional Information</u> Please address the following issues related to the proposed survey equipment described in TR Section 5.7.6: A. Please provide the information requested in NUREG-1569, Acceptance Criterion 5.7.6.3(4). B. Staff observes that the proposed Ludlum Model 44-38 probe is rated with a beta cutoff energy of 200 keV (refer to ADAMS accession No. ML13086A183). Some of the uranium decay products have beta energies that are below this cutoff energy. Please provide information on how surface contamination with beta-emitting radionuclides will be evaluated. C. Please state whether the practice of washing the soles of shoes prior to exiting the restricted area will be used at the MEA. If this practice will be used, please demonstrate the minimum detectable concentration for contamination surveyed on the wet soles of shoes.</p>	<p>8/5/2014 Status: When revisions to the Marsland application are submitted to comport with the underlying license, Cameco will include information on the range, sensitivity, calibration methods and frequency, availability and planned use equipment by type. For RAI 33 C., Cameco will provide a response independent of the underlying license activities. NRC 9/11/2014: Cameco expects to update the TR according after it is resolved by the License Renewal for the main facility.</p>
<p>RAI 34 <u>Description of Deficiency</u> The applicant did not address NUREG-1569, Acceptance Criterion 5.7.6.3(6). <u>Basis for Request</u> NUREG-1569, Acceptance Criterion 5.7.6.3(6), states: "The licensee will ensure that radioactivity on equipment or surfaces is not covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table 5.7.6.3-1 of this standard review plan before application of the covering. A reasonable effort will be made to minimize the contamination before the use of any covering." <u>Request for Additional Information</u> Please address NUREG-1569, Acceptance Criterion 5.7.6.3(6), for operations or indicate where this can be found in the application.</p>	<p>Cameco 12/23/2014 Response: This issue is currently being addressed in the context of Draft License Conditions to the underlying license for the Crow Butte facility. Cameco will revise the Marsland application to comport with the revisions to the underlying license prior to operations. Cameco 5/6/2014 Status: At present, the draft license for the overlying facility includes condition 9.6. The reference in this license condition establishes a requirement identical to acceptance criteria 5.7.6.3(6). Since that license language will be directly applicable to Marsland operations, the inclusion of identical language in the application would be redundant. Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: No update. Cameco 8/5/2014 Status: Cameco will revise the license application to expressly include a commitment to make a reasonable effort to minimize contamination before use of any covering. NRC 9/11/2014: 1. NRC is awaiting on Cameco to provide the above information. 2. In addition, it is unclear to staff what values Cameco will limit contamination to before using coverings. 3. It is unclear how Cameco is going to ensure that materials that have been painted over with activity levels above the values in NUREG-1569, Table 5.7.6.3-1, will not eventually get released for unrestricted use, without the contamination being removed. NRC 10/16/2014: NRC is awaiting the above information from Cameco. Cameco</p>

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	<p>expects to submit the above-referenced information by 12/31/2014</p>
<p>RAI 37.A.1 Description of Deficiency Staff cannot verify the applicant’s MILDOS calculations for the maximally exposed individual and its basis for not collecting vegetation, food, and fish samples during operations for the environmental monitoring program. <u>Basis for Request</u> 10 CFR Part 40, Appendix A, Criterion 7, requires, in part: “...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.” 10 CFR 20.1301(a) requires, in part: “(a) Each licensee shall conduct operations so that – (1) The total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year, exclusive of the dose contributions from background radiation, from any administration the individual has received, from exposure to individuals administered radioactive material and released under § 35.75, from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage in accordance with § 20.2003...” 10 CFR 20.1302(b) requires, in part: “A licensee shall show compliance with the annual dose limit in § 20.1301 by — (1) Demonstrating by measurement or calculation that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual dose limit...” NUREG-1569, Acceptance Criterion 5.7.7.3(1), states: “The proposed airborne effluent and environmental monitoring program is consistent with Regulatory Guide 4.14, Sections 1.1 and 2.1 (NRC, 1980) and as low as is reasonably achievable requirements as described in Regulatory Guide 8.37, Section 3 (NRC, 1993)”. RG 4.14, Section 2.1, provides guidance for conducting an operational environmental monitoring program including the collection of vegetation, food, and fish samples. Furthermore, RG 4.14 provides guidance that these media are relevant when a significant pathway to man is identified in</p>	<p>Cameco 12/23/2014 Response: The MILDOS model was rerun and the report was revised to eliminate the duplicate reduction in source term. Please see the revisions to Appendix M. Cameco 5/6/2014 Status: Cameco will be submitting an update to the Mildos reflecting a higher total flow rate. Please proceed with the review of this section and Appendix M as the only change will be an increase in flow and the dose estimates. We expect to provide the update no later than May 30, 2014. Cameco 5/16/2014 Status: Weather permitting the gamma survey will occur the week of May 26th. It takes 30 days for sample results, and our contractor expects to prepare a final report for submission in mid-July 2014. (Erroneous language deleted). Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: Attached please find a Mildos assessment for a 6000gpm production/1500 gpm restoration plant. The revised Mildos no longer includes the additional reduction in radon effluent concentration. Cameco 8/5/2014 Status: No update. NRC 9/11/2014: Regarding the MILDOS calculations, NRC is awaiting the clarifications discussed in the 9/9/2014 call. Additional clarification may be needed following future discussions and evaluation. NRC 9/24/2014: The applicant is going to provide us the spreadsheet that it used to calculate the radon concentrations matching the MILDOS calculations. NRC 10/16/2014: 1. Regarding MILDOS, Cameco representative needs to explain why radon level release rates in MILDOS output files are different from what I get and what Larry M gets when we put it into the system (will be discussed in 10/21/2014 call). 2. Also, the issue of 1% of the total radon in the process solution being vented to the atmosphere for MILDOS has to be reconciled, since NT used 10%. This issue needs to be reviewed by NRC to see if it is acceptable. 3. Applicant is expected to remove the statement regarding 0.1 km east of the header houses, 0.1 km east of the site boundaries, and 0.1 km east of</p>

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<p>individual licensing cases. A significant pathway is defined in RG 4.14, Footnote (o) to Tables 1 and 2, when a predicted dose to an individual would exceed 5 percent of the applicable radiation protection standard. RG 3.51, Calculational Models for Estimating Radiation Doses to Man from Airborne Radioactive Materials Resulting from Uranium Milling Operations, provides guidance on calculating dose for individuals including ingestion of vegetables, milk and meat. <u>Request for Additional Information</u> A. In TR Sections 5.7.7.5 and 5.7.7.6, the applicant stated that it will not collect vegetation, livestock, crop, or vegetable garden samples as part of its operational environmental monitoring program based on the results of its MILDOS calculations presented in TR Appendix M. In order for staff to verify the technical bases for this approach, please address the following issues: 1. In Appendix M1, page 7 of the report by Noel Savignac, the applicant describes the MILDOS operational input data. In addition to the assumed values of one percent for the radon venting rate of the wellfields (refer to NUREG-1569, Appendix D, and TR Appendix M, Table 2 of the report by Noel Savignac) and 20 percent of the radon released from the purge water, the applicant appears to further reduce the radon effluent by applying a 25 percent (radon venting from header houses) and 75 percent (radon venting from satellite plant) proportion factor in one scenario, and a 10 percent (radon venting from header houses) and 90 percent (radon venting from satellite plant) proportion factor in another scenario. Please provide additional clarification and justification for this apparent additional reduction in radon effluent concentration over and above the MILDOS-assumed value for wellfield venting and the applicant-assumed value for purge water venting.</p>	<p>the vent stack from the MILDOS summary. NRC 10/31/2014: 1. Resolved. Corrections made to report in 10/31/2014 response. 2. Resolved. MILDOS default value. 3. Resolved. Applicant explained this paragraph and it has been retained in the summary. As appropriate. 4. While all technical issues regarding MILDOS are resolved the applicant is still in the process of correcting editorial errors. Such as, incorrect directions (says south east in several spots for highest dose when it should say south west). The incorrect references of 10 CFR 190. Also page 15 of the report references Table 4 when it should reference Table 5. Cameco expects to submit the above-referenced information by 11/14/2014</p>
<p>37.A.2. In Appendix M2, the applicant calculates the maximum dose to man from the vegetation pathway. Please address the following issues regarding the vegetation pathway analysis: a. The applicant stated that it used the food production rate for Colorado from RG 3.51, Table 7, page 35, as Nebraska was not listed in this table. Staff observes that this tabulated data is from 1973 and that guidance on page 24 of RG 3.51 states that if other means are not available, it is</p>	<p>Cameco 12/23/2014 Response: Consistent with the Powertech Dewey Burdock alternate proposal at ML11208B714, Cameco proposes to take a soil sample from each garden in the area of review and then apply concentration factors to estimate the radionuclide concentrations in vegetables. Similar to Dewey Burdock, the large quantity of vegetables required to meet LLDs would decimate each home owner's crop. The specifics of this</p>

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<p>acceptable to assume that regional agricultural productivity will remain in constant proportion to the U.S. population. Consistent with RG 3.51, please provide a discussion on efforts to derive site-specific (e.g., State, regional) agricultural productivity data and comparison of the tabulated agricultural productivity data with the U.S. population to derive an appropriate proportion factor. b. The applicant calculated the maximum dose to an individual using the ratios of population exposures to vegetation, milk, and meat pathway to the total population exposure times the maximum resident dose at the Marsland operation. This approach does appear to address the requirements of 10 CFR 20.1302(b), dose to an individual, or be consistent with RG 3.51, Regulatory Position C.2, which provides guidance for dose calculations for individuals. Please provide justification for applying a population exposure ratio to derive a maximum individual exposure. c. Staff observes that the maximum resident dose at the Marsland operation was calculated assuming the highest radon air concentrations during operations. For maximum total individual dose, this approach appears consistent with RG 3.51, Regulatory Position C.2 which states that the 1-yr exposure period is taken to be the year when environmental concentrations resulting from plant operations are expected to be at their highest level. However, the applicant stated that the dose from the vegetation pathway was calculated from the consumption of vegetables, meat, and/or milk that may have been impacted by the release of radon and its decay products on vegetation or forage from uranium in situ operations. Staff observes that the maximum vegetation concentrations will not necessarily occur during the same timeframe as the maximum radon air concentrations. Consistent with RG 3.51, please provide the exposure period resulting in the maximum radiation dose from the vegetation pathway and reanalyze the maximum individual dose from the vegetation pathway if necessary.</p>	<p>alternate approach are presented as revisions to Section 2.9.5.2. Cameco 5/6/2014 Status: Cameco has taken and analyzed soil samples from each garden in the area of review. At present we are working with Inter Mountain Laboratories in Casper, Wyoming to develop a justification for an LLD for Polonium 210 in soil for submission and NRC written verification. We expect to submit the justification, data and analysis with no later than September 1, 2014. Cameco 5/16/2014 Status: Cameco now expects to submit the justification, data and analysis no later than June 30, 2014. Cameco 5/27/2014 Status: Cameco will respond to RAI 37.A.2. a., b., and c., individually. Cameco 7/11/2014 Status: No change. Cameco 8/5/2014 Status: No update. NRC 9/11/2014: 1. NRC staff is awaiting responses to parts a, b, and c. Cameco expects to submit the above-referenced information by 11/14/2014</p>
<p>37.B. In TR Section 5.7.7.6, the applicant stated that it will not collect fish samples as part of its operational environmental monitoring program based on the results of the MILDOS analysis for vegetation</p>	<p>Cameco 12/23/2014 Response: The incorrect vegetation uptake language has been removed from Section 5.7.7.6. In addition, alternative language in Section 5.7.7.6 was modified to trigger</p>

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<p>uptake. Staff observes that the correlation between vegetation uptake and the potential for a significant fish pathway is unclear. Consistent with RG 4.14, Section 2.1, please provide a direct dose analysis for the fish pathway to enable staff to determine if a significant pathway to man from fish exists or not.</p>	<p>operational fish sampling if upward trends in radionuclides are observed in sediment samples as the result of surface spills at the site. This alternative approach is justified because surface water flow is absent, the distance to the Niobrara River is significant, and the absence of sufficient fish in the Niobrara River above Box Butte Reservoir for sampling. It should also be noted that the perimeter monitoring wells and excursion control practices preclude a groundwater pathway to fish in the Niobrara River. Cameco 5/6/2014 Status: Awaiting NRC review. Cameco 5/27/2014 Status: No update. Cameco 7/11/2014 Status: No change. Cameco 8/5/2014 Status: Cameco will provide additional discussion. NRC 9/11/2014: Staff cannot find a correlation between sediment samples and fish in the TR or any information indicating what radionuclide levels in the sediment would require fish sampling and approval from the NRC. Alternative approaches include taking operational fish samples, or demonstrating that an individual would not exceed 5% of the applicable radiation standards. NRC 10/16/2014: I believe the applicant indicated in a previous call that they will be taking fish operational fish samples. applicant is going to update the TR accordingly. Cameco expects to submit the above-referenced information by 12/31/2014</p>
<p>Section 6 – Ground-water Quality Restoration, Surface Reclamation, and Facility Decommissioning</p>	
<p>RAI 41 Description of Deficiency In TR Section 6.4, the applicant refers to its RESRAD calculations in TR Appendix N for Marsland site-specific cleanup criteria. However, staff can't verify that the applicant utilized Marsland site-specific input data (e.g., soil type, wind speed, precipitation, etc.) for RESRAD appropriate for the site. Basis for Request NUREG-1569, Acceptance Criterion 6.4.3(1), states: "The cleanup criteria for radium in soils are met as provided in 10 CFR Part 40, Appendix A, Criterion 6(6)." This criterion states that the design requirements for longevity and control of radon releases apply to any portion of a licensed and/or disposal site unless such portion contains a concentration of radium in land, averaged over areas of 100 m2,</p>	<p>Cameco 12/23/2014 Response: A sampling plan with details on where and how Marsland site-specific cleanup criteria are to be determined will be submitted for NRC review in January 2013. Following resolution of any issues, the application will be revised to highlight the elements of that plan. Any required sampling will be conducted in late spring or early summer of 2014, prior to construction. Cameco 5/6/2014 Status: The sampling plan was submitted on January 24, 2014 and is attached below for your information. Dependent on the variability detected during initial transects, the scan speed and transect spacing may be increased</p>

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which as a result of byproduct material, does not exceed the background level by more than: (i) 5 picocuries per gram (pCi/g) of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over the first 15 cm [5.9 in.] below the surface, (ii) 15 pCi/g of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over 15-cm [5.9-in.] thick layers more than 15 cm [5.9 in.] below the surface.” NUREG-1569, Acceptance Criterion 6.4.3(3), states: “Acceptable cleanup criteria for uranium in soil, such as those in Appendix E of this standard review plan, are proposed by the applicant. This is the radium benchmark dose approach of 10 CFR Part 40, Appendix A, Criterion 6(6).” NUREG-1569, Acceptance Criterion 6.4.3(4), states: “For areas that already meet the radium cleanup criteria, but that still have elevated thorium levels, the applicant proposes an acceptable cleanup criterion for thorium-230. One acceptable criterion is a concentration that, combined with the residual concentration of radium-226, would result in the radium concentration (residual and from thorium decay) that would be present in 1,000 years meeting the radium cleanup standard.” NUREG-1569, Acceptance Criterion E2.1.3(2), states, in part: “...The code/calculation input data are appropriate for the site and represent current or long-term conditions, whichever is more applicable to the time of maximum dose. When code default values are used, they are justified as appropriate (representative) for the site...” Request for Additional Information Please address the following issues related to the soil cleanup criteria for the MEA: A. In TR Section 6.4.1, the applicant stated that the ALARA goal for natural uranium in the top 15 cm soil layer is 150 pCi/g averaged over *more than* 100 m². The averaging of radionuclides over more than 100 m² is not consistent with the requirements of 10 CFR Part 40, Appendix A, Criterion 6(6) or NUREG-1569, Acceptance Criterion 6.4.3(1). Please provide a justification for averaging the natural uranium concentration over more than 100 m². B. Consistent with NUREG-1569, Acceptance Criteria 6.4.3(3) and E2.1.3(2), please confirm that site-specific parameters relevant to the MEA (e.g., soil type, wind speed, precipitation, etc.) were used for the RESRAD analysis and thus deriving the radium benchmark dose. If the MEA site-specific parameters are different from what was analyzed, please provide a relevant RESRAD and radium benchmark dose analysis. C. In TR Section 6.4, the applicant refers to its analysis of Th-

to utilize ATVs and up to a maximum of 50 meter spacing respectively. The gamma surveys and soil sampling will be performed in June and a report submitted by September 1, 2014. Cameco 5/16/2014 Status: Weather permitting the gamma survey will occur the week of May 26th. It takes 30 days for sample results, and our contractor expects to prepare a final report for submission in mid-July 2014. Cameco 5/27/2014 Status: The survey and sampling are underway. Cameco 7/11/2014 Status: Cameco now anticipates submission in early August. Cameco 8/5/2014 Status: No update. **NRC 9/11/2014: Cameco has never addressed the NRC staff questions. NRC is awaiting the responses and a revised TR Section 6.4 with Marsland specific information. Cameco expects to submit the above-referenced information by 12/31/2014**

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<p>230 at its main facility for the Marsland analysis without assessing if this analysis is applicable to the MEA. Consistent with NUREG-1569, Acceptance Criterion 6.4.3(4), please provide a MEA site-specific discussion on Th-230, or indicate where this information can be found.</p>	
<p>RAI 42 <u>Description of Deficiency</u> In TR Section 6.4.2, the applicant provided a gamma action level of 17,900 cpm as the level corresponding to the Marsland soil cleanup criterion. In TR Appendix N, the applicant described its derivation of the gamma action level of 17,900 cpm. However, the gamma action level was derived from data at the main facility (i.e., background levels, etc.) and there is no justification addressing why this data can be applied to Marsland, an unrelated land area. <u>Basis for Request</u> NUREG-1569, Acceptance Criterion 6.4.3(5), states: “The survey method for verification of soil cleanup is designed to provide 95-percent confidence that the survey units meet the cleanup guidelines. Appropriate statistical tests for analysis of survey data are described in NUREG–1575, ‘Multi-Agency Radiation Survey and Site Investigation Manual’ (NRC, 2000).” <u>Request for Additional Information</u> Consistent with NUREG-1569, Acceptance Criterion 6.4.3(5), please provide a technical justification for applying a gamma action level of 17,900 cpm to the Marsland facility when data used to derive this action level is based on site-specific data for the main facility, an unrelated land area.</p>	<p>Cameco 12/23/2014 Response: RAI 42 - A sampling plan with details on where and how a Marsland site-specific gamma action level is to be determined will be submitted for NRC review in January 2013. Following resolution of any issues, the application will be revised to highlight the elements of that plan. Sampling will be conducted in late spring or early summer of 2014, prior to construction. Cameco 5/6/2014 Status: The sampling plan was submitted on January 24, 2014 and is attached below for your information. Dependent on the variability detected during initial transects, the scan speed and transect spacing may be increased to utilize ATVs and up to a maximum of 50 meter spacing respectively. Cameco 5/16/2014 Status: Weather permitting the gamma survey will occur the week of May 26th. It takes 30 days for sample results, and our contractor expects to prepare a final report for submission in mid-July 2014. Cameco 5/27/2014 Status: The survey and sampling are underway. Cameco 7/11/2014 Status: Cameco now anticipates submission in early August. Cameco 8/5/2014 Status: No update. NRC 9/11/2014: Cameco has never addressed the NRC staff question. NRC is awaiting the response and a revised TR Section 6.4 with Marsland specific information. Cameco expects to submit the above-referenced information by 12/31/2014</p>
<p>ADMINISTRATIVE ISSUES</p>	
<p>Section 2 – Site Characterization</p>	
<p>Admin §2 #7. The summer wind rose (Figure 2.5-21) appears to be composed of two separate timeframes from 2010 and 2011. Please clarify the timeframe for the summer wind rose in Figure 2.5-21.</p>	<p>Cameco Response: The timeframe of 9/07/2010 to 8/29/2011 for the summer wind rose was added as a notation in Figure 2.5-21. Because the monitoring year spans parts of two calendar years, the summer wind rose software program used all of the available summer data from both years. This turned out to be September of 2010 (beginning with the 7th), July of 2011, and</p>

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	<p>August of 2011 (up to the 29th). Therefore, the summer months are extracted from the stated date range. Cameco 8/5/2014 Status: No update. NRC 9/11/2014: NRC awaiting meteorologist to review. No action is expected from Cameco at this time. NRC anticipates issuing meteorology RAI(s) – Mid. Nov.2014</p>
<p>Admin §2 #12. Please confirm the TR table where the MEA site-specific meteorological station coordinates and period of operation can be found.</p>	<p>Cameco Response: The MEA site-specific meteorological station coordinates are provided in Table 2.5-1. The period of operation for the MEA site-specific meteorological station is provided in 2.9.2.1. Cameco 8/5/2014 Status: No update. NRC 9/11/2014: NRC awaiting meteorologist to review. No action is expected from Cameco at this time. NRC anticipates issuing meteorology RAI(s) – Mid. Nov.2014</p>
<p>Admin §2 #17. Please provide a consistent description of the preoperational and operational environmental surface water monitoring plan consistent with RG 4.14. (a) TR Section 2.9.4.3 and Tables 2.9-26 and 2.9-27 indicate that surface waters will be sampled on a monthly basis. However TR Table 2.9-35 indicates that surface water samples will be performed on a quarterly and semiannual basis. (b) TR Section 5.7.8.3 indicates that operational samples will include Po-210. TR Table 5.7-1 does not include Po-210 as an analyte. (c) TR Table 5.7-1 indicates two samples will be collected from designated ephemeral drainages. This appears inconsistent with “Note a” in TR Table 2.9-35 and sample collection points in TR Figure 2.7-4.</p>	<p>Cameco Response: As stated in the responses for 2.17 a), b), and c), clarifications have been provided for the preoperational and operational environmental surface water monitoring plan consistent with RG 4.14. Surface water samples at N-1 and N-2 have been collected monthly for a 12-month period. This sampling also included Po-210 and Pb-210, which are required to be sampled semi-annually as per RG 4.14. Table 2.9-35 (revised to Table 2.9-41 due to table changes in Section 2.9) has been revised to be consistent with RG 4.14 preoperational monitoring requirements. Future sampling will consist of monthly sampling for suspended and dissolved natural uranium, Ra-226, and Th-230, and semi-annually for suspended and dissolved Pb-210 and Po-210. Figure 2.9-1 has been updated to present the remaining preoperational monitoring tasks. Table 5.7-1 was revised to include Po-210 as an additional analyte that will be monitored in accordance with RG 4.14 operational monitoring requirements. The description of the sampling of ephemeral drainages in Table 5.7-1 has been revised to clarify that two surface water samples (upstream and downstream) for each designated ephemeral drainage (total of three drainages, total of 6 samples) will be collected quarterly when runoff flow is available. Cameco 8/5/2014 Status: Cameco is revising the application as noted</p>

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	immediately above. In addition, we are adding a monitoring location where one of the drainages leaves the license area for a short distance and then returns. Figure 2.7-4, the text in Section 2.9.7.2 and Table 5.7-1 will be modified accordingly. NRC 9/11/2014: NRC is awaiting Cameco revisions.
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Additional notes:

- Determination of the specific model of dosimeters used for background radiological gamma data at air monitoring stations. **The applicant is going to provide the necessary information.**
- **Cameco expects submit quarterly water quality data for Arikaree and Brule monitoring wells by 11/28/2014.**
- **Cameco expects submit surface water data by 11/28/2014 and later for one data point.**
- **Cameco expects submit information that will be in wellfield packages (e.g., pumping test information, etc.) and a commitment to submit wellfield packages. Cameco expects to submit this information by 11/14/2014.**
- **Cameco expects submit additional information for private wells that were not and that are abandoned. Cameco expects to submit this information by 11/14/2014.**