

March 20 2012

CD12 0075

Mr Rusty Lundberg
Executive Secretary
Utah Division of Radiation Control
Utah Division of Water Quality
195 North 1950 West
P O Box 144850
Salt Lake City, UT 84114 4850

RECEIVED

MAR 20 2012

DEPARTMENT OF
ENVIRONMENTAL QUALITY

DRC - 2012-001250

Re Radioactive Material License #UT 2300249 and Ground Water Quality Discharge Permit No UGW450005 Amendment and Modification Request – Class A West Embankment Response to Round 3 Interrogatory R313 25 7(3) 04

Dear Mr Lundberg

In an electronic communique received 6 February 2012 the Division requested that EnergySolutions provide a revised response to the Class A West Interrogatory addressing the distortion design criteria for the proposed Class A West embankment cover [R313 25 7(3) 04] Following receipt of this request an acceptable response was agreed upon during a meeting with Division staff and URS representatives on 19 March 2012 This letter represents EnergySolutions summary of the mutually formed response to the Division s request

EnergySolutions response to the Division s request includes the following

- EnergySolutions considers it more accurate and therefore appropriate to assess the tensile strain and distortion induced crack resistant properties of Clive specific clays expected to be used in the eventual construction of the proposed Class A West embankment cover
- EnergySolutions will analyze its native clays and report the laboratory findings prior to any construction of cover over the proposed Class A West embankment
- These results will also be included in EnergySolutions Radioactive Material License renewal application due for submittal to the Division on or before 25 December 2012
- EnergySolutions has modified its LLRW and 11e (2) CQA/QC Manual (version 26c dated 20 March 2012) to delay placement of final cover until after affirmation that future propagation of the current consolidation trend will not exceed 0 007 ft/ft



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The attachments provided with this submittal contain EnergySolutions response to the Division's Round 3 interrogatory R313 25 7(3) 04 as well as a replacement page for the LLRW and 11e (2) CQA/QC Manual (version 26c dated 20 March 2012) If you have any questions regarding this issue please contact Sean McCandless at 801 649 2000

Sincerely

A handwritten signature in black ink that reads "Timothy L. Orton".

Timothy L Orton
Environmental Engineer
enclosures

cc John Hultquist DRC (w/ encl)
Robert Baird URS (w/ encl)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

ROUND 3 RESPONSE TO CAW R313 25 7(3) 04

As part Interrogatory CAW R313 25 7(3) 04/1 the Division directed EnergySolutions to provide *additional documentary evidence if such evidence is available and applicable of the basis for choosing 0.02 as the design criterion for evaluating allowable distortion of the liner and clay components of the CAW Embankment cover*. Rather than attempt to arbitrarily quantify uncertainties created by sampling the population of published clay distortion research EnergySolutions considers it more accurate and therefore appropriate to assess the tensile strain and distortion induced crack resistant properties of site specific clays expected to be used in the eventual construction of the proposed Class A West embankment cover.

In preparation for imminent construction of cover over its Mixed Waste embankment EnergySolutions is already mining, preparing and stockpiling these native clays. In order to resolve concerns over distortion induced crack resistant properties of site specific clays that are proposed for use in eventual cover construction for the Class A West embankment EnergySolutions will analyze its native clays and report the laboratory findings prior to any construction of cover over the proposed Class A West embankment. These results will also be included in EnergySolutions Radioactive Material License renewal application due for submittal to the Division on or before 25 December 2012.

To provide additional reassurance to the Division regarding limitation of cracking due to differential settlement EnergySolutions current LLRW and 11e (2) CQA/QC Manual (version 26b dated 15 November 2011) already specifies that temporary cover placement must be monitored for a minimum of 1 year after placement until all monitored distortions are less than or equal to 0.007 ft/ft. Once this point is reached an analysis will be conducted to affirm that future propagation of the current consolidation trend will not exceed 0.01 ft/ft. Only after this degree of consolidation and settlement has been reached can final cover construction begin.

Until the laboratory analysis can be completed and distortion induced crack resistant properties of site specific clays reported to the Division EnergySolutions has modified its LLRW and 11e (2) CQA/QC Manual (version 26c dated 20 March 2012) to specify that temporary cover placement must be monitored for a minimum of 1 year after placement until all monitored distortions are less than or equal to 0.007 ft/ft. Once this point is reached an analysis will be conducted to affirm that future propagation of the current consolidation trend will not exceed 0.007 ft/ft. It is noted that the basis for changing the criterion to 0.007 ft/ft is that this value correlates to a tensile strain much less than that expected to initiate cracking (using the Lee and Shen correlation)¹. Only after this degree of consolidation and settlement has been reached can final cover construction begin. Additionally since the temporary cover surface will be regraded prior to final cover construction it is important to note that the final tensile strain baseline will be reset at zero. A replacement page to the CQA/QC Manual reflecting this change is attached.

¹ AMEC Allowable Differential Settlement and Distortion of Liner and Cover Materials New LARW and Proposed LLRW Embankments Clive Utah (Job No. 0.817.003091A) Letter to Ken Alkema 4 October 2000

LLRW and 11e(2) CQA/QC MANUAL
TABLE 1 QA/QC ACTIVITIES
WORK ELEMENT – TEMPORARY COVER PLACEMENT AND MONITORING

SPECIFICATION	QUALITY CONTROL	QUALITY ASSURANCE
<p>than 0.007 foot/foot for all of the grid points in a given area and each grid point has at least one year's monitoring data then final cover construction may proceed. Once an area is approved final cover construction shall be completed within 3 years of this determination.</p> <p>The Director of Engineering shall perform the analysis of projected future distortions. The analysis shall be submitted no later than the end of the 16th year since waste placement began in the oldest lift area subject to analysis.</p> <p>If an area is not approved for final cover construction by the end of the 16th year of the 18 year open cell period an analysis of projected future distortions shall be performed and submitted to DRC. The analysis shall evaluate settlement through the end of year 17 of the open cell period at a minimum. If the analysis indicates that the future distortions between any two adjacent points will be more than 0.007+ foot/foot then surcharging over the area(s) in question will be required to stabilize settlement prior to final cover construction. If surcharging is required a plan and schedule shall be provided to DRC by the end of the 16th year of the open cell period. The surcharging schedule shall show that surcharging will be complete by the end of the 17th year of the open cell period. Settlement monitoring frequency during surcharging shall be at least equivalent to that required in Year 16.</p> <p>Immediately prior to placement of the first lift of radon barrier the pre final cover settlement monuments shall be removed and the temporary cover surface restored.</p> <p>Addtional clean debris free soil material shall be placed or excess temporary cover material shall be cut as needed</p>	<p>settlement data for each area of cover construction to determine distortion between all adjacent points in that area. If the criteria are met a written report shall be prepared and forwarded to DRC at least 7 calendar days prior to removing the pre final cover settlement monuments.</p> <p>Inspect and document that all pre final cover settlement monuments have been removed prior to final cover construction.</p> <p>Survey and document the temporary cover surface to confirm that the top of waste design grades and elevations are achieved. Document lift thickness and compaction for any debris free soil material placed to bring the temporary cover surface to the design top of waste grades and elevations.</p>	<p>Verify that pre final cover settlement monuments have been removed and that the temporary cover surface meets design top of waste grades and elevations.</p> <p>Periodically observe paperwork for temporary cover removal.</p>