

November 25, 2015

CD15-0266

Mr. Scott T. Anderson
Director
Utah Division of Waste Management and Radiation Control
195 North 1950 West
Salt Lake City, Utah 84114-4880

Subject: Radioactive Material License UT2300249: Safety Evaluation Report for Condition 35.B Performance Assessment; **Response to Issues Raised in the April 2015 Draft Safety Evaluation Report**

Dear Mr. Anderson:

EnergySolutions herein submits comments on the Utah Department of Environmental Quality's Safety Evaluation Report (SER) released on April 13, 2015. The SER was prepared by a third party contractor, SC&A, and reviewed by staff from the Division of Radiation Control, now part of the Division of Waste Management and Radiation Control (Division). It is an evaluation of EnergySolutions' Depleted Uranium Performance Assessment (DU PA) undertaken in compliance with Utah Administrative Code (UAC) R-313-25-9(5)(a).

To address technical questions raised in the SER, EnergySolutions submits version 1.4 of the DU PA Modeling Report, which includes the additional study scenarios requested by the Division staff. It is important to note that many of the study scenarios requested by staff are not representative of site-specific conditions observable within the Clive basin and ecosystem. EnergySolutions offers the attached updated scenarios, comments and corrections to the Draft SER to further inform the process and the Division Director's decision on the adequacy of the DU PA.

This letter contains general comments on the content and scope of the SER. Our specific technical comments and edits are made within the body of the SER itself (also enclosed). The colors applied to the general comments in this letter are used to differentiate the basis for the specific technical comments and edits made to the SER.

1) The April 2015 draft SER goes beyond the scope outlined by the Nuclear Regulatory Commission (NRC) and inappropriately provides policy and legal direction to the Division Director.

EnergySolutions requests that the SER be amended to comply with the Nuclear Regulatory Commission (NRC) guidelines and the stated purpose of the SER “to determine the extent to which the DU PA submitted by EnergySolutions complies with UAC R313-25-9(5)(a).” As it is currently drafted, the SER goes well beyond a technical analysis and makes definitive statements on future licensing requirements and policy positions. In guidance prepared to instruct Agreement States conducting reviews of licensee requests (such as the DU PA), NRC limits the purpose of an SER to:

“document[ing] the required finding of reasonable assurance that the performance objectives and standards for the issuance of a license will be met.”¹

NRC expects that an Agreement State’s SER conclusions will be limited to technically-based findings that the Assessment either “meets” or “does not meet” each of the regulatory performance objectives. In multiple instances, the SER requires the Director to include additional conditions for approval of the DU PA. As an example, Section 6.2 lays out seven specific conditions for approval. It is within the scope of the SER to articulate technical concerns with modeling or site engineering. However, it is outside the purpose and scope to dictate specific conditions for approval. Again, the purpose of the SER is to provide a technical analysis on which the Division Director will base his decision and any conditions in the license. Section 6.2 is just one example of language that is throughout the document and highlighted in green.

EnergySolutions respectfully asks that the language and requirements that go beyond the stated purpose of the SER be removed from the document.

¹ U.S. Nuclear Regulatory Commission. “Standard Review Plan for the review of a License Application for a Low-level Radioactive Waste Disposal Facility (NUREG-1200, revision 3).” Office of Nuclear Material Safety and Safeguards. U.S. Nuclear Regulatory Commission. Washington, D.C. April 1994. p. 1-3

2) The SER is in conflict with Utah Code Section 19-3-104(7)(a) and Utah Code Ann. 19-5-102(5) as it applies a more stringent standard than R313-25-9(5)(a) requires. Additionally R313-25-9(5)(a) is “more stringent” than the draft corresponding federal regulation 10 C.F.R. 61.13(e) .

EnergySolutions has two concerns regarding the “stringency” of the requirements in the SER. First, by requiring modeling analysis beyond 10,000 years, the SER is applying R313-25-9(5)(a) more stringently than it is written. This application of the rule also goes well beyond the corresponding federal regulation. Second, at the time R313-25-9(5)(a) was promulgated, the Division staff and Board were aware that the NRC was amending Part 61 to change the modeling analysis to 1,000 years, and that Utah’s rule would therefore be more stringent. When the amendments to Part 61 are final, the Division will be required to vacate R313-25-9(5)(a) because it will violate Utah Code Ann. 19-3-104(7)(a) and Utah Code Ann. 19-5-102(5). Requiring EnergySolutions to model compliance beyond 10,000 years and apply those results *quantitatively*, in light of the current state regulation and the proposed NRC rule, is arbitrary and capricious.

The process of reviewing the DU PA, as directed by SC&A and Division staff, resulted in numerous requests for additional information and supplemental modeling, studies and analysis. EnergySolutions has complied with all requests, as appropriate. Much of the additional analysis requested and submitted goes beyond what is required by rule and has been applied and analyzed more stringently than required by federal law. These areas are highlighted in pink in the SER. EnergySolutions requests that the highlighted quantitative analysis beyond 10,000 years be removed from the document and not used as a basis for the Division Director’s decision.

Utah Code Section 19-3-104(7)(a) states:

“Except as provided in Subsection (8), and in accordance with Title 63G, Chapter 3, Utah Administrative Rulemaking Act, the board may not adopt rules, for the purpose of the state assuming responsibilities from the United States Nuclear Regulatory Commission with respect to regulation of sources of ionizing radiation, that are more stringent than the corresponding federal regulations which address the same circumstances.” [emphasis added]

Similarly, Utah Code Section 19-5-102(5) states:

“Except as provided in Subsections (2) and (3), no rule that the board makes for the purpose of the state administering a program under the federal Clean Water Act or the federal Safe Drinking Water Act may be more stringent than the corresponding federal regulations which address the same circumstances. In making rules, the board may incorporate by reference corresponding federal regulations.” [emphasis added]

The current corresponding federal regulation for performance standards is 10 C.F.R. 61.13, which requires that technical analysis provide “*reasonable assurance*” that performance measures will be met and does not specify a time period for that analysis. Requiring quantitative modeling beyond 10,000 years and applying it quantitatively is clearly more stringent as it adds a specific – and excessive -- time period for compliance. Additionally, modeling to this timeframe produces uncertain and scientifically unreliable data that is not at all informative and is prejudicial to the Division Director’s decision.

Notably, NRC recently released a proposed amendment to Part 61 that establishes a three tier compliance period analysis. The proposed compliance period would be site closure to 1,000 years; a proposed protective assurance period would be from 1,000 to 10,000 years; and a performance period after 10,000 years that would have no dose limits. The Division was aware of this proposed rule change when UAC R313-25-9(5)(a) was promulgated and included language in the rule to adjust the DU PA accordingly. The NRC rulemaking, when finalized, will clearly render UAC R313-25-9(5)(a) “*more stringent*” than the corresponding federal regulation and in violation of Utah Code Ann. 19-3-104(7)(a) and Utah Code Ann. 19-5-102(5).

In addition to the prohibition of *more stringent* requirements, there is an important distinction between a quantitative assessment up to 10,000 years (which is what staff has requested) and a qualitative analysis beyond 10,000 years, as UAC R313-25-9(5)(a) currently requires. The requirement in the SER that doses and surface fluxes be quantitatively calculated beyond 10,000 years and then quantitatively compared to arbitrary and inapplicable numerical standards is contrary to generally-applicable NRC guidance and to the proposed changes to 10 C.F.R. Part 61.

NRC has advanced the regulatory analysis in a SER as facilitating informed decision making, and ensuring that regulatory initiatives are appropriately safety-focused, cost-justified, and cost-effective when compared with reasonable alternatives. Misuse of unreliable quantitative information undermines the process and these goals.

As a case-in-point, Section 6.1.3 (“*Conditionally Resolved*”) of the SER states that a groundwater characterization program needs to be established to gain a better understanding of the spatial and temporal characteristics of the hydrogeological system at Clive, particularly as it relates to the lower aquifer. It further concludes that the program would be defined in a condition for approval of any license amendment request. This is but one example of the SER dictating the decision of the Division Director. The SER also ignores the DU PA’s identification of well-supported critical exposure pathways to groundwater. Finally, this requirement is far “*more stringent*” than the corresponding federal requirement.

When the Vitro Embankment (located within EnergySolutions’ licensed area and adjacent to EnergySolutions’ proposed Federal Cell for disposal of DU) was originally sited and constructed, the U.S. Department of Energy (DOE) did not require it be constructed with a clay liner for groundwater protection, did not require ongoing groundwater monitoring, and did not require modeling to assess groundwater contaminant transport or ingestion doses. DOE’s justification for this was as follows:

“Groundwater monitoring is not required at the Salt Lake City Disposal [Vitro] Site because the tailings are stabilized in the disposal cell and are not contributing to contamination of any currently or potentially useful aquifer. In accordance with 40 CFR 192.21 (g), groundwater at the site meets the criteria for applying narrative supplemental standards because the concentration of total dissolved solids is in excess of 10,000 milligrams per liter, and, therefore, groundwater in the uppermost aquifer beneath the disposal site qualifies as “limited use” according to the definition at 40 CFR 192.11 (e)(1).”²

DOE’s regulatory justification to exclude groundwater from its assessment of impacts associated with disposal of depleted uranium in the Vitro Embankment “*address the same circumstances*” modeled in the DU PA. The proposed Federal Cell shares identical hydrologic, geologic, and meteorological conditions.

Potential groundwater use and exposure was further evaluated during hearings for the Louisiana Energy Services. During those inquiries, NRC concluded that:

“...it is reasonable to assume there will not be radiological exposures involving residents or farmers drinking contaminated water obtained from the site and eating foods irrigated by the site’s water and grown in the site’s soil.”

² U.S. Department of Energy. “Salt Lake City, Utah, Disposal Site – Fact Sheet.” Office of Legacy Management. U.S. Department of Energy. Grand Junction, CO. January, 22, 2009., p 1.

The State of Utah is on federal record concurring with NRC's decision that groundwater ingestion at Clive is NOT a viable dose pathway.³

Despite these past conclusions, Section 4.4.2 of the SER requires the DU PA to include groundwater ingestion analysis. These current modeling requirements and quantitative analysis outlined in this section violate the "no more stringent" requirement in Utah Code. Additionally, the section inappropriately dictates to the Director conditions required for approval of future license amendments. Accordingly, Section 4.4.2 should be removed.

3) The April 2015 draft SER inappropriately addresses issues with general data rather than using available site-specific analysis.

Although the NRC continually cautions reviewers against preferential application and interpretation of generalized characterizations over site-specific data, the SER repeatedly contradicts this NRC guidance. Section 4.4.1 regarding infiltration is an example of site specific data gathered by EnergySolutions over a period of many years has been disregarded in favor of generalized studies and data from sites with different soils and geology. In general guidance for site decommissioning, NRC expresses caution regarding site-specific application of results produced from the use of generalized national data:

*"It is clear that reduction in uncertainties occur as more site specific, direct measurements are made. Frequently, however, the site-specific data are unavailable and there must be reliance on estimates from generic, regional or local data sources that act as surrogate for site specific information. There is some caution that must be exercised in applying the local, regional, or generic data bases to site-specific cases."*⁴

NRC further cautions against the treatment of generic and national parameter distributions as though they are site-specific:

*"These data sources are available to provide estimates of parameter values in the absence of site-specific information. The large national databases can also be used to characterize parameter uncertainty. This is particularly appropriate when there are insufficient site-specific data on which to base parameter uncertainty estimates."*⁵

³ U.S. NRC. "Telephone Summary Regarding Depleted Uranium Disposal" U.S. Nuclear Regulatory Commission Memorandum, 6 April 2005.

⁴ NRC. November 1999. Pg. 25.

⁵ NRC. "Information on Hydrologic Conceptual Models, Parameters, Uncertainty Analysis, and Data Sources for Dose Assessments at Decommissioning Sites." (NUREG/CR-6656). Division of Risk

Therefore, in accordance with the guidance of NRC, site-specific observations should be preferentially selected over other more general references. By doing so, differences between site-specific and generic data are recognized, uncertainty is reduced and the risk of overestimation of variability is minimized. The SER sections highlighted in blue should be amended accordingly.

4) The April 2015 draft SER includes several factual errors that require correction.

The SER will be the primary document for communicating to stakeholders about the technical strengths and weaknesses of the DU PA. Therefore it is critical that the SER be factually correct. Please note that areas highlighted in red delineate statements that are factually incorrect. EnergySolutions requests that these inaccuracies (highlighted in red) be corrected.

5) The “Unresolved Issues” in the April 2015 draft SER have been addressed in version 1.4 of the DU PA Modeling Report.

The April 2015 draft SER included eight minor issues that were characterized as “unresolved”. In response to the SER and under direction by the Division, the DU PA Modeling Report has been revised to include additional studies (as version 1.4) for the following topics:

- Evapotranspiration Cover (correlation between the alpha and hydraulic conductivity values, etc.);
- Infiltration (correlation between the alpha and hydraulic conductivity values, etc.);
- Erosion of Cover (clarifications);
- Frost Damage (recurrence intervals, estimated frost penetration depths, and hydraulic property estimates);
- Effect of Biologicals on Radionuclide Transport (natural increases in cover permeability over time);
- Clay Liner (increase in Ksat values over time; correlation between the alpha and hydraulic conductivity values);
- GoldSim Quality Assurance (process level model abstractions and the primary model); and
- Deep Time Analysis.

EnergySolutions submits herewith version 1.4 of the DU PA Modeling Report, which includes the Divisions' additional study scenarios to address the outstanding *unresolved* issues identified in the SER. Although these studies are unrepresentative of Clive's site-specific conditions (as outlined above), the April 2015 draft SER should be revised to acknowledge the incorporation of these additional studies.

Prior to releasing the next SER draft, EnergySolutions requests that the comments contained in this document be addressed and that they have opportunity to consult with the Division on any further issues identified.

Thank you for your thoughtful review of these comments. Please let me know if you have any further questions.

Sincerely,

Vern C. Rogers
Manager, Compliance and Permitting

cc Don Verbica, DWMRC
Helge Galbert, DWMRC

enclosure

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.