



State of Utah

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Department of
Environmental Quality

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DIVISION OF RADIATION CONTROL
Rusty Lundberg
Director

DRC - 2011-007676

December 12, 2011

Dan Shrum,
Senior Vice President of Regulatory Affairs
EnergySolutions, LLC
423 West 300 South, Suite 200
Salt Lake City, UT 84101

RE: Disposal of SempraSafe Processed Waste at the Clive Containerized Waste Facility;
Radioactive Material License UT 2300249

Dear Mr. Shrum:

The Division of Radiation Control (DRC) has reviewed EnergySolutions' (ES) letters dated February 14, 2011 and July 28, 2011 regarding the justification for the disposal of thermally processed ion-exchange resins as Class A low-level radioactive waste (LLRW) at the Clive Class A North Cell Containerized Waste Facility (CWF). The purpose of the DRC review is to determine whether the proposed disposal of this blended LLRW has or has not previously been analyzed and whether it would require the preparation of a performance assessment (PA) in accordance with UAC R313-25-8(1).

The DRC finds the new requirements added to the Utah Radiation Control Rules in early 2011 [UAC R313-25-8(1) and (2)] by the Utah Radiation Control Board (Board) to be relevant to this proposal, in that the rule requires the Executive Secretary to determine if a new PA is required, before the licensee can receive approval to accept for disposal any radioactive waste subject to the new provisions.

The purpose of the performance assessment rule [UAC R313-25-8(1)], is to ensure that LLRW that has not been analyzed is not disposed without consideration of the potential environmental or human health and safety impacts. The principal test is contained in UAC R313-25-8(1)(a), which requires additional analyses for wastes that were not considered by the U.S. Nuclear Regulatory Commission (NRC) in the rulemaking for 10 CFR Part 61, *Licensing Requirements for Land Disposal of Radioactive Waste*. Both land disposal and treatment of nuclear power plant ion exchange resins were considered in the analysis found in the 1981 NRC Draft Environmental Impact Statement (DEIS). In guidance released earlier this year, the NRC stated that "**Large-scale blending operations** [emphasis added] could result in disposal of significant quantities of waste at or near the Class A concentration limit, which was not considered in the analysis

supporting the development of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 61.”¹ Because EnergySolutions' proposes to dispose of these wastes on a large scale, a performance assessment demonstrating that the waste can be safely disposed is required.

Further, UAC R313-25-8-2 also requires a licensee provide a 60-day prior notice, if a previously approved site-specific PA is applicable to a proposed new waste that otherwise would require the 4-part examination under UAC R313-25-8(1). EnergySolutions has provided this notice through submittal of multiple documents beginning on February 14, 2011.

In evaluating EnergySolutions' proposal, the DRC re-visited the July 19, 2000 EnergySolutions PA model, as approved by the Executive Secretary, in order to determine whether the previous PA is applicable to the SempraSafe waste. As you may recall, the previous PA model predicted that Clive groundwater would not exceed the State Ground Water Quality Standards (GWQS) for at least 500 years at a point of compliance (POC) well that was 90-feet from the outside edge of the LLRW material in the disposal cell (90-foot POC well).

In order to conduct a complete regulatory analysis, the DRC carefully reviewed and followed the requirements of UAC R313-25-8(1). However, based on DRC's review of R313-25-8(1)(b), (c), and (d), it was noted that the existing PA applied a methodology for which the NRC has since released revised guidance regarding a site-specific analysis. Accordingly, the science associated with preparing and conducting a performance assessment has progressed significantly since the original PA was completed (see federal guidance: NUREG 1573). Therefore, the existing PA does not fully demonstrate compliance with R313-25-8(1)(b) and (c) [e.g. peak dose, and total source term over the operational life of the facility]. Consequently, a new PA model is required in order for the licensee to address the new requirements of R313-25-8(1).

As such and in accordance with UAC R313-14-15(5), the Executive Secretary is requesting that EnergySolutions re-evaluate the existing PA or conduct a new PA that meets updated standards for conducting performance assessments. At a minimum this would include, but is not limited to prediction of nuclide concentrations and peak dose (at the time peak dose would occur) using updated dose conversion factors, and a suggested model timeframe of 10,000 years, as well as any need to revisit / update the waste source term, receptor, and exposure pathways. The guidance cited above provides a good analysis of the currently accepted standards for conducting a PA.

In addition, the DRC recognizes that waste such as the SempraSafe (thermally processed) ion exchange resins residue proposed for disposal at the Clive facility is Class A waste and this type of waste was considered in the analysis to support the 1981 NRC DEIS. However, the SempraSafe waste falls outside the bounds of that DEIS because the SempraSafe waste will be disposed of in significant quantities at or near the Class A concentration limit.

Therefore, the Executive Secretary will not initiate any license modification or other proceedings provided the licensee does not receive and dispose of more than 40,000 cubic feet per year of the thermally processed SempraSafe ion exchange resins. This represents approximately 1% of the

¹Memorandum to all Agreement States, Michigan, *Summary of Existing Guidance for Reviewing Large-Scale Low-Level Radioactive Waste Blending Proposals*, FSME-11-024, March 17, 2011.

Dan Shrum

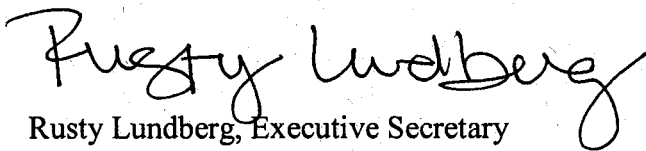
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total volume of waste disposed on an annual basis at the Clive Facility, based on recent historical volumes. It is also significantly less than the volume considered by the Radiation Control Board in setting the 10% threshold in R313-25-8(1) as well as the NRC in issuing its guidance regarding large-scale blending proposals. The volume limit set forth above (40,000 cubic feet/year) will be reevaluated following the completion of the analysis of an updated PA. In order to ensure continued progress towards completing and submitting an updated PA, EnergySolutions is hereby directed to complete and submit an appropriately updated PA model and report on or before December 30, 2012.

The Division of Radiation Control will be conducting a public comment period on this determination. In addition to this letter, the DRC has prepared an accompanying technical evaluation that will also be made available for public comment. We anticipate initiating the comment period in January 2012.

If you have any questions regarding this letter, please contact me at (801) 536-4257.

UTAH RADIATION CONTROL BOARD


Rusty Lundberg, Executive Secretary

RL/JDH:jh

Enclosure

cc: Sean McCandless, EnergySolutions, Director of Compliance and Permitting
Amanda Smith, Executive Director, DEQ