State of Utah

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Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL

Douglas J. Hansen
Director

April 24, 2023

Vern C. Rogers, Director of Regulatory Affairs
Energy*Solutions*, LLC
299 South Main Street, Suite 1700
Salt Lake City, UT 84111

RE: Federal Cell Facility Application Request for Information

Dear Mr. Rogers:

The Division of Waste Management and Radiation Control (Division) hereby provides Requests for Information (RFI) regarding the Federal Cell Facility Application dated August 4, 2022. Each individual paragraph in the attached document is numbered and represents an issue discovered in a review of the application. When responding to an RFI, please use the assigned number representing the question. The Division will track all responses and provide regular updated information to the public and reviewers.

The current review does not represent a comprehensive evaluation of the Application's merit and additional RFI's will follow where appropriate.

If you have any questions regarding this letter, please call Otis Willoughby at 385-622-2213.

Sincerely,

Douglas J. Hansen, Director
Division of Waste Management and Radiation Control

DJH//JK/wa

Enclosure: Federal Cell Application Review, Request for Information

c: Jeff Coombs, EHS, Health Officer, Tooele County Health Department
Bryan Slade, Environmental Health Director, Tooele County Health Department
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Federal Cell Application Review

Request for Information or Updates to the Application (RFI)

General

- Each RFI has been assigned an identifier with a numbering convention as follows:
  - Application/Appendix Section
    - Section/Appendix Subsection
      - Section/Appendix Subsection (when applicable)
        - Sequential numbering

Example: A question in Section 1, subsection 1, subsubsection 1 -The first RFI#1 would be 1.1.1-1., the next question in that section/subsection would be numbered 1.1.1-2

Please refer to the assigned RFI number when submitting a response.

Appendix AB

Operational Period Modelling

- **AB-2**

Calculation of potential radionuclide concentrations in the groundwater, surface water, biota, and air pathways are conducted for the Federal Cell Facility using the waste inventory and other applicable parameters from the Depleted Uranium (DU) PA v2.0. The modeling is performed using RESRAD-OFFSITE version 4.0. Please clarify the intended purpose of the RESRAD modeling and include justification for why RESRAD was used instead of GoldSim if only radionuclide concentrations in groundwater, surface water, biota, and air are of interest.

- **AB-3**

It is unclear how long of an operational period was modeled. For example, the Groundwater section on page 2 states "…within 50 years of operations…" and "…within an assumed 20-year operating period…", and the Pond Biota section states: "Over a 20-year modeling period…" Additionally, every graph included in the appendix appears to include data up to approximately 25 years. Please clarify what time period was assumed for modeling and include the correct time period in the graphs.

- **AB-4**

The graph in the Groundwater section (page 2 of the Clive Operational Period RESRAD Analysis) does not adequately show the relevant information discussed in the preceding text. It is said that Tc-99 reaches groundwater at year 35, and that the well Tc-99 concentration is approximately 0.006 pCi/L at 40 years, however the x-axis does not reach these time periods, and the y-axis is excessively large.

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- **AB-5**

  Please provide the justification for assigning a leach rate of 0.01/yr for Tc99 and I-129 rather than using K_d values like the other modeled radionuclides. The second paragraph of page one states that using a leach rate of 0.01 for the other radionuclides (i.e., all but Tc-99 and I-129) would result in unrealistically high leaching from the contaminated zone, what is the justification for 0.01/yr not being unrealistically high for Tc-99 and I-129?

- **AB-6**

  It appears that the waste is modeled to begin leaching immediately after placement. Please provide justification for this assumption.

- **AB-7**

  A screening calculation of potential radionuclides in various pathways was conducted for the Federal Cell Facility using the waste inventory and other applicable parameters from the Depleted Uranium PA v2.0. Please provide the radionuclide inventory used in the model.

- **AB-8**

  A number of the values used in the RESRAD model are referenced as RESRAD default values in the RESRAD-OFFSITE v4.0 Clive Operational Period Model Parameter Values table. Please provide justification for how the RESRAD default values for the applicable parameters listed in the parameters table are descriptive/accurate for the site.

- **AB-9**

  The dimensions for the Federal Cell in the Depleted Uranium PA are 374 m by 585 m, but in the RESRAD model the active area modeled was only 30.48 m by 30.48 m. Even though a smaller portion of the overall cell may be open at a given time for waste placement, an area larger than this will contain waste for a majority of the operating period. Please provide justification for the contamination dimensions.

- **AB-10**

  A small pond (southwest corner pond) southwest of the facility was included in the RESRAD model. Please provide justification for the location and size of the modeled surface water body.

- **AB-11**

  There are several citations included in the table of RESRAD parameters, but no reference list is provided. Please include a complete list of references cited in this appendix.

- **AB-12**

  The length parallel to aquifer is set to 30.48 m, however, for a majority of the Federal Cell's operational period, it is likely that a longer portion of the cell will contain waste. Please provide justification for this assumption.

- **AB-13**

  The clay liner unsaturated zone included in the model is set to a thickness of 1 foot, however, Section 1.2.3 of the application states the clay liner is 2 feet. Please provide justification for the clay liner thickness used.

- **AB-14**

  Tc-99 reaches groundwater, which arrives in about model year 35. Please provide the depth below the bottom line of the cell to groundwater (water elevation) and the thickness of the unsaturated zone below the Federal Cell?