State of Utah
GARY R. HERBERT
*Governor*

GREG BELL
*Lieutenant Governor*

Department of
Environmental Quality

Amanda Smith
*Executive Director*

DIVISION OF RADIATION CONTROL
Rusty Lundberg
*Director*

January 25, 2012

Mr. Sean McCandless, Director of Compliance and Permitting
EnergySolutions, LLC
423 West 300 South, Suite 200
Salt Lake City, UT 84101

SUBJECT: License Amendment No. 7: Radioactive Material License UT 2300478

Dear Mr. McCandless:

Enclosed is a copy of Amendment No. 7 to Radioactive Material License (RML) UT 2300478. License Amendment 7 has minor licensing changes to the reporting requirements to License Conditions 10.8 and 12.3. In addition License Condition 11.1 the groundwater protection requirements were removed and the Clive facility's Groundwater Discharge Permit (GWDP) was referenced. This is a minor change because the GWDP contains the same requirements.

If you have any questions or concerns regarding the amendment, please contact John Hultquist at (801) 536-4250.

UTAH RADIATION CONTROL BOARD

Rusty Lundberg

Rusty Lundberg, Executive Secretary

RL/RJ:rj

Enclosure

# UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
# DIVISION OF RADIATION CONTROL
# RADIOACTIVE MATERIAL LICENSE

Pursuant to Utah Code Annotated, Title 19, Chapter 3 and the Utah Radiation Control Rules, Utah Administrative Code R313, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material designated below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This licensee is subject to all applicable rules, and orders now or hereafter in effect and to any conditions specified below.

| LICENSEE | | 3. License Number: UT 2300478<br>Amendment # 7 |
|---|---|---|
| 1. Name | EnergySolutions, LLC | 4. Expiration Date<br>November 30, 2003 (under timely renewal) |
| 2. Address | 423 W. 300 S., Suite 200<br>Salt Lake City, UT 84101 | 5. License Category 2-c |

| 6. Radioactive material (element and mass number) | 7. Chemical and/or physical form | 8. Maximum quantity licensee may possess at any one time |
|---|---|---|
| 11e.(2) Byproduct Material | Packaged or Bulk Radioactive Waste | 5.5 Million Cubic Yards |

## SECTION 9.0: ADMINISTRATIVE CONDITIONS

9.1 All notices to the Utah Division of Radiation Control required under this license shall be addressed to the Executive Secretary of the Utah Radiation Control Board.

9.2 Authorized place for use shall be the licensee's facility located in Section 32 of Township 1 S, Range 11 W, Tooele County, Utah, near Clive.

9.3 Authorized use is for the receipt, storage, and disposal of 11e.(2) byproduct material in accordance with statements, descriptions, and representations contained in the licensee's application, including appendices, submitted to the NRC by cover letter dated 12/23/91; as amended by page changes submitted to the NRC on 07/02/92, 08/10/92, 04/05/93, 04/07/93, 04/10/93, 05/03/93, 05/06/93, 05/11/93, 05/21/93, 07/01/93, 07/25/93, 08/03/93, 08/11/93, 08/19/93, 08/25/93, 01/14/94 (deletes only Operating Procedure TRAIN-1; other documents submitted to the NRC on this date remain in force), 01/21/94, 03/01/94, 03/08/94, 04/19/94, 06/10/94, 06/29/94, 06/30/94, 07/27/94, 08/03/94, 09/01/94, 01/19/95, 03/24/95, 04/11/95 (deletes only Appendix JJ, Quality Assurance Manual; other documents submitted to the NRC on this date remain in force), 05/24/95, 06/14/95, 08/25/95, 09/18/95, 12/12/95, 02/07/96, 05/22/96, 07/19/96, 05/16/97, 01/09/98, 04/01/98, 04/07/98, 04/08/98, 04/17/98, 05/29/98, 06/24/98, 07/02/98, 07/07/98, 09/21/98, 03/31/99, 04/07/99, 04/30/99, 05/07/99, 07/08/99, 07/20/99, 08/16/99, 09/07/99, 09/10/99, 09/16/99, 11/15/99, 11/17/99, 12/06/99, 02/16/00, 02/17/00, 03/01/00, 03/24/00,

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04/27/00, 04/28/00, 05/08/00, 05/31/00, 06/09/00, 06/16/00, 06/23/00,06/30/00, 07/06/00, 07/10/00, 07/14/00 [NRC Amendment No. 24], 07/14/00 [NRC Amendment No. 29], 08/09/00, 08/28/00, 08/30/00, 09/18/00, 09/21/00 [NRC Amendment No. 35], 09/22/00, 09/26/00, 10/12/00, 12/20/00, 12/29/00, 01/31/01, 03/06/01, 04/11/01, 04/16/01, 04/24/01, 07/09/01 [NRC Amendment No. 36], 09/13/01 [NRC Amendment No. 37], 10/18/00, 10/05/01 [NRC Amendment No. 38], 05/30/02 [NRC Amendment No. 39], 7/9/02 [NRC Amendment 42], 7/12/02, 9/4/02 [NRC Amendment No. 43], 10/17/02 and 02/27/03 [NRC Amendment 45],10/01/03 [NRC Amendment 48] and 09/19/05 (replacing Section 18 of the 11e.(2) License Application in its entirety, the descriptions, statements, representations of the approved Appendix I, *Organization*, from the license application for RML UT 2300249) [UDRC Amendment: 2], Environmental Monitoring and Surveillance Plan Appendix LL dated 6/19/07; Replacing Section 7 of the 11e.(2) License Application in its entirety with the approved Environmental Monitoring Plan dated November 24, 2008 for RML UT2300249 [URDC Amendment 4][UDRC Amendment 5][UDRC Amendment 6].

Notwithstanding the above, the following conditions shall override any conflicting statements contained in the licensee's application and supplements.
[Applicable NRC Amendments: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 42, 43, 45, and 48]
[Applicable UDRC Amendment 2]

9.4 Deleted by UDRC Amendment 5
[Applicable NRC Amendments: 7, 31, 38, 39, and 41][UDRC Amendment 5]

9.5 In order to assure that no disturbance of cultural resources occurs, the licensee shall cease any work resulting in the discovery of previously unknown cultural or historical artifacts and report the discovery, in writing, to the Executive Secretary and the Utah State Historic Preservation Office (SHPO). The artifacts shall be inventoried and evaluated in accordance with UCA Section 404, and no disturbance shall occur until the licensee has received written authorization from the Executive Secretary and SHPO to proceed.

9.6 Prior to the initial receipt and storage of any 11e.(2) byproduct material at the site, the licensee shall:

a) Establish and implement standard operating procedures (SOPs) for all operational activities involving the handling, storing or disposing of radioactive materials. SOPs for operational activities shall enumerate pertinent radiation safety practices to be followed. In addition, SOPs shall be established and implemented for non-operational activities to include environmental monitoring, bioassay analysis, and instrument calibration. An up-to-date copy of each written SOP, as controlled under the quality assurance (QA) procedures, shall be kept in each area where it is used.

b) Deleted by NRC Amendment 1

c) Deleted by NRC Amendment 1

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d) Deleted by NRC Amendment 1

e) Modify the Quality Control/Quality Assurance Plan to provide quality controls for waste sampling and characterization. The plan must also be modified to provide controls for the quality of the protective equipment (e.g., anticontamination clothing and equipment that meets the ANSI Z-88.2 guidance (ANSI, 1989)) and respiratory protection equipment;

f) Design and implement an effective air sampling program in the workplace based on Revision 1 to NRC Regulatory Guide 8.25 (June 1992) entitled "Air Sampling in the Workplace," or an equivalent program.
[Applicable NRC Amendment: 1]

9.7 Deleted by UDRC Amendment 6.

9.8 The licensee shall have all written SOPs reviewed and approved by the Director of Health Physics (DHP), or designate, qualified by way of specialized radiation protection training equivalent to that required for the DHP as defined in License Condition 9.10, before being implemented and whenever a change in a procedure is proposed. All existing facility SOPs related to operational and non-operational activities shall be reviewed and documented by the DHP on an annual basis.
[Applicable NRC Amendments: 7, 31, and 41][UDRC Amendment 6]

9.9 Any change to the licensee's corporate organizational structure, as presented in the license application, affecting the assignment or reporting responsibility of the radiation staff shall conform to the NRC's Regulatory Guide 8.31, "Information Relevant to Ensuring That Occupational Radiation Exposures at Uranium Mills Will Be As Low As Is Reasonably Achievable", as amended.
[Applicable NRC Amendment: 7]

9.10 The Licensee's staff shall meet the qualifications as described in the currently approved Appendix I, *Organization*, of the Radioactive Material License UT 2300249. In addition to the responsibilities and qualifications specified in the licensee's application, the DHP or their designate(s) shall be qualified as specified in Sections 1.2 and 2.4 of the NRC Regulatory Guide 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Mills will be As Low As Reasonably Achievable," as amended. In addition, the DHP shall also receive 40-hours of related health and safety refresher training every two years.
[Applicable UDRC Amendments: 2, 5, and 6]

For the purposes of this licensee condition, reference to "uranium mill" or "milling" in the NRC Regulatory Guide 8.31, as amended, shall mean the licensee's facility and authorized activities.
[Applicable NRC Amendments: 11, 21, 29, 31, 41 46, and 48]

9.11 The licensee shall conduct:

a) Annual training for its facility inspectors that covers all areas included in the daily inspections of the 11e.(2) byproduct material and the disposal area.

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b) Annual operational training that covers all aspects of operational safety and emergency procedures for all employees. The SOPs will be used to conduct operations training to assure consistency and thoroughness.

9.12 The Licensee shall at all times maintain a Surety that satisfies the requirements of UAC R313-24-4 (10 CFR 40, Appendix A, Criterion 9 and 10 incorporated by reference) in an amount adequate to cover the estimated costs, if accomplished by a third party contractor, for completion of the Executive Secretary-approved reclamation/decommissioning plan of the Licensees' grounds, equipment and facilities including; above-ground decommissioning and decontamination, soil and water sample analyses, and groundwater restoration associated with the site, as warranted.

The licensee's currently approved surety instrument, irrevocable letter of credit from Zions First National Bank, and a related standby trust agreement, in favor of the Executive Secretary, shall be continuously maintained for the purpose of complying with UAC R313-24-4 (10 CFR 40, Appendix A, Criterion 9 incorporated by reference), in an amount approved by the Executive Secretary, until a replacement is preauthorized by the Executive Secretary.

The Licensee shall annually review the amount and basis of the surety and submit a written report of its findings by May 31 each year for Executive Secretary approval. At a minimum, this annual report shall meet the following requirements:

a. Summary of Changes - the annual report shall include a written summary of any change in the cost estimate previously approved by the Executive Secretary, including, but not limited to:

   i. A description of any modification, addition, or deletion of any direct cost or post-closure monitoring and maintenance (PCMM) cost line item, including supporting justification, calculations and basis;

   ii. Any change to the unique reference number (cost line item) assigned or approved by the Executive Secretary for any cost line item.

b. In-direct Costs shall be based on the sum of all direct costs in accordance with the following values:

| Surety ID No. | Description | Percentage |
|---|---|---|
| 300 | Working Conditions | 5.5% |
| 301 | Mobilization / Demobilization | 4.0% |
| 302 | Contingency | 11.0% |
| 303 | Engineering and Redesign | 2.25% |
| 304 | Overhead and Profit | 19.0% |
| 305 | Management Fee and Legal Expenses | 4.0% |

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| | | |
|---|---|---|
| 306 | DEQ Oversight | 4.0% |

c. RS Means Guide estimates of direct construction costs provided in the annual report shall be derived from or based on the most recent edition of the RS Means Guide for Construction.

d. Report Certification – the annual report shall be prepared under the direct supervision of and be certified by a professional with at least 5 years of construction cost estimation experience, who bears the seal of either a Professional Engineer or Professional Geologist currently licensed by the State of Utah.

e. Electronic Format – the Licensee shall provide the report in both paper and electronic formats, as directed by the Executive Secretary.

f. Within 60-days of Executive Secretary approval of said annual report, the Licensee shall submit written evidence that the surety has been adequately funded.

[Applicable NRC Amendments: 1, 6, 8, 9, 10, 15, 17, 19, 23, 24, 28, 30, 36, 39, 44, 47, and 49]
[Applicable UDRC Amendments: 1, 2, 5, and 6]

9.13 The licensee shall require a radiation work permit (RWP) for work where the potential for significant exposure to radioactive materials exists and for which no SOP exists. Each RWP shall contain the information specified in Regulatory Guide 8.31, as amended.

The DHP, or designate, qualified by way of special radiation protection training equivalent to that required for the DHP as defined in License Condition 9.10, shall indicate by signature, the review and approval of each RWP, prior to the initiation of the work.
[Applicable NRC Amendments: 7, 31, and 41][UDRC Amendment 6]

9.14 The licensee shall provide SOPs for controlling internal contamination of workers from dust inhalation, which shall include the use of dust suppressants (e.g., magnesium chloride or water) on all operational roads, as necessary.

9.15 The licensee shall have qualified individual(s), designated by the DHP and Risk Manager, perform quantitative respirator fit tests on all employees required to wear respirators prior to the initial use of a respirator and annually thereafter. During the annual fit test, the qualified individual(s) performing the test shall ensure that the employee is correctly performing negative pressure fit checks and shall instruct the employee that the fit test is to be performed each time a respirator is donned and prior to entering an area where respirators are required. The licensee shall follow the guidance provided in the NRC Regulatory Guide 8.15 "Acceptable Programs for Respiratory Protection", as amended.
[Applicable NRC Amendments: 31 and 41][UDRC Amendment 6]

9.16 The licensee shall complete "as built drawings" of the facility on an annual basis. The "as built drawings" shall be certified by a professional engineer.

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9.17 The licensee shall provide for an independent internal audit of facility operations to assure compliance with applicable regulations and license conditions. The independent internal audit will be conducted annually by a qualified health physicist knowledgeable on operations concerning radiation protection programs at milling/waste disposal facilities. The contractor report shall be submitted as part of the annual report.
[Applicable NRC Amendment: 7]

## SECTION 10.0: OPERATIONAL CONTROLS, LIMITS, AND RESTRICTIONS

10.1 The licensee shall restrict eating and drinking to the administrative offices, and enclosed lunch areas that are separated from the disposal areas. With the exception of drinking from closeable containers, there will be no eating, drinking, smoking, defecating, or urinating in the restricted areas at any time.

10.2 The licensee shall analyze and adequately characterize:

a) All incoming waste to identify any new hazardous constituents not listed in License Condition 11.1. The licensee shall develop and implement methodologies and procedures for systematic characterization and analysis of the incoming waste, so that any new hazardous constituents are identified. Furthermore, the licensee shall assume that the baseline background concentrations for any new constituents are below their detection levels, unless the licensee demonstrates to the Executive Secretary's satisfaction that the constituents will not reach the water table in one year and proceeds to establish background based on direct monitoring of these constituents in the Point of Compliance (POC) wells for one full year.

b) The following key radon attenuation model parameter values during placement to verify that the values used in the licensee's model (see Licensee's correspondence to the NRC dated August 30, 2000 and to the DRC dated October 31, 2007) have been achieved: (1) dry density, and (2) moisture content (percent by dry weight) of the placed compacted radon barrier material and the upper ten feet of 11e.(2) byproduct material. Average values for each parameter by lift, for the upper ten feet of the 11e.(2) embankment only, per year will be calculated and provided in the annual effluent and environmental monitoring report.
[Applicable NRC Amendments: 4 and 35][UDRC Amendment 6]

c) The distribution of the Ra-226 and Th-230 concentrations in the 11e.(2) byproduct material in the upper 3.3 meters (10 feet) of the contaminated material to verify that the concentration in any lift does not exceed the values used in the radon attenuation model. The licensee shall measure the Ra-226 and Th-230 concentrations, using standard analytical procedures, for every 2500 c.y. of material placed for compaction; and at least once per lift for lifts smaller than 2500 c.y. This sampling may be performed from the waste container/conveyance at receipt or on the lift during waste placement. In the case where sampling will be performed from the waste container/conveyance, proper tracking shall be performed to accurately identify disposal location (or lift number). In the case where

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sampling will be performed at the disposal lift, each sample shall be a composite sample consisting of ten aliquots from random locations on the lift. The data will include the elevation (or lift number) of the sample location. The results will be presented as average values for each lift in the 4th quarter effluent and environmental monitoring report. [Applicable NRC Amendments: 4 and 30][UDRC Amendment 6]

10.3 The licensee shall assume full responsibility for cleaning up the groundwater of all hazardous constituents detected at the POC in concentrations that exceed the limits specified in Tables 1-A the Groundwater Quality Permit. It shall be assumed that the 11e.(2) disposal facility is the source of all of the hazardous constituents detected in the POC wells, unless it can be demonstrated to the Executive Secretary's satisfaction, based on field and laboratory data, that the 11e.(2) facility is not the source of particular constituents. The Executive Secretary shall have the final decision concerning any claim by the licensee that the 11e.(2) facility is not the source of a particular constituent that is detected at the POC.

The licensee shall undertake corrective action to clean up groundwater contamination if and when required, no later than 18 months from the date when exceedence of a standard has first been discovered, and without taking credit for any delays caused by disagreements as to the source of contamination. The licensee shall consider and evaluate existing and new groundwater clean-up technologies before selecting and implementing an appropriate clean-up program. [Applicable NRC Amendment: 7]

10.4 The licensee shall continue groundwater and land surface monitoring at all POC locations throughout the post closure period until the disposal facility is transferred to long-term government custody.

10.5 The licensee shall implement the quality assurance plan as provided in the license application.

10.6 The licensee shall, upon arrival of the waste and before acceptance on site, visually inspect the waste or use the Environmental Protection Agency's Paint Filter Liquids Test (SW-846, Method 9095) to determine if the waste contains free liquids. The licensee shall not accept any waste containing free liquid for disposal. The licensee however, shall be subject to the following minimum frequency of Paint Filter Liquids Test analyses and sample collection requirements: (1) for each waste stream, the minimum number of samples to be analyzed shall be one sample for each shipment (rail or highway) for the first 1,000 $yd^3$ (or any part thereof), and (2) thereafter the minimum number of samples to be analyzed shall be one sample for each set of ten (10) shipments. The licensee shall manage leaking waste shipments and/or waste containing greater than one percent (1%) free liquid as listed below, or for other reasons, reject the shipment for disposal:

a) Upon discovery of free-liquids or a leaking shipment, the licensee shall immediately notify the Executive Secretary (within 24 hours) and shall provide a written notification to the Executive Secretary within fourteen (14) calendar days of the immediate notification containing the following:

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(1) Generator number

(2) RSR number or Bates Number for the shipment(s)

(3) Date accepted or rejected for disposal

(4) Corrective Actions

b) The licensee shall take leaking rail shipments to the railcar decontamination wash-down pad and leaking truck shipments to the decontamination wash-down pads or railcar rollover facility.

c) The licensee shall take shipments containing more than one percent (1%) free liquids to one of the following areas:

(1) Restricted-area sections of the railroad

(2) Restricted-area asphalt or concrete surfaces

(3) Wash-down pads

(4) Approved temporary storage areas

(5) Rollover containment area

(6) Unloading area

d) The licensee shall remediate using one or more of the following methods:

(1) Solidification through the use of agents generally accepted by the industry, such as clay, sand, and other adsorptive materials and documenting formula development.

(2) Evaporation

(3) Physical removal of liquid

e) Upon completion of remediation, the shipment may be accepted for disposal and moved to either the 11e.(2) disposal cell or to an approved 11e.(2) waste management area.
[Applicable NRC Amendments: 13 and 25]

10.7 The licensee shall upon arrival of waste, perform external exposure rate measurements of the waste conveyances. Any shipment with exposure rates greater than 5 mrem per hour at a distance of 30 cm from any surface, and which cannot be disposed of within 24 hours, shall be posted as a Radiation Area in compliance with UAC R313-15-901, R313-15-902, and R313-15-903 [10 CFR 20.1902(a) incorporated by reference] until disposed.
[Applicable NRC Amendment: 1]

10.8 The licensee shall operate the facility in compliance with the following specifications:

a) The maximum bulk mass of waste disposed of annually will not exceed $4.536 \times 10^5$ tonnes ($5 \times 10^5$ tons) or ($3.82 \times 10^5$ $m^3$) or ($4.00 \times 10^5$ $yd^3$).
[Applicable NRC Amendment: 19]

b) The open cell area will not exceed 69,955.41 $m^2$, 83,666.67 $yd^2$, 753,000 $ft^2$ or 17.29 acres.

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[Applicable NRC Amendments: 14 and 19]
[Applicable UDRC Amendment: 1]
[Applicable UDRC Amendment: 3]
[Applicable UDRC Amendment: 6]

c) Deleted by NRC Amendment 1

d) The total embankment capacity will not exceed 4.20 x $10^6$ $m^3$ (5.50 x $10^6$ $yd^3$)
[Applicable NRC Amendments: 5 and 19]

e) The maximum volume of waste that may be stored as in-cell bulk storage on site prior to disposal will not exceed 75,000$yd^3$ or (5.735 x $10^4$$m^3$) at any one time.
[Applicable NRC Amendment: 19] [Applicable UDRC Amendment 5]

f) Waste with an average concentration above 4,000 pCi/g for natural uranium or for any radio nuclide in the radium-226 series; above 60,000 pCi/g for thorium-230; or above 6,000 pCi/g for any radionuclide in the thorium series in any truckload or railcar will not be accepted.
[Applicable NRC Amendment: 14]

g) Deleted by NRC Amendment 1

h) Deleted by NRC Amendment 1

i) Deleted by NRC Amendment 45
[Applicable NRC Amendments: 4, 5, 19, and 45]

The licensee shall maintain the detailed documents demonstrating compliance with the above specifications on-site and summarize the data in paragraphs a) and b) of this License Condition in the annual As-built report that is required in the Groundwater Quality Discharge Permit UGW450005." [Applicable UDRC Amendment 7]

10.9 The minimum compacted radon barrier thickness placed after December 1, 2001, will be 4.0 ft. on the top and 3.5 ft. on the side of the disposal cell.

a) The placed radon barrier material will be compacted to not less than 95 percent of maximum dry density in accordance with Standard Proctor Method ASTM-698, field-tested for compliance. At least one density test shall be performed for every 200 cubic yards (compacted) and at least one test shall be conducted on each lift. All lifts shall be field-tested for density and moisture content. At least one moisture content test shall be performed for every 200 cubic yards (compacted) and at least one test shall be conducted on each lift.

b) The waste in the upper ten feet of the 11e(2) embankment shall be placed and compacted to not less than 90 percent of the maximum dry density in accordance with Standard Proctor Method ASTM D-698, field-tested for compliance. At least one density test shall be performed for every 1000 cubic yards (compacted) and at least one test shall be conducted on each lift. All lifts in the upper ten feet of the 11e.(2) embankment shall be field-tested

for moisture content. CLSM shall not be used in the upper ten feet of the 11e.(2) embankment.

c) At the end of every calendar year starting with 2001, the licensee shall ensure that the cumulative average activity concentration of waste placed after Jan. 1, 2001, within the upper 3 feet of disposed waste does not exceed 300 pCi/g of Ra-226 or 900 pCi/g of Th-230, and within the next 7 feet does not exceed 500 pCi/g Ra-226 or 1500 pCi/g of Th-230. When both radionuclides are present, the unity rule defined below will apply to ensure that the Ra-226 limit is not exceeded within 1000 years.

Activity of Th-230 (pCi/g)/X + Activity of Ra-226 (pCi)/Y < or = 1

Where:

X = 900 pCi/g in the upper 3 feet and 1500 pCi/g in the next 7 feet of waste, and

Y = 300 pCi/g in the upper 3 feet and 500 pCi/gm in the next 7 feet of waste

d) The cumulative average densities of the waste in the upper ten feet of the 11e(2) embankment and of the compacted radon barrier placed since January 1, 2001, shall not be less than 1.5 g/cm$^3$ for either.

e) These cumulative average values of 10.9(d) will be provided in the 4$^{th}$ quarter effluent and environmental monitoring report, starting with the 2008 report, and in the construction completion report.
[Applicable NRC Amendment: 37][UDRC Amendment 6]

## SECTION 11: INSPECTION, MONITORING, AND RECORDING REQUIREMENTS

11.1 The Licensee shall fulfill and maintain compliance with all conditions and all compliance schedules stipulated in the Ground Water Discharge Permit, number UGW 450005, issued by the Executive Secretary of the Utah Water Quality Board, as amended.

11.2 Replaced by State of Utah Groundwater Quality Permit #450005.
[Applicable NRC Amendments: 21, 31, 41, and 42]

11.3 The licensee shall require that the DHP and the Site Engineer perform and document joint inspections of all work areas at least monthly. The licensee shall correct any deficiency noted during the inspection within 7 working days. The results of the inspections and any necessary corrective actions should be reported in the annual report.
[Applicable NRC Amendments: 31, 41, and 46][UDRC Amendment 6]

11.4 The licensee is granted an exemption to UAC R313-15-201(4) and R313-15-302(2) and is authorized to use Annual Limit on Intake (ALI) and Derived Air Concentration (DAC) values based on dose coefficients adopted by the International Commission on Radiological Protection (ICRP) and published in ICRP publication No. 68 and adult dose factors published in ICRP

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publication No. 72, as required to demonstrate compliance with the requirements of Subpart C and Subpart D of 10 CFR 20 (UAC R313-15).
[Applicable NRC Amendments: 32, 33, and 45]

## SECTION 12: REPORTING REQUIREMENTS

12.1 Deleted by NRC Amendment 4.

12.2 Deleted by UDRC Amendment 6

12.3 The licensee shall perform an annual ALARA audit of the radiation safety program which shall be led by the DHP or designate, qualified by way of specialized radiation protection training equivalent to that required for the DHP as defined in License Condition 9.10, in accordance with Section 2.3.3 of NRC Regulatory Guide 8.31, as amended. A report of this audit shall be submitted to corporate headquarters and the Executive Secretary, by March 31st for the previous year. The report shall include detailed summaries of the analytical results of the radiological surveys. In order to evaluate the ALARA objective, the licensee shall, at a minimum, review the following records:
[Applicable NRC Amendments: 24, 31, and 41][UDRC Amendment 6][UDRC Amendment 7]

a) Bioassay results including any actions taken when the results exceed established action levels as referenced in the NRC Regulatory Guide 8.9, "Acceptable Concepts, Models, Equations, and Assumptions For A Bioassay Program", as amended.
[Applicable NRC Amendment: 34]

b) Records of external and internal exposure.

c) Safety meeting minutes, attendance records, and training program records.

d) Daily inspection log entries and summary reports of the monthly reviews.

e) Radiological survey and monitoring data, as well as environmental radiological effluent and monitoring data.

f) Surveys required by radiation work permits.

g) Reports on overexposure submitted to the Executive Secretary and previously submitted to the NRC.

h) Reviews of operating and monitoring procedures completed during the period.

The audit shall also address any noticeable trends in personnel exposures for identifiable categories of workers and types of activities, any trends in radiological effluent data, and the performance of exposure and effluent control equipment as well as its utilization, maintenance, and inspection history. Any recommendations to further reduce personnel exposures or environmental releases of uranium or radon and radon progeny shall be included in the report.

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12.4 The licensee shall conduct an annual land use survey for a 5 km radius around the site. The purpose is to assess population growth or industry growth in the immediate vicinity of the Clive facility and provide an inventory of domestic and agricultural wells within the survey area. The licensee shall document this survey in the annual report.

12.5 The licensee shall immediately notify the Executive Secretary, by telephone within 24 hours and by letter within 7 days of any waste shipment where a violation of applicable regulations or license conditions has been found.
[Applicable NRC Amendment: 24]

12.6 The licensee shall, unless otherwise specified, submit an annual report documenting: 1) the annual reporting requirements as specified in the license conditions; 2) the results of calibration of equipment; 3) reports on audits and inspections completed during the year; 4) the results of all meetings and training courses required by this license; and 5) any other significant subsequent information, reviews, investigations, and corrective actions. This report, covering the calendar year, shall be submitted to the Executive Secretary by March 1 following the first full year after receipt of this license, and by April 30 every year thereafter. Unless otherwise specified in the UAC rules, all such documentation shall be maintained at the site and corporate headquarters for a period of at least five (5) years.
[Applicable NRC Amendments: 4 and 22]
[Applicable UDRC Amendment 1]

12.7 The licensee shall, at least three months prior to license termination, provide a report which demonstrates the site has met all applicable provisions for license termination and transfer of the facility to the government for long-term custody in accordance with UAC R313-24-4 (10 CFR Part 40, Appendix A, Criterion 11 incorporated by reference). Specifically, the licensee shall document that: (1) the concentrations of all of the listed hazardous constituents at the POC are within their designated concentration limits (standards); (2) if a corrective action program was carried out that the hazardous constituents contaminating the ground-water were returned to their designated limits; and (3) the facility has been properly decontaminated and decommissioned in accordance with the decontamination and decommissioning plan proposed by the applicant in the license application approved by the Executive Secretary. The license termination will not occur until the licensee has demonstrated that these actions have been completed.

12.8 The licensee shall immediately report to the Executive Secretary: 1) any failure of the 11e.(2) byproduct material disposal cell that results in a release of waste into unrestricted areas; or 2) any unusual conditions that if not corrected could indicate the potential or lead to the failure of the system and result in a release of waste into an unrestricted area.
[Applicable NRC Amendment: 24]
[Table SDT-1 Deleted by NRC Amendment 38]
[Table S-1 replaced by State of Utah Groundwater Quality Permit #450005.]
[Applicable NRC Amendments: 2, 3, 5, 7, 18, 26, and 38]

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## SECTION 13: CLOSEOUT CONDITIONS

13.1 Except as specifically provided otherwise in this license, the Licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The Utah Radiation Control Rules, Utah Administrative Code R313 shall govern unless the statements, representations, and procedures in the Licensee's application and correspondence are more restrictive than the rules.

A. The following documents refer to revisions made in Amendment 1.

(1) Letter CD05-0102, dated March 4, 2005 refers to increase in the 11e.(2) open cell area.

(2) Letter CD05-0179, dated April 13, 2005 refers to increase of surety corresponding to increased open cell area.

B. The following documents and submittals are the basis for revisions made in Amendment 2.

(1) Letter CD05-0267, dated May 26, 2005, 11e.(2) 2005 annual surety review; and request to change License Condition 9.12.

(2) Deficiency letter regarding 11e.(2) annual surety submittal, from Stephen Palmer to Mark Ledoux, dated June 23, 2005.

(3) Letter CD05-0341, dated July 8, 2005, responding to deficiencies in 11e.(2) surety submittal.

(4) Email Correspondence from Treesa Parker to Stephen Palmer dated June 29, 2005, regarding changes to Section 9.12.

(5) Letter CD05-0398, dated August 16, 2005, regarding changes to License Condition 9.12.

(6) Letter CD05-0453, dated September 19, 2005, regarding changes to License Condition 9.10.

(7) Letter CD05-0507, dated October, 2005, Envirocare's response to DRC request for additional information regarding proposed revisions to Appendix I of the RML UT 2300249 License Application

(8) Letter dated November 22, 2005, from John Hultquist to Mark Ledoux. Request for information regarding changes to License Condition 9.10.

(9) Email dated December 12, 2005, Treesa Parker to John Hultquist, transmitting redline/strikeout changes to License Condition 9.10, and redline/strikeout changes to Appendix I of the RML UT 2300249 License Application.

(10) Letter CD06-0012, dated January 12, 2006, requests change of address in License Condition 2.

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(11) Letter CD06-0041, dated February 3, 2006, requests change in company name from Envirocare of Utah to EnergySolutions, LLC in License Condition 1.

(12) Letter dated February 23, 2006, Dane Finerfrock to Tye Rogers, granting conditional approval of the 2005 11e.(2) annual surety submittal.

C. The following documents and submittals are the basis for revisions made in Amendment 3.

(1) Letter CD06-0207, dated May 22, 2006, 11e.(2); open cell area, request to change License Condition 10.8(b).

(2) Email dated July 14, 2006, from John Hultquist to Sean McCandless, open cell area request condition 10.8(b).

(3) Email dated 7/24/2006, from Sean McCandless to John Hultquist Amendment request open cell area 11e.(2) license condition 10.8(b) and associated attachments, Letter of Credit and insurance policy schedule B.

D. The following documents and submittals are the basis for revisions made in Amendment4

(1) Letters CD06-0445, dated December 1, 2006; CD07-0186, dated May 24, 2007; CD07-0204, dated June 19, 2007; CD07-0220, dated July 6, 2007, Wayne Johns to Dane Finerfrock, Revision to Appendix LL, Environmental Monitoring and Surveillance Plan.

(2) Letter dated May 30, 2007 from John Hultquist to Wayne Johns, Revision to Appendix LL, Environmental Monitoring and Surveillance Plan.

(3) Email dated May 29, 2007 from Kevin Carney to Wayne Johns; email dated May 29, 2007 from Wayne Johns to Kevin Carney; email dated May 31, 2007 from John Hultquist to Wayne Johns.

E. The following documents and submittals are the basis for revisions made in Amendment 5.

(1) Letter CD06-0004, dated January 9, 2006; Mark Ledoux to Dane Finerfrock; Request to amend License Conditions 9.4 and 11.1.c, and approve proposed revisions to the license application for the elimination of the Safety and Environmental Review Panel.

(2) Letter dated September 21, 2007, Craig Jones to Mark Ledoux, Re: Request to amend License Conditions 9.4 and 11.1.c, and approve proposed revisions to the license application for the elimination of the Safety and Environmental Review Panel.

(3) Letter dated May 25, 2007, Sean McCandless to Dane L. Finerfrock, Radioactive Material License No: UT2300478; Request to amend License Condition 9.12 and 10.8.e). Submittal of Annual Surety Review.

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(4) Letter dated July 16, 2007, Sean McCandless to Dane L. Finerfrock, Radioactive Materials License No: UT2300478; Response to letter dated, June 19, 2007, regarding Annual Surety Review.

(5) Letter dated August 30, 2007, Sean McCandless to Dane L. Finerfrock, Radioactive Materials License No: UT2300478; Response to letter dated July 25, 2007, regarding Annual Surety Review.

(6) Letter dated September 10, 2007, Dane L. Finerfrock to Daniel Shrum, 2007 Annual Surety Submittal, May 25, 2007, July 16, 2007, and August 27, 2007 Update for 11e.(2) 2007 Engineering Module 30, Radioactive Materials License Number UT2300478: Conditional Approval.

(7) Letter dated September 28, 2007 (CD07-0318) Mark Ledoux to Dane L. Finerfrock, Radioactive Material License No: UT 2300478 Response letter dated September 21, 2007, regarding proposed license amendment to eliminate the SERP and comments of draft license.

(8) Letter dated March 27, 2007 from Zions Bank to the Executive Secretary of the Utah Radiation Control Board, Re: Standby Letter of Credit.

F. The following documents and submittals are the basis for revisions made in Amendment 6

(1) Letter dated August 8, 2008, Dane Finerfrock to Tye Rogers, 2007 Module 32 Engineering Inspection – 11e.(2) Waste Placement: Notice of Violation

(2) Letter dated August 22, 2007 (CD07-0267) Wayne Johns to Dane Finerfrock, Response to Notice of Violation (NOV) identified by letter to EnergySolutions dated August 8, 2007.

(3) Letter dated September 6, 2007 (CD07-0289) Tye Rogers to Dane Finerfrock, 2007 RML #UT2300478[2149] – Response to Notice of Violation dated August 7, 2007.

(4) Letter dated October 31, 2007 (CD07-349) from Tye Rogers to Dane Finerfrock, RML#UT2300478; Supplementary information regarding NOV dated August 7, 2007, and Request for License Amendment.

(5) Letter dated March 3, 2008 (CD08-0069) Dan Shrum to Dane Finerfrock, Request to Remove License Condition 11.1, revise Section 5 of the License Application, and approve modification of Tables 1C and 1D of the Groundwater Quality Discharge Permit UGW450005.

(6) Letter dated May 29, 2008, Dane Finerfrock to Tye Rogers, 2007 Module 32 Engineering Inspection – Notice of Violation dated August 7, 2007, RML #UT2300478[2149] License Amendment Request.

(7) Letter dated May 30, 2008 (CD08-0166) Sean McCandless to Dane Finerfrock,

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Radioactive Material License No: UT2300478; Request to amend License Condition 9.12 and 10.8 e.). Submittal of Annual Surety Review and request for increase in open cell area.

(8) Letter dated October 9, 2008, Dane Finefrock to Dan Shrum; EnergySolutions 2008 Annual Surety Submittal, May 30, 2008, and September 3, 2008 Update for 11e.(2), 2008 Engineering Module 30, RML UT2300478: Conditional Approval.

(9) Letter dated November 24, 2008 (CD08-0376) Wayne Johns to Dane Finerfrock; Radioactive Material License No. UT2300249 and RML No. UT2300478, License Condition 13.1.D Environmental Monitoring Plan.

(10) Email dated 12/24/2008 from Sean McCandless to John Hultquist, Subject: 11e.(2) amendment –DRC letter 5/29/08.

(11) Email dated 12/29/2008 from Sean McCandless to John Hultquist, Subject: New Environmental Plan in 11e.(2) License.

(12) Emails dated 1/21/2009 and 1/22/2009 from Sean McCandless to John Hultquist, Subject: 11e.(2) License, condition 10.2.c.

(13) Email dated 01/26/2009 from Sean McCandless to John Hultquist, Subject: FW Draft RML UT2300478 (amendment 6).

(14) Letter dated January 26, 2009 (CD09-0020) from Dan Shrum to Dane Finerfrock, Revision to Appendix I *Organization*.

(15) Letter dated January 28, 2009 John Hultquist to Dan Shrum, Request for Information, Revision to Appendix I *Organization* submitted Jan 26, 2009.

(16) Letter dated February 9, 2009 (CD09-0038) from Dan Shrum to Dane Finerfrock, Revision to Appendix I *Organization*. Response to Request for Information.

(17) Email dated 2/17/2009, from Sean McCandless to John Hultquist, Subject UT2300478 EnergySolutions Amend 6-draft.

G. The following documents and submittals are the basis for revisions made in Amendment 7

(1) Letter dated June 3, 2010, from Sean McCandless of EnergySolutions to Dane Finerfrock of the DRC. Radioactive Materials License UT 2300478 – Amendment Request to Consolidate 11e.(2) Embankment Groundwater Monitoring requirements with the Requirements listed in the Groundwater Quality Discharge Permit (UGW 450005)

(2) Letter (CD10-0231) dated August 12, 2010, Sean McCandless of EnergySolutions to Rusty Lundberg of the DRC. Radioactive Materials License No. UT 2300478 amendment request.

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(3) Letter dated September 2, 2010, from Rusty Lundberg of the DRC to Sean McCandless of EnergySolutions. Radioactive Material License (RML) Number UT 2300478 amendment request dated August 12, 2010.

(4) Memorandum dated June 6, 2011, from Charles Bishop to John Hultquist/Loren Morton. Request to Consolidate 11e.(2) Embankment's Ground-Water Monitoring Requirements, 11e.(2) License UT2300478, Amendment #6, with the Ground Water Quality Discharge Permit, UGW 450005.

(5) Letter (SD11-0218) dated August 09, 2011, from Sean McCandless of EnergySolutions to Rusty Lundberg of the DRC. Radioactive Material License (RML) Number UT 2300478 amendment request dated August 12, 2010.

(6) Letter dated September 8, 2011, from Charles Bishop of the DRC to Sean McCandless of EnergySolutions. EnergySolutions request to amend Radioactive Material License UT 2300478, consolidating the 11e.(2) embankment's Ground Water Monitoring Requirements into the Ground Water Quality Discharge Permit, UGW450005: Division of Radiation Control Request for Information.

(7) Letter dated October 11, 2011, from Sean McCandless of EnergySolutions to Rusty Lundberg of the DRC. Response to Division of Radiation Control Request for Information – Radioactive Material License UT 2300478 - Amendment Request to Consolidated 11e.(2) Embankment Ground Water Monitoring Requirements with the requirements listed in Ground Water Quality Discharge Permit UGW450005.

**UTAH RADIATION CONTROL BOARD**

Rusty Lundberg

Rusty Lundberg, Executive Secretary

1/12/2012

Date