PUBLIC PARTICIPATION SUMMARY

for the

Energy*Solutions*' License Renewal Application

Tooele County, Utah

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Abbreviations and Acronyms

11e.(2)	Section 11e.(2) of the Atomic Energy Act of 1954, as amended
AASHTO	American Association of State Highway & Transportation Officials
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
ARML	AASHTO Materials Reference Laboratory
ASME	ASME International, formerly American Society of Mechanical Engineers
bgs	Below ground surface
BLM	U.S. Department of the Interior, Bureau of Land Management
BWF	Bulk Waste Facility
CAC	Class A Combined Facility
CAES	Computer Aided Earthmoving System
CAN	Class A North Facility
CFR	Code of Federal Regulations
cm/sec	centimeters per second
cm/yr	centimeters per year
CQA/QC	Construction Quality Assurance/Quality Control
CRSO	Corporate Radiation Safety Officer
CSLM	Controlled Low Strength Material
CWF	Containerized Waste Facility
cy	Cubic yards
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
Division	Utah Division of Radiation Control
DU	Depleted Uranium
EZD	Evaporative Zone Depth
ft/ft	feet per foot
GSA	Generator Site Access
GWQDP	Groundwater Quality Discharge Permit
HEAL Utah	Healthy Environment Alliance of Utah
HIC	High integrity container
LARW	Low-activity Radioactive Waste
LEU	Low-enriched Uranium

LRA	License Renewal Application
LLRW	Low-Level Radioactive Waste
NQA-1	Quality Assurance Requirements for Nuclear Facility Applications published jointly by ASME and ANSI
NRC	U.S. Nuclear Regulatory Commission
NW	Northwest
OSHA	U.S. Occupational Safety and Health Administration
PE	Professional Engineer
PMP	Probable Maximum Precipitation
QA	Quality Assurance
QAP	Quality Assurance Program
QC	Quality Control
RML	Radioactive Materials License
RWP	Radiation Work Permit
SEC	U.S. Securities and Exchange Commission
SER	Safety Evaluation Report
sf	square feet
SME	Subject Matter Expert
UO_2	Uranium dioxide
U_3O_8	Triuranium octoxide; yellowcake
URCB	Utah Radiation Control Board
URCR	Utah Radiation Control Rule
URS	URS Corporation

Introduction

The purpose of this document is to summarize public comments received by the Utah Division of Radiation Control (the Division) regarding Energy*Solutions*' request for license renewal at its low-level radioactive waste (LLRW) disposal facility located at Clive, Utah. Three sets of written comments were received from the public during the comment period that ended on September 28, 2007. No verbal comments were received. These comments were considered in revising the requirements of the facility's Radioactive Material License, No. UT 2300249.

Each comment topic received is restated below in italics. The Division's response and disposition of each comment follow each comment, is denoted with the words "Division Response" in bold text, and is preceded by a diamond. Images of the complete comment documents are included as appendices.

Revisions made to Energy*Solutions*' Radioactive Material License, No. UT 2300249 since it was issued for public comment are shown in Appendix D and discussed in the conclusion to the document.

1. Comments from EnergySolutions, Tye Rogers, Senior Vice President of Regulatory Affairs

a. Draft Radioactive Material License comments

Condition 9.H: *As requested in our letter dated November 15, 2006, please remove this license condition. The training cask has been disposed.*

- **Division Response**: This is a substantive comment. The Division has confirmed the receipt of the letter dated November 15, 2006, and agrees the license condition is no longer applicable. The condition has been removed from the final License, see Conclusion section, below.

Condition 10.D: *Please remove the license condition. The section corners and placed monuments were verified by Olympus Aerial Surveys, Inc. in December 2004; making this condition obsolete.*

- **Division Response**: The Division has not received any documentation regarding the December 2004 survey. Therefore, this condition remains as proposed.

Condition 27: *Please revise to read as follows in order to clarify the release requirements for conveyances used for commercial transport of radioactive waste: "Vehicles, containers, facilities, materials, equipment or other items for unrestricted use shall not be released from the Licensee's control if contamination exceeds the limits found in Table 27-A. The only exception to this is for conveyances used for commercial transport of radioactive waste or materials, which may be returned to service in accordance with the requirements of 49 CFR 173.443(c)."*

- **Division Response:** The language provided during the comment period was revised by the Division in consultation with the Licensee to clarify the intent. The Licensee incorporated these limits into their procedures and daily operations years ago. Previously the condition was silent regarding conveyances. The revised language explains what the release criteria will be for conveyances. The revised language simply clarifies the release criteria for conveyances in the license condition. Both the Licensee and Division have agreed to the following language for License Condition 27; "Vehicles, containers, facilities, materials, equipment or other items for unrestricted use shall not be released from the Licensee's control if contamination exceeds the limits found in Table 27-A. Except as provided in 49 CFR 173.443(d), conveyances used for commercial transport of radioactive waste or materials, may not be returned to service until the radiation dose rate at each accessible surface is 0.005 mSv per hour (0.5mrem per hour) or less, and there is no surface removable (non-fixed) radioactive surface contamination as specified in paragraph (a) of 49 CFR 173.443." Conveyances may be released under the conditions of 173.443(d) provided the conveyances are consigned directly to a licensed or license exempt facility.

Condition 28: *Data from the Cover Test Cell were evaluated in conjunction with the Class A Combined amendment request to justify a thicker Evaporative Zone Depth (EZD). The request for a thicker EZD was rejected and no further interrogatories were issued with respect to the cover test cell. The inclusion of a License Condition with the due date of September 30, 2007 to resolve issues regarding an unrelated license amendment is severe; particularly since the Division extended the public comment period to September 21, 2007 and the timeframe for issuance of the final license once this comment period closes is unknown.*

EnergySolutions submitted its request for license renewal on July 2, 2003 (over 4 years ago). The last set of interrogatories on the cover test cell was transmitted in March 2006 (1.5 years ago). As a result of these evaluations, the Division and URS staff concluded that the data from the test cell did not justify increasing the EZD from 18-inches to 24-inches for the modeling of the Class A Combined

Cell. No additional communications were received regarding the Cover Test Cell until the issuance of the draft License. The Division's actions are not consistent on this item.

EnergySolutions has contracted with Desert Research Institute to evaluate the effectiveness of the Cover Test Cell. We request a meeting with the Division staff to develop specific goals and performance objectives for the Cover Test Cell. EnergySolutions maintains that the only objective of the cover test cell is to evaluate performance modeling previously conducted. specifically the infiltration rate through the test cell. In addition, the cover test cell can be used to verify that the sacrificial soil barrier is protecting the radon barrier from freeze/thaw cycles. Interrogatories received to date focus on the soil moisture monitoring equipment installed in the cover system. These data, although useful in determining EZD, are not used in the evaluation of the performance modeling. The conservative nature of the modeling assumes that the soil layers in the cover system are at or near saturation. Infiltration rates through the test cell, however, are orders of magnitude lower than the modeled infiltration rates. The data ranges from 0.072 cm/year in 2002 (the first year of monitoring data, as the test cell drained construction water and started to reach equilibrium) to 0.000 cm/year for 2007 year-to-date. To date, the infiltration through the test cell averages 0.0267 cm/yr (including the first year of monitoring data) compared to the modeled infiltration rate of 0.265cmlyr - an order of magnitude lower. In addition, the clay temperature measurements demonstrate that the sacrificial soil layer is preventing freeze/thaw in the radon barrier.

EnergySolutions respectfully requests that at a minimum, the mandatory date of September 30, 2007, be removed from the License. A minimum of 6 months is requested to fully evaluate the concerns that were only recently made evident by the issuance of the license. Similarly, the stipulated deadline of 30 days to complete new instrumentation or construction, when the nature and scope of any potential new instrumentation or construction is currently unknown, is not realistic, reasonable, or in keeping with the Division's lack of urgency on this issue to date. We also request that this issue be transferred to the Groundwater Quality Discharge Permit, as the Permit deals more directly with the dynamics of the test cell. EnergySolutions looks forward to resolving this issue with the Division staff.

- **Division Response**: The Division agrees to meet with the Licensee to review the expectations and goals of the Cover Test Cell. This meeting can be held at convenience of both the Licensee and the Division. The additional public comment period and response timeline has made the current date in the License Condition infeasible. The request for additional investigation time by the licensee is granted, and the date will be revised to July 23, 2008 (see revised wording in Conclusion section, below).

  (a) The Division recognizes the license renewal process has taken a long time and also that part of the delay has been due to additional licensing actions requested by the licensee, such as the Class A North (CAN) amendment request, Class A Combined (CAC) amendment, request and amendment requests for several capital improvement projects. The Division disagrees that the previous CAC amendment was not related to the license renewal application. The CAC amendment was an amendment to the UT2300249 license, which at the time of application was already under timely renewal. The UT2300249 license is the subject of this license renewal application. Therefore, they are directly related.

  (b) The requirement to develop the Cover Test Cell and collect data has been in place for many years and has had the objective of demonstrating the effectiveness of the cover system the Division has approved. The deficiencies encountered during this renewal process must be resolved and defensible data collected in a timely manner.

  (c) The Division understands the Licensee's need to assess the problems associated with the Cover Test Cell and to identify and evaluate potential resolutions to these

problems. The Division is revising the license condition to allow six months from the effective date of the renewed license (i.e., July 23, 2008), as shown in Conclusion section, below.

(d) The request to move this License Condition to Groundwater Quality Discharge Permit (GWQDP) Number UGW450005 is denied. The Division does not agree with the rationale presented by the licensee.

Condition 32.D: *The addition of this condition appears to be from interviews conducted several years ago by URS staff. EnergySolutions was not provided the opportunity to discuss these concerns with the Division and URS staff prior to the issuance of the license. EnergySolutions ' management organization has been approved by the Division and explicitly provides for the exact requirements found in this license condition. Section 1.1.5 of Appendix I states that the Director of Health Physics and the Health and Safety Manager report to the Vice President of Clive for day to day activities. For radiation safety issues, the Director of Health Physics reports to the Corporate Radiation Safety Officer. For health and safety issues, the Health and Safety Manager reports to the Corporate Director of Safety and Health. The Division's approval of this organizational structure indicates that EnergySolutions adequately maintains organizational independence of programs critical to safety and environmental protection.*

Furthermore, page 89 of the SER acknowledges that the renewal application includes a description of how EnergySolutions ensures the independence and authority of the quality assurance program and quality assurance personnel. Therefore, this license condition simply re-states a requirement already complied with and already incorporated by reference in Condition 32.A. Furthermore, it is not clear how this condition would be inspected against nor how compliance would be documented by EnergySolutions, beyond the Division-approved organization as described in Appendix I.

- **Division Response**: License Condition 32.A requires the qualifications of the licensee's staff, as committed in LRA Appendix I. License Condition 32.D requires the organizational independence of the programs that monitor and enforce employee safety, environmental protection, and public safety. In other words, the new wording in Condition 32.D sets a performance standard for Appendix I. With the recent changes to the licensee's corporate structure, the Division deems a clear definition of the expectation of continued organization independence is needed in the license; therefore License Condition 32 D remains unchanged.

Condition 32.E: *The addition of this condition appears to be from interviews conducted several years ago by URS staff. EnergySolutions was not provided the opportunity to discuss these concerns with the Division and URS staff prior to the issuance of the license. EnergySolutions has maintained a formal program enabling any employee or contractor to anonymously submit their concerns for many years now. This is a vital program that EnergySolutions takes very seriously. Had we been given an opportunity to address the concern prior to issuance of the draft license for public comment, we would have demonstrated such. By raising the issue in the draft license and SER based on incomplete information about EnergySolutions ' program, the public may be misled about how seriously EnergySolutions takes whistleblower protection.*

A formal Whistleblower Protection Policy was submitted to the NRC in 1998. Employees were provided training on the program. Since that time, the program has evolved and is currently incorporated within the Employee Policy Manual. The current program is referred to as Silentwhistle, and provides an anonymous avenue for raising concerns without the fear of retaliation. EnergySolutions employees are given specific initial training on how to raise concerns within the company as well as the availability of the SilentWhistle Program and Whistleblower Protection Program.

EnergySolutions expects employees to raise nuclear safety and compliance concerns to their supervisors using normal processes or as set forth within the Environmental and Nuclear Safety Compliance Program. Although this program is available, EnergySolutions encourages employees, if they feel it necessary, to raise concerns directly with the Nuclear Regulatory Commission, the Division, or other regulatory agencies at any time they believe that these agencies should be aware of their concerns.

EnergySolutions does not believe that a specific license condition requiring that a method for providing anonymous concerns, etc. to the CRSO should be required. Furthermore, the way this license condition is written ignores the existing program and its long history. The SilentWhistle program is prominently advertised through posters in lunchrooms and other employee gathering points throughout our facilities. In addition, the program is discussed in detail in the employee policy manual provided to each individual upon initial employment and when updated. This program is a standard requirement of federal government contracts. As a long-time government contractor, EnergySolutions has a mature program and could have easily demonstrated such, were we given an opportunity to do so before issuance of the draft RML

- **Division Response:** The Division has not received any documentation regarding the Energy *Solutions*' SilentWhistle program. Therefore, this condition remains as proposed.

  The observation was made during site visits during 2005. Review of the procedures included in the license renewal application did not find the "SilentWhistle" program. The Division recognizes the license renewal process has taken a long time and also recognizes that part of the delay has been due to additional licensing actions requested by the licensee, such as the Class A Combined (CAC) amendment and several capital improvement projects.

Condition 34: *The timeline for this issue is provided as Attachment 1. Requiring a response 30 days after the issuance of the license is not acceptable. When requested, EnergySolutions responded immediately to fund restoration of grade within Section 32 and was informed by the Division staff that restoration of grade outside of Section 32 would be addressed following license renewal. At that time, EnergySolutions staff requested a meeting with the Division personnel to establish criteria that would be acceptable to both sides. the Division has not responded to this request. EnergySolutions and Whetstone Associates need to meet with the Division staff in order to respond adequately to Interrogatory CAC R3 13-22-32(1)-0513. Therefore, EnergySolutions respectfully requests that a response to this Interrogatory be required within 180 days after issuance of the license.*

- **Division Response**: The Division agrees to meet with the licensee to review the expectations and goals of the Restoration of Grade issue. This meeting can take place at the convenience of both the Licensee and the Division. The additional public comment period and response timeline has made the current date in the License Condition not viable. The request for additional investigation time by the licensee is granted, and the date will be moved to July 1, 2008. [NOTE: This date is contingent upon license approval in a timely manner. Should additional regulatory delays arise, this date may be adjusted.]

  The Division recognizes the license renewal process has taken a long time period and also recognizes that part of the delay has been due to additional licensing actions negotiated by the licensee, such as the Class A Combined (CAC) amendment and several capital improvement projects.

Condition 39.C: *Please correct the position title in the last sentence to "Corporate Radiation Safety Officer." The Containerized Waste Facility Corporate Radiation Safety Officer was removed as a*

distinct position in revision 18 of Appendix I. The currently approved revision is 19, dated October 6, 2006.

- **Division Response**: The Division agrees with the request and will change the text as noted. For details, see Conclusion section.

Condition 45: *Please remove the last sentence of this Condition. As documented in our letter dated January 5, 2007, EnergySolutions has secured AMRL accreditation.*

- **Division Response**: The Division has confirmed the receipt of the licensee's AASHTO Materials Reference Laboratory (AMRL) accreditation. The Division will remove the following text, "The Licensee shall secure said certification and accreditation on or before December 31, 2006," from the license condition. For details, see Conclusion section, below.

Condition 76: *Please delete this condition, as surety costs for these facilities have been submitted, approved by the Division, and funded.*

- **Division Response:** The Division agrees with the request and changed the text as noted. For details, see Conclusion section, below.

Condition 88: *Conditions 88.A through 88.CC reflect licensing actions incorporated into the License renewal and are therefore redundant to carry forward. Many have been superseded by successive licensing actions. Similarly, Conditions 88.DD.(l) through (9), among many others, reference reports included with or incorporated by reference into the License Renewal Application; it would streamline the license to simply reference the renewal application. Condition DD.(12) will be superseded each year by subsequent annual surety reviews and does not need to be explicitly referenced to be enforceable; otherwise, the Division would need to amend the license each time the surety calculations change. Conditions 88.DD.(34) and 88.DD.(44) through (58) deal with the Class A Combined embankment and should be removed from this License, as the Class A Combined license amendment was not completed. It would be confusing to the Division, EnergySolutions, and the public to reference documents that do not represent the basis for the issuance of a license. Conditions DD.(65) through (68) refer to draft revisions to the CQA/QC Manual completed 5 years and 6 revisions ago. All of these documents are available in the historical records for these various licensing actions that have long since been completed; and in many cases superseded by later licensing actions.*

- **Division Response**: The Division has agrees all matters from communications dated prior to the Licensee's issuance of the revised LRA (June 20, 2005) should be addressed in the LRA, with the exception of unrelated licensing efforts (such as approval of capital improvement projects that were resolved after that date). The Division has added a new Item 88.A to document the revised LRA. The Division has revised License Condition 88 by deleting Items 88.A through 88.X as published for public review. The Division has, however, retained but renumbered Items 88.Y through 88.DD (as listed in the draft License published for public review). The Division recognizes that, with this resolution, some of the referenced documents may be repetitive or otherwise incorporated into the license renewal application.

  (a) The Division does agree that streamlining this license condition would be beneficial.

  (b) General comment regarding license conditions, Condition 26 needs an updated revision date of July 3, 2007.This Appendix R revision has been reviewed and approved by the Executive Secretary.

b. Draft Safety Evaluation Report comments:

NOTE: No comments were submitted that require action by the Division which would impact the SER. Therefore, the SER was not revised.

Page 8, 7th bullet: *The appeal of the Class B&C License is introduced in the 4th bullet on this page. Therefore, it would also be appropriate to note here that, prior to final agency action on that license, this appeal was denied.*

- **Division Response**: The comment is accurate but requires no action on the Division's part.

Section 4.1 "Summary of Findings" Part 2*: This statement is incorrect. Our Document Control program includes providing Division with a "controlled copy" of all operating procedures. This program includes a formal transmittal of each revision to any procedure.*

- **Division Response**: The Division acknowledges this misstatement. No other action is required on its part.

Section 4.1 "Summary of Findings" Part *4:* *This comment is baseless speculation, and EnergySolutions was provided no opportunity to provide existing data to the contrary. No basis is suggested for the allegation that turnover may lead to increased worker exposures. Workers at the Clive facilities receiving the highest individual Total Effective Dose Equivalent are routinely less than 10% of the permitted occupational dose. Technically, per the Division rules, EnergySolutions is not required to issue dosimetry to Clive radworkers due to the very low doses they receive.*

- **Division Response:** The Division acknowledges that work stoppages are of no concern, except as they might affect worker health and safety and the protection provided members of the general public and the environment. The Division also acknowledges that occupational radiation exposures resulting from operations at the Clive disposal facility (possible work stoppages and work force turnover notwithstanding) have been very low and well within regulatory limits. No further Division action in this matter is required.

Section 4.1 "Summary of Findings" Part *6:* *The procedure review and formalization process has recently been streamlined. The comment that the process is ". . .overly complex.. ." seems to contradict later comments regarding increased formalization of engineering design reviews.*

- **Division Response**: As with other matters relating the actual operation of the facility, the Division will observe the process of revising operating procedures as part of its inspection and review program. The Division's concern is to confirm that revisions to operating procedures that Energy*Solutions'* staff judges to be necessary or desirable can be reasonably initiated by staff. The Division is also concerned that Energy*Solutions* will objectively evaluate and pursue all such requests for revision. The Division also recognizes that the company must maintain control of its procedures and that some requests originating from staff may not be implemented.

  SER Section 4.1 Part 6 relates specifically to the approval of changes to operating procedures. Comments made later in the SER about engineering procedures relate to the extent to which they appear to be implemented. This comparison is not applicable.

Section 4.1 "Summary of Findings" Part *7:* *The allegation that "...no effort is made to verify understanding.. ." is unfounded and incorrect. BWF staff conducts daily operations briefings to discuss each day's operations, including specific concerns as needed. In addition, weekly safety meetings are held to provide on-going training and discussion opportunities; weekly site management*

meetings are held with the compliance and permitting department; and a monthly managers' meeting is held to highlight specific safety and regulatory compliance topics.

- **Division Response:** The Division did not observe Bulk Waste Facility (BWF) staff briefings and records during the site visits in 2005. It would have been preferable for the Division to have limited its conclusion to what it did observe. The comment made by Energy*Solutions* indicates a level of attention to operations that is desirable and would likely be acceptable. The Division will observe the daily BWF briefings and ongoing training as part of its inspection and review program.

Section 4.1 "Summary of Findings" Part *8:* *This comment ignores the annual submittal of actual occupational dose data to the Division. This is much more valuable data than revising past models, and indicates that EnergySolutions ' radiation safety program is functioning effectively in maintaining occupational exposure at low levels, in spite of fluctuating waste volumes and hours worked.*

- **Division Response**: We acknowledge that actual past occupational dose data substantiates past exposures to workers. However, revision of modeling data to reflect the current LRA would enable analysis of anticipated future dose rates. Further, current occupational dose data does not predict future exposure rates, but can be used to validate the accuracy of the model's projections to reality. The Division deems revision of the modeling data would provide valuable knowledge of impacts of current changes to future exposures.

Section 4.1 "Summary of Findings" Part *9:* *Staffing levels relative to waste receipts and maintaining compliance with regulatory requirements are continually reviewed. At the time of URS' interviews, waste receipts were at a record volume but have since dropped dramatically.*

- **Division Response**: No response required.

Section 4.1 "Summary of Findings" Part *10:* *The practice of placing waste prior to receiving complete analytical results has been performed in compliance with the Waste Characterization Plan. Any time that waste has needed to be excavated, it has been done so in a manner that is protective of human health and the environment. EnergySolutions recognizes that it is not desirable to excavate previously placed waste, and so has implemented operational controls to reduce the disposal of waste prior to receiving analytical results.*

- **Division Response:** No response required.

Section 4.2.1 "Areas of Concern to the Division" Part *1:* *Although EnergySolutions as a whole has a Quality Program consistent with NQA-1, the activities at the Clive facility are considered "commercial grade". Therefore NQA-1 would not be applicable. Data obtained from design and technical support contractors is reviewed by EnergySolutions ' engineering and other technical staff prior to acceptance.*

- **Division Response**: The Division disagrees. Work performed by support contractors is not exempt from the requirements of "Quality Assurance Requirements for Nuclear Facility Applications" (ANSI/ASME NQA-1 2004), nor does it exempt the licensee from responsibility for the quality of the data supplied by contractors.

  (a) The license renewal application submitted June 20, 2005, by the licensee says in Section 9: Quality Assurance, Section 9.1: Introduction, Paragraph 2, Sentence 1, "In pursuit of this objective, Envirocare has developed a quality assurance program, which is consistent with guidance provided by the Nuclear Quality Assurance Standard, ANSI/ASME NQA-1, Quality Assurance Program Requirements for Nuclear Facilities, and satisfies the special needs of a waste disposal facility."

Further, in Appendix T (dated June 20, 2003) of the license renewal application, the licensee says in QAP 2.0 (May 07, 1999) Section 6.1, "The following Basic Requirements of ASME NQA-1 apply: Organization; Quality Assurance Program; Design Control; Procurement Document Control; Instructions, Procedures, & Drawings; Document Control; Control of Purchased Material, Equipment, and Services; Identification and Control of Items; Inspection; Test Control; Control of Measuring and Test Equipment; Handling, Storage and Shipping; Inspection, Test and Operating Status; Nonconforming Materials, Parts, or Components; Corrective Action; Quality Assurance Records; Audits…"

(b) Design or technical reports submitted by the licensee to the Division have been found to have technical errors (for example, the discussion via email with the licensee regarding the license renewal application Appendix A, monitoring at station A-9). These errors raise concerns regarding the effectiveness of the Quality Assurance program and the quality of the data presented in the reports. Further, reports which impact the facility design, including quality, are required to be signed and sealed by a Professional Engineer (PE) licensed by the Utah Division of Occupational and Professional Licensing. Reports generated by a contractor are linked to the purchasing program.

The Division has concluded that it will examine the effectiveness of the QA process at the Clive facility in connection with individual licensing actions requested by the Licensee. Evidence will be sought to demonstrate that the documents submitted by the Licensee and reviewed by the Division have been developed consistent with the Licensee's engineering and other procedures.

Section 4.2.1 "Areas of Concern to the Division" Part *2:* *This process is already in place. EnergySolutions performs an internal review of each design and analysis submittal to the Division. Internal reviews include the applicable affected disciplines. We do not rely upon the Division to assess design adequacy; however, continually changing design and supporting information expectations make it difficult to know what level of information will be needed for a particular project. For example, a point of discussion on the NW Evaporation Pond was the potential for wind uplift to affect the liner during installation; this had never been raised as an issue in permitting other ponds at the Clive facility. A concern raised during licensing of the Shredder Facility was the potential impact on site wastewater generation, which led to a requirement to calculate and submit a facility water balance; this had never been raised as an issue in licensing a new facility before.*

- **Division Response**: The original statement stands. One example is cited above (see the response in Section 1.b.8.(b).

Section 4.2.1 "Areas of Concern to the Division" Part *3:* *This is in place. Field training is performed and documented using the qualification form system. Qualification for field functions involves review of requisite procedures, a written test, and observation of field activities. In this system, subject matter experts (SMEs) are designated by applicable managers, and play a key role in the evaluation of job performance. SMEs are also responsible to review qualification exams.*

- **Division Response**: The Division did not observe efforts to evaluate the effectiveness of the Licensee's training programs during the site visits in 2005. The comment made by Energy*Solutions* indicates that training is evaluated through written means and through observation of employee performance. The Division will observe the Licensee's efforts to evaluate the effectiveness of its training programs as part of the Division's compliance audit program.

Section 4.2.1 "Areas of Concern to the Division" Part *4: E**nergySolutions had already identified an opportunity for improvement in this area and has initiated steps to address it. Procedures are in development and are being tracked in our Quality Assurance system under Condition Report CR07-003.*

- **Division Response**: No response required.

**Section 4.2.1 "Areas of Concern to the Division" Part *5:* *This comment is unfounded. EnergySolutions performs an internal review of each design and analysis submittal to the Division. This review explicitly evaluates permit and license requirements that may be applicable to the project in question. Satisfying regulatory requirements is always a dominant consideration of the design process.*

- **Division Response**: Original finding stands. See the response in Section 1.b.8.(b), above.

Section 4.2.1 "Areas of Concern to the Division" Part 6: This comment is unfounded, as design documents are currently approved and stamped by a licensed Professional Engineer, as required under License Condition 48.B.

- **Division Response**: Original statement stands. See the response in Section 1.b.8.(b), above.

**Section 4.2.1 "Areas of Concern to the Division" Part *7:* *While EnergySolutions supports the goal of reducing revisions to licensing and implementation documents, this goal is not always practical given new information, new waste streams, and new technologies. Furthermore, we note that revision control is always maintained and that our Document Control program ensures controlled copies of all revisions are provided to the Division.*

Division Response: Non-substantive. No response required.

**Section 4.2.1 "Areas of Concern to the Division" Part *8:* *The comment is unfounded. Document Control procedures are in place and have been for many years to ensure that superseded versions of documents are not incorrectly used. If the Division or URS are aware of instances where this has not been the case, please share this information with us so the situation can be corrected.*

- **Division Response:** The observation was made during site visits during 2005. The Division will inform the Licensee of said problems upon identification during future inspection and review activities.

**Section 4.2.1 "Areas of Concern to the Division" Part *9:* *The comment is unfounded, as there is a separation between organizational functions and responsibilities for commercial and safety/quality considerations. This separation is explicitly incorporated in our Organization as incorporated into the License at Condition 32.A. See also our comments to Condition 32.D above.*

- **Division Response**: Original finding stands. See the response in Section 1.a.(5), above.

**Section 4.2.1 "Areas of Concern to the Division" Part *10:* *The comment is unfounded, as a formal program is already in place. See our comments to Condition 32.E above.*

- **Division Response:** Original finding stands. See the response in Section 1.a.(6), above.

**Section 4.2.1 "Areas of Concern to the Division" Part *11:* *This is an ongoing process. The training procedures are currently under review and being updated to reflect current job titles and training requirements. As procedures are updated, training is provided once the revised procedure becomes effective. Training on departmental procedures is typically delivered by the applicable department. Training may also be delivered as part of periodic manager/foreman training. Qualification forms are currently under review to update references to new procedures/requirements.*

- **Division Response**: Original finding stands.

Section 4.2.1 "Areas of Concern to the Division" Part *12:* *The comment is unfounded, as all personnel do have training on and ready access to controlled revisions of procedures that affect their work activities.*

- **Division Response:** The observation was made during site visits during 2005 in which a staff member was asked to produce a copy of the procedures that affect his work. He was unable to produce the documents from his work area. The Division will observe this matter as part of its inspection and review program.

Section 4.2.1 "Areas of Concern to the Division" *Part 13:* *EnergySolutions had already identified an opportunity for improvement in this area and has initiated steps to address it. Procedures are in development and are being tracked in our Quality Assurance system under Condition Report CR07-003.*

- **Division Response:** The original finding stands. The Division will evaluate this issue in future inspections of the facility.

Section 4.2.1 "Areas of Concern to the Division" Part *14:* *The comment is unfounded. EnergySolutions implements Quality Assurance controls on purchasing functions using an approved vendor system. EnergySolutions has implemented a graded approach to quality. This approach establishes the control over items, services and activities affecting quality to an extent consistent with their importance through the assignment of defined quality levels. Items affecting quality are assigned a Quality Level of 1, 2 or 3 which determines the QA rigor and controls associated with these items. Additionally, only vendors which have been evaluated and approved are used when procuring Quality Level 1 and 2 items. This ensures that the supplier has implemented adequate internal controls to ensure the quality of items or services provided.*

- **Division Response:** The original finding stands. Design or technical reports submitted by the licensee to the Division have been found to contain technical errors (for example, the discussion via email with the licensee regarding the license renewal application Appendix A, monitoring at station A-9). These errors raise concerns regarding the effectiveness of the Quality Assurance program and the quality of the data presented in the reports. Further, reports which impact the facility design, including quality, are required to be signed and sealed by a Utah-certified Professional Engineer. Reports generated by a contractor are linked to the purchasing program. The Division will evaluate this issue during future inspections of the facility.

Section 4.2.1 "Areas of Concern to the Division" Part *15:* *Staffing levels relative to waste receipts and maintaining compliance with regulatory requirements are continually reviewed. At the time of URS' reviews, waste receipts were at a record volume but have since dropped dramatically.*

- **Division Response:** The original finding stands.

Section 4.2.2 "Areas Not Impacting Licensure at This Time" Part *1:* *EnergySolutions agrees, and notes that the Division is generally fair in this regard.*

- **Division Response:** No response required.

Section 4.2.2 "Areas Not Impacting Licensure at This Time" Part *2:* *EnergySolutions had already identified an opportunity for improvement in this area and has initiated steps to address it. Procedures are in development and are being tracked in our Quality Assurance system under Condition Report CR07-003.*

- **Division Response:** No response required.

Section 4.2.2 "Areas Not Impacting Licensure at This Time" Part *3:* *EnergySolutions is not aware of any problems in the current process that would support implementing this change. All changes that impact the Hazardous Waste Permit are coordinated with, if not prepared by, the Environmental Engineer.*

- **Division Response:** No response required. This section documented other observations which the Division wanted to make known, but do not impact licensure at this time.

Section 4.2.2 "Areas Not Impacting Licensure at This Time" Part *4:* *This comment is not warranted. Procedures are readily updated as needed, and subject to annual review by the CRSO, as required by License Conditions 20 and 21.*

- **Division Response:** The last revision of the procedures within the license renewal application was in 2006 or before. Over the course of the license renewal process the licensee has had several organizational changes. Evaluating a moving target is challenging and difficult.

Section 4.2.2 "Areas Not Impacting Licensure at This Time" Part *5:* *A hazard communication procedure which references the OSHA regulated substances is currently in place and has been for some years. Specific procedures governing exposure to Lead and Beryllium are also in place. Additional substance-specific procedures may be developed as circumstances require.*

- **Division Response:** No response required.

Section 5.4.2.3.3, page 59-60**:** The discussion of settlement plate monitoring indicates that plates on top of the temporary cover will be extended through the final radon barrier. This is incorrect, and it would be contrary to sound cover design to penetrate the final radon barrier this way. Rather, the settlement plates on the temporary cover will be removed at the time of final cover construction, and new plates will be placed on top of the completed radon barrier, anchored in the drainage and rip rap rock layers. Please refer to the CQA/QC Manual for details.

- **Division Response:** The Division has reviewed the discussion of settlement plates in SER Section 5.4.2.3.3 on pages 59-60 and agrees with the comment. The discussion in the SER does not accurately describe the placement of the settlement plates. The text should read, "Settlement plate monuments will consist of a four-foot- long #5 rebar welded to an 18-in.-square 3/16-in.-thick steel plate. The plate is placed on top of the temporary radon barrier layer. After satisfactory settlement is established and documented, the settlement plates on the temporary cover will be removed. New settlement plates will be placed on the final cover system, specifically on top of the radon barrier. The settlement plate monuments will be strategically placed to allow locations of maximum and minimum settlement to be observed and measured. Settlement plate monitors will be placed in uniformly spaced grids as specified in the CQA/QC Plan." This text change does not impact the license terms and actions.

2. Comments from HEAL Utah, Christopher Thomas, Policy Director

Note: Comments submitted by Mr. Christopher Thomas are provided below in italics.

a. Disposal of Depleted Uranium (DU) or Low-Enriched Uranium (LEU) in Large Amounts

Disposal of Depleted Uranium (DU) or Low-Enriched Uranium (LEU) in large amounts, as from enrichment facilities and as recovered from high-level waste reprocessing, should be specifically excluded from the scope of EnergySolutions' license. Please see the Technical Report prepared by the Institute for Energy and Environmental Research that follows for a technical and legal discussion of DU and other matters related to EnergySolutions' licenses.

- **Division Response:** Materials provided by the commenter claim that NRC excluded DU from consideration when developing the low-level waste classification system (10 CFR 61.55). While this is true, recent statements from the NRC have affirmed that DU from enrichment plants meets the definition of low-level waste. In January 2005, the NRC ruled that DU from enrichment plants is a low-level radioactive waste as defined in the Radioactive Waste Policy Act of 1982 (NRC 2005a). In that ruling NRC did not address the question of whether DU from enrichment plants should be classified as Class A low-level waste.

  Under current regulations, DU from any source meets the definition of a Class A low-level waste. The low-level waste classification system, in 10 CFR 61.55(a)(6), states that if a low-level waste contains none of the radionuclides in Table 1 or Table 2 of Part 61.55, then the waste is Class A. Pure DU, as UO_2 or U_3O_8, fits this qualification because it contains none of the radionuclides listed in Table 1 or table 2 of the classification system. However, it must be noted that NRC is evaluating the appropriateness of shallow land disposal of DU, in light of the fact that uranium was specifically excluded from the low-level waste classification system at the time it was developed.

  On June 2, 2006, NRC issued an Order (NRC 2006) that affirmed two previous NRC Orders (NRC 2005a, 2005b) and determined that the Energy*Solutions* facility appeared to be suitable for near-term disposal of depleted uranium. The decision noted that the radiological hazards from uranium will slowly increase over time, but that the disposal site characteristics (e.g., lack of potable water) provide assurance that the performance objectives of 10 CFR 61 will be met for the foreseeable future.

  In summary, DU from enrichment facilities is a low-level waste and the NRC has specifically stated that the Energy*Solutions* facility is an appropriate disposal site for DU. The disposal of DU at Energy*Solutions* satisfies the performance objectives of 10 CFR 61 and complies with all current state and federal regulatory requirements.

  We acknowledge the September 21, 2007 technical report prepared by the Institute for Energy and Environmental Research (IEER), that was attached to the HEAL Utah comments of the same date. However, no further response is required in light of the Division's discussion and findings, above.

REFERENCES

NRC 2006. U.S. Nuclear Regulatory Commission (NRC), Memorandum and Order, CLI-06-15, Docketed June 2, 2006.

NRC 2005a. NRC, Memorandum and Order, CLI-05-05, Docketed January 18, 2005.

NRC 2005b. NRC, Memorandum and Order, CLI-05-20, Docketed October 19, 2005.

Makhijani 2007. Makhijani, Arjun. Regulatory and Health Protection Considerations in the Re-licensing of the Energy*Solutions* Low-Level Waste Disposal Facility near Clive, Utah, report prepared for HEAL Utah, Institute for Energy and Environmental Research, Takoma Park, Maryland, September 21, 2007.

b. "Incident Reporting, Investigation, and Tracking" Procedure

The license as well as the "Incident Reporting, Investigation, and Tracking" procedure document should be revised to indicate that incidents involving higher than expected radiation exposures should require re-assay of the radioactive material involved prior to disposal.

- **Division Response:** Waste materials accepted for disposal are verified to be consistent with the waste characteristics listed on the manifest. This is accomplished through routine inspections of arriving waste shipments and by periodic generator audits. If actual waste characteristics are found to differ materially from information on the manifest, the waste is not accepted for disposal.

  Waste characteristics are determined by the generator and their accuracy is verified through generator audits. If a particular waste shipment arriving at Energy*Solutions* is found to be inconsistent with the manifest, the waste can not be re-assayed and re-manifested by Energy*Solutions*. The manifest is the legal description of the waste, prepared by the generator, and it can not be modified by Energy*Solutions* without the consent of the Generator (URCR R313-15-1006, "Transfer for Disposal and Manifests").

  Using radiation exposure rate as a basis for requiring re-assay would be an undependable approach to assessing acceptability of the waste. The regulations the Division is authorized to enforce addresses radionuclide concentration limits but not exposure rate (URCR R313-15-201. "Occupational Dose Limits for Adults" and URCR R313-15-1008 "Classification and Characteristics of Low-Level Radioactive Waste"). Generators, the Licensee, and the Division must accurately determine radionuclide concentrations and must report them in the shipping manifests that accompany waste received at the Clive facility. These manifests and observable characteristics of the containers and waste shipment are carefully examined and all problems resolved before the waste is accepted for disposal at the Clive facility (Energy*Solutions* Procedure SHR-4.1 "LARW/NORM Incoming Shipment Acceptance").

  Should errors be found in manifests that indicate inappropriate quality control on the part of the Generator, the Division's Generator Site Access Program allows the Division to restrict or cancel access privileges (URCR R313-26 "Generator Site Access Permit Requirements for Accessing Utah Radioactive Waste Disposal Facilities"). These program provisions give the Division leverage with the generators and help provide assurance that the manifest information is accurate and its quality properly controlled.

  Radiation dose rates for shipments must satisfy US Department of Transportation (DOT) standards in 49 CFR 173 and are verified before the shipment is accepted. Radiation dose rates for individual containers are reported and independently calculated; Dose rate information is used in planning the disposition and handling of individual containers.

  Should conditions be observed that would prompt reconsideration of the acceptability of an individual container, several actions are available to the Licensee and/or Division to provide additional assurance that waste is disposed of according to regulatory requirements and license conditions. These include:

  - Returning containers or shipments to generators

- Temporarily holding containers or shipments while issues are resolved.
- Dispose of containers knowing that the Division might order it to be exhumed and/or relocated if conditions are found to be inappropriate.
- Initiate Division enforcement action.

The Licensee's procedures and Division's inspection program are adequate to provide assurance that only acceptable waste is disposed of at the facility.

c. Generator Site Access Permit Program

We are concerned that EnergySolutions is able (as under the Waste Generator Access program, as well as other scenarios) to delegate radioactive waste sampling to other entities. This framework creates a situation where mischaracterization of waste can be attributed to external generators or contracted labs while EnergySolutions disposes of waste that is specifically prohibited by its license. We suggest that the license as well as any other procedural documents and paperwork, as required, be revised to require EnergySolutions to assay radioactive waste shipments under State of Utah supervision, with results received prior to disposal. As long as EnergySolutions is not responsible for accurately characterizing the waste coming through its gates, waste ineligible for disposal can and will be disposed here with minimal consequences for EnergySolutions. We find this situation unacceptable. (* See Brent Israelsen, "Envirocare Cited for 'Hot' N-Waste Cargo," Salt Lake Tribune, September 26, 2000. 1,350 cubic feet of Class C waste was reportedly disposed at EnergySolutions' Clive site with no monetary penalty to the company, since, as the author put it, "the errant waste was the fault of the shipper.")*

- **Division Response:** The Division's Generator Site Access Permit Program became effective in 2001 (URCR R313-26 "Generator Site Access Permit Requirements for Accessing Utah Radioactive Waste Disposal Facilities"). The situation referenced in the article took place in 2000, prior to this Program's implementation. The Generator Site Access Permit Program was developed and operates to prevent transport and disposal of ineligible wastes to the licensee's facility.

REFERENCE

Israelsen 2000. Israelsen, Brent. "Envirocare Cited for 'Hot' N-Waste Cargo." Salt Lake Tribune, 26 Sep 2000.

d. Downblending B and C Class Wastes

As Barnwell prepares to close its doors to most of the country's B and C low-level wastes, we are concerned that EnergySolutions as well as waste generators will look for ways to combine hotter Class B, C or Greater-Than-C wastes with other materials or waste to achieve an overall dilution consistent with the regulatory definition of Class A waste. We believe such a scheme would contradict the spirit and possibly the letter of current laws, rules, and guidance governing radioactive waste disposal, and should be specifically prohibited in EnergySolutions' license.

- **Division Response:** Any blending of wastes by waste generators would be regulated by the applicable radioactive materials license held by the waste generator in their particular state or region. Blending of wastes at the Utah disposal facility is subject to the license(s) held by the site. Since the licensee can not receive Class B or C wastes, the issue of the licensee "downblending" Class B or C waste at the Clive site, to achieve Class A waste, is not applicable. Further, the Division policy and rules are consistent with current NRC's policy and rules (NRC 2004), which are generally summarized as: (a) intentional dilution of waste

to alter its classification is prohibited, (b) concentrations of some waste are reduced by the addition of stable fill material to ensure stability of the disposal embankment and through other waste management operations (equipment and facility decommissioning and decontamination), (c) intentional mixing of contaminated material with uncontaminated material for purposes of reduction of contamination level alone is generally unacceptable, but will be reviewed on a case-by-case basis to ensure the application of the ALARA principle is achieved. In general, the Division policy and rules regarding waste classification disallow concentrations (and certainly classification) to be reduced by dilution (US Nuclear Regulatory Commission, "Final Waste Classification and Waste Form Technical Position Papers", May 11, 1983).

REFERENCE

NRC 2004. NRC, "Experience And Information, Relevant Issues, And Other Considerations Supporting The Staff Options Analysis For Appropriateness Of Allowing Intentional Mixing Of Contaminated Soil Under The License Termination Rule", issued as Attachment 2 of SECY-04-0035, "Results of the License Termination Rule Analysis of the Use of Intentional Mixing of Contaminated Soil." 1 Mar 2004.

e. Cover Test Cell

We note with interest the addition of License Condition 28. The requirement for such a substantive corrective action plan for the Cover Test Cell seems to suggest that data collected thus far may indicate that proposed or approved cover designs have failed to meet performance objectives. We thank the Executive Secretary for imposing this corrective action plan as a license condition if such is the case. However, we believe that renewing the license at this time in the absence of a proven cover design may be inappropriate.

- **Division Response:** The Division considers the Cover Test Cell an important project to provide additional confidence that the disposal system will perform as intended over the long term. Originally, the Licensee was required to measure soil moisture characteristics directly from the radon barrier by Part I.I.7 of the GWQD Permit modified on September 10, 1993. Later, the Division agreed with a proposal that this monitoring be conducted on a nearby test pad that would be representative of the cover system design and construction. As a result, a plan for this test pad or Cover Test Cell was required by Part I.I.5 of the Permit modified on October 22, 1998. Again, the purpose of the Cover Test Cell monitoring was to verify if cover system performance is in accordance with the analyzed condition, i.e. the infiltration model predictions that formed the engineering design basis for the facility. Construction of the Cover Test Cell was completed and monitoring began in September, 2001. Later, the Licensee submitted a Cover Test Cell As-Built Report to the Division on January 24, 2002.

  In a letter of April 14, 2003, the Division asked the Licensee to prepare a report of the monitoring data collected from the Cover Test Cell, and submit this information as a part of the License renewal. On October 13, 2005 the Licensee provided this report. Subsequent review by the Division found the reported data to be inconsistent and inconclusive. For details, see the June 14, 2007 SER (p. 155-157). The requirement for further work on the Cover Test Cell is not an indication of poor cover system performance. Rather, it is required because previous monitoring data from the Cover Test Cell proved inconclusive, most likely because of instrument failures, quality assurance issues, or other causes. As a result, more work is required to resolve these issues. After resolution of the concerns, the

Division will make a determination regarding cover system performance. In the meantime it is premature to conclude that the cover system has failed.

3. Comments from Charles Judd (September 21, 2007)

NOTE: The paragraphs quoted from Mr. Judd's comments (listed below in italics) are numbered according to their placement on each page, commencing with the first page of his cover letter, not according to the numbering systems used in his comments. Mr. Judd's numbering systems are not included to prevent confusion. If a paragraph overlaps from one page to the next, paragraph 1 (Para 1) is the first full paragraph on the next page.

a. Judd Page 1

Para 1) I am pleased to submit comments on Energy Solutions proposed license renewal. It was very difficult to review the license renewal because there was no order to the thousands of pages of information that needed to be reviewed. This makes it almost impossible to understand what is really going on with the facility. For example, if you look at all the different documents you will find that there are many different designs presented for the cover of the embankments. Some reports used a 7 foot radon barrier, some a 2 foot radon barrier. Some reports used a 6" filter zone and others used a 24" filter zone. Several different companies provided studies on the cover but they were using different designs. It is obvious that there needs to be some consistency in the design of the facility between the different reports.

- **Division Response:** The Division has received numerous requests for design revisions to various features of the Clive disposal facility. Commencing in original issuance of Groundwater Quality Discharge Permit (No. UGW450005, dated in March of 1991), the required features of the cover system over the LARW disposal embankment have been stated. Initially the radon barrier was 7 ft thick and consisted of clay with permeability no greater than 1.E-7 cm/sec. With Modification #4 of that permit, the radon barrier was revised to consist of 6 ft of clay with permeability no greater than 1.E-6 cm/sec and 1 ft of clay with permeability no greater than 1.E-8 cm/sec.

  By April 1994, the design of the low-permeability layer of the radon barrier over the former non-mobile waste disposal area of the LARW disposal embankment was increased from 1.E-8 to 5.E-8 cm/sec. In October of 1998, the design of the low-permeability layer of the radon barrier over the former mobile waste disposal area was also increased from 1.E-8 to 5.E-8 cm/sec. Subsequently, the thickness of the 6-foot-thick layer of the radon barrier was decreased from 6 ft to 2 ft, after Division review, a September 10, 2003 Statement of Basis prepared by the Division, a public comment period, and a major modification to the Groundwater Quality Discharge Permit approved on October 14, 2003.

  In the case of the LARW disposal embankment, some of the approvals for changes in the cover design were made after much of the cover had already been constructed with previously approved characteristics. In order to begin constructing the revised cover design, a transition from the old design to the new design was necessary. These transitions are defined in drawings submitted to the Division in Appendix G of the revised LRA.

  The Class A disposal embankment was approved with a radon barrier consisting of 1 ft of clay with permeability no greater than 1.E-6 cm/sec and 1 ft of clay with permeability no greater than 5.E-8 cm/sec (in ascending order).

  The Division has reviewed and evaluated each request to revise the cover design to determine whether applicable regulatory requirements and license conditions would be satisfied if the request were to be granted. The review of requested changes to the cover design has involved an iterative process that has culminated in the Division's approval of the current cover design, once the Division had concluded that applicable regulatory and

technical requirements had been met and that the future facility was likely to perform as required by applicable regulations..

While previous cover designs have also been similarly approved, the currently approved cover design is the only one that should be considered currently binding on the Licensee. The latest approved cover design for the Class A and Class A North disposal embankments is found in the State Ground Water Quality Discharge Permit (hereafter Permit), Part I.D.4, and includes the following layers starting with the uppermost and proceeding downward:

- Erosion barrier – 18 inches thick of riprap (Type A for side slopes and Type B for top slopes)
- Upper Filter Zone; Type A Filter – 6 inches
- Sacrificial soil layer – 12 inches for frost penetration
- Lower Filter Zone; Type B Filter – 6 inches, permeability greater than 3.5 cm/sec
- Upper Radon Barrier – 12 inches of clay, permeability 5E-8 cm/sec
- Lower Radon Barrier – 12 inches of clay, permeability 1E-6 cm/sec

The cover system approved for the LARW disposal embankment at the time of that cell's closure is similar to the Class A and Class A North Cells. For details see Part I.D.2 of the Permit. Historically, the LARW Cell design did differ from that summarized above in that the thickness of the radon barrier was once greater, namely 6 feet (including 5 feet of clay with permeability of 1.0E-6 cm/sec and one foot of clay with permeability of 5.0E-8 cm/sec). This change in radon barrier thickness was considered by the Division after receipt of a March 29, 2002 request from the Licensee. After review of supporting information (e.g. infiltration and radon attenuation models, and biointrusion issues), and a public comment period, the Division approved the requested cover design changes on April 29, 2003.

Conclusion of LARW Cell cover system construction was documented in the Licensee's annual as-built report submitted on March 31, 2006. Following review of this report, the Division approved the as-built report by letter on June 12, 2006 and acknowledged proper completion of the LARW cell cover system.

The 24-inch filter zone referred to was a proposal for the Class A Combined (CAC) Cell. However, that proposal was later withdrawn by Energy*Solutions* in a letter of March 16, 2007. Therefore the design change was never approved by the Division.

See response to Judd Page 16, Paragraph 5 regarding biointrusion.

Para 2) I strongly suggest that the cover design by scrapped and that Energy Solutions revert back to the original design for the cover which included a 7' radon barrier. There is no other design that has shown to be affective [sic]. This is shown by the fact that there was faulty data on the cover design cell and that there is no way to show that the new design works. It is also shown by the differential settlement data which shows extreme differential settlement and then a disclaimer by Energy Solutions that their data is faulty.

- **Division Response:** See response to Judd Page 1, Paragraph 1 regarding the cover design.

  The latest data from the Cover Test Cell is not yet conclusive. Conflicting results remain that will be resolved through the implementation of License Condition 28 of the proposed license. The results of the final Cover Test Cell data will be used to determine the

effectiveness of the design and will either validate the design or it will provide the basis for a Division order to revise the cover system design. For related discussion, see Division Response to HEAL Utah Comment 5 in Section 2.e, above.

Unacceptable differential settlement has not occurred, contrary to the claim. The remark that there has been differential settlement of a magnitude of over 1.18 feet in 100 feet (in 6 years) is not correct. One settlement stand at the LARW Cell was observed to have settled 1.18 feet, but that measurement was absolute settlement or "total settlement," not differential settlement. The requirement from the Division is that differential settlement measured horizontally in any direction within a distance of 100 feet from a particular stand should not exceed 2 feet. Total settlement of 1.18 feet, in and of itself, does not indicate or suggest failure or inability to meet performance or design objectives.

Page 53 of the SER discusses the requirement for long-term stability and maintenance of the design slopes for maintaining positive drainage to ensure run-off of precipitation under both normal and abnormal conditions. To ensure clear communication, the two major slopes on the cover need to be defined. Longitudinal slopes are in the primary direction of storm runoff and are responsible for providing positive drainage away from the waste cell. Cross slopes are perpendicular to longitudinal slopes.

Several changes in elevation have been observed on the cross-slopes of the LARW Cell. However, these changes in elevation do not constitute a slope reversal as it applies to run-off. Cross-slope changes are small compared to the longitudinal slope. Run-off and filter drainage is controlled by the longitudinal slope. Changes in elevation along cross-slopes do not increase the potential for ponding on the cell or increasing infiltration into the embankment.

There are two cases where the relative elevations between two adjacent settlement stands on opposite sides of the main ridge (the center brake-line of the LARW Cell [N5 - N6 and K5 - K6]) have changed sense. Because of the interposing ridge, these elevation changes do not constitute a slope reversal as it applies to run-off and do not increase the potential for ponding on the cell or increasing infiltration into the embankment. Instead they indicate that the slope on one side of the main ridge has changed a bit more than the slope on the other side of the main ridge.

The issue of slope reversal is closely tied to the matter of differential settlement. The Division has reviewed both aspects of LARW Cell settlement and concluded that the disposal embankment design provides assurance that the integrity of the radon barrier will not be compromised.

The Division is unable to identify the source of the Commenter's claims regarding faulty data. Should the Commenter have additional substantive information regarding this "faulty data", the Division would be interested in it..

Para 3) I also strongly suggest that the surety be reviewed closely before license renewal because my calculations show that Energy Solutions is at least $32 million short of the amounts necessary to protect the State. The State should be protected in this area as much as possible.

- **Division Response:** Responses to individual surety items are addressed in this document where individual issues are stated. The Division reviews the Licensee's surety report annually to assess its adequacy and to determine what sureties should be provided for the State's protection. Further, the surety amount is adjusted annually to reflect inflation, increases in the amount of disturbed land, changes in engineering plans, addition of new

facilities, closure and stabilization that have already been accomplished, and other conditions affecting closure costs.

The Division has critically evaluated the 2006 surety report submitted by the Licensee to ensure that the issues raised in Mr. Judd's comments are appropriately addressed. This review has also determined the appropriate amount of surety against the costs of closing the facility. Consistent with findings of this review, the Division has required the necessary sureties be provided.

Para 4) I also suggest that the process for waste placement be changed to previous methods. There is obviously a concern about differential settlement and the new methods are not ones that will help. The soil to debris ratio should be at least 3:1, there should be no "canyons" in the cell during construction, there should be no debris in the outer 3 feet of the waste and there should be no debris in the top 50% of the embankment. These are all original requirements that have been changed to save money for the applicant, however at the same time they have created much more risk to environment and the public.

- **Division Response:** We disagree with the Commenter. Specifics for the Divisions findings are found in the following sections of this document.

  (a) Differential Settlement – see response to Judd Page 1, Paragraph 2.

  (b) Soil to Debris Ratio – see responses to Judd Page 5, Paragraph 3, and Judd Page 14, Paragraph 3.

  (c) Debris Zones in Waste – see response to Judd Page 5, Paragraph 3.

Para 5) I have attached a list of comments for your review. In the past 12 months I have submitted other comments that I was told should wait until public comment. With this submission I request that all of these comments also be included as a part of my public comment.

- **Division Response:** The additional comments and responses can be found under "Judd Attachment 1, Pages 24 and 25" through "Judd Page 32" of this document.

b. Judd Page 2

Para 1) It is clear that this license renewal cannot be completed until significant updates and changes have been made by the applicant. I would hope that the public would be able to again comment on the updates and changes before the license renewal is finalized.

- **Division Response:** The Division disagrees, in that it has not identified any substantive issues that would justify not renewing the license at this time.

c. Judd Page 3

SECTION 1

Para 1) It is clear that the June 14, 2007 SER is already outdated and does not include all of the review necessary to determine if the facility is "ensuring that all applicable regulatory requirements are currently being satisfied." Most of the information reviewed is from 2005 and before. Since that time there have been many changes to the facility including a whole new direction in the volumes and types of waste accepted, the ownership and philosophy of the company, the design of the facility and other such major items. At the least, the SER needs to be updated to include all of the pertinent information. During the remainder of these comments the reader will see many instances where the information reviewed is not up to date.

- **Division Response:** The Division's primary means of demonstrating the Licensee's compliance with regulatory requirements and license conditions lies in the implementation of its inspection program. Division inspectors conduct their inspections and oversight activities regularly and following a defined and documented program. Through its inspection program, the Division examines the extent to which the Licensee satisfies its license requirements and other commitments based on current information and inspectors' individual observations. Where deficiencies have been observed, the Division's inspection activities have resulted in enforcement actions to correct deficient conditions. Through the Division's inspection program, it develops ongoing assurances that the facility is being operated and constructed so as to protect the workers, human health, and the environment.

  Although conditions and operations at the facility are not identical to what they were under the original license, they lie within the "original envelope" that was defined by the original license, or within the "extended envelope" defined by the Division's licensing actions since issuance of the original license. Each licensing action has been taken only after:

  - The Licensee has submitted documents, data, analyses, and other information that the Division judges to be adequate to justify the requested action
  - A "Statement of Basis" or "Safety Evaluation Report" has been prepared for major changes and issued for public review and comment.
  - Considering and resolving comments received from the public as documented in a "Public Participation Summary".

  The Division has also reviewed and accepted other changes to operating and construction procedures that do not require the license to be revised, again only after the Licensee has justified to the Division's satisfaction that the requested action satisfies applicable regulatory requirements and license conditions.

  The comment suggests that the many changes that have been made since the latest submission in the renewal process have not been reviewed. This assumption is incorrect. The Division reviews each request for change that has the potential to impact the safety of facility workers, the health of the public, or protection of the environment and assures that applicable regulatory requirements and license conditions are, or will be, satisfied before it grants the request. Such changes would involve facility configuration, waste types to be received, and operating and construction procedures. The following are examples of requested changes that the Division has reviewed concurrent with its review of the license renewal application:

  - Class A North Disposal Embankment
  - Class A Combined Disposal Embankment (though withdrawn from consideration)
  - Intermodal Container Waste Building
  - New Access Control Building
  - Shredder Facility
  - Rotary Dump Facility
  - East Side Drainage Project

- Northwest Evaporation Pond

The review of these requested changes has involved consideration of the impacts each of these facilities could have on the overall performance of the facility in terms of facility workers' safety, health of the public, and protection of the environment. The Division has evaluated each of these requests and imposed the conditions it judged necessary to provide required protections. Review and approval of these facilities was performed by the Division in parallel with review of the LLRW License renewal application.

Para 2) *It is clear that the June 14, 2007 SER is already outdated and does not include all the review necessary to determine if the facility is "ensuring that all applicable regulatory requirements will likely continue to be satisfied." Most of the information reviewed is from 2005 and before. In many situations the Applicant admits that they are either violating or close to violating certain requirements. Into the future the applicant has not provided the information necessary to ensure that the regulations will be met in the future. For example, there has been no way to verify if the new cover design works as discussed in Section 6.4 (this is years after it was first approved), there has been differential settlement in their previous embankment of over 1.18 feet over 100 feet (in 6 years) with the new limit being 2 feet over in 1000 years. Instead of trying to limit differential settlement in the new embankment there has been a relaxation of the requirements in the new cells. During the remainder of these comments the reader will see many instances where the performance of the facility will most likely fail in the future. With the current information available it is most likely that the facility will fail in the future.*

- **Division Response:** We disagree with the Commenter. Specifics for the Division's findings are found in the following sections of this document.

  (a) Cover Design – see response to Judd Page 1, Paragraph 1.

  (b) Cover Test Cell – see response to Judd Page 1, Paragraph 2.

  (c) Differential Settlement – see response to Judd Page 1, Paragraph 2.

Para 3) *This section states that "The Division's LRA review observations confirm that the assumptions and projections that formed the basis for previous regulatory decisions are being realized." This statement cannot be completely correct because of many situations where the projections and assumptions are not being realized, such as: a) the cover test pad has not performed as assumed, b) the waste projections are significantly different than previously recorded, c) waste placement is done differently than in the past, 4) there is no rock source currently available that meets the gradation and a rock score of 50 and many other items that have changed which greatly affect the basis or the regulatory decision making process.*

- **Division Response:** We disagree with the Commenter.

  (a) Cover Test Cell – the Division's concerns for the Cover Test Cell (CTC) focus on monitoring inconsistencies and inconclusive data. It is premature to conclude that the CTC or disposal cell cover systems have failed. For more information, see response to Judd Page 1, Paragraph 2.

  (b) Waste Projections – the waste projections used previously were conservatively high. These conservatively high estimates were used in preparing projections of the facility's long-term performance, resulting in overstated releases from the facility and

overstated doses to facility workers and members of the general public. The resulting projected releases and doses are acceptable and within applicable regulatory limits. Refer also to the Division's response to Judd Page 7, Paragraph 9 regarding types of waste received and disposed of.

The actual receipt activity levels have been much lower than initially projected. The actual receipt volume rate is constrained only by the rate at which the licensee is able to perform disposal activities. Actual long-term releases and doses are now projected to be lower than originally projected, providing greater confidence that the facility will perform as required.

(c) Waste Placement Activities – the waste placement activities have evolved over time. In each case, the licensee has informed the Division and applied, as appropriate, for license amendments. As noted, the Division encourages operational improvements that will ultimately improve health and safety.

(d) Available Rock Source - several letters have been exchanged regarding the issue of rock source (including BLM 2007, ENERGYSOLUTIONS 2007, and UDRC 2007). In summary, the rock source the Licensee has previously relied upon is no longer available to the Licensee. In response, the Licensee has opted to use an alternate rock source, the Grayback Hills Gravel Pit 24 (Pit 24). The Licensee has demonstrated through appropriate analyses that the rock taken from Pit 24 will satisfy all applicable requirements (including that the rock must have a minimum score of 50 following guidance presented in Table D-1 of NRC 2002) and that sufficient rock will be available to support complete facility closure. For details, see Division memorandum of January 18, 2008.

The primary difference between the two sources is that Pit 24 is significantly further from the licensed area than the previously relied upon rock source. To compensate for this increased haul distance, Energy*Solutions* has added $2,968,908 to the previously approved surety. The Division has reviewed this increase and approved it; see Division letter of December 21, 2007.

REFERENCES

BLM 2007. Bureau of Land Management, Letter from David H. Murphy to Dane Finerfrock of the Utah Division of Radiation Control, November 9, 2007.

Energy*Solutions*. License No:UT2300249; Revised Annual Surety Review, November 7, 2007.

Energy*Solutions*. Radioactive Materials License No. UT 2300249 – Grayback Hills Gravel Pit 24, November 21, 2007.

Energy*Solutions*. Radioactive Materials License No. UT 2300249 – Grayback Hills Gravel Pit 24, December 6, 2007.

NRC 2002. "Design of Erosion Protection for Long-Term Stabilization", US Nuclear Regulatory Commission, NUREG-1623, September 2002.

UDRC 2007a. Utah Division of Radiation Control, "License #2300249, 2007 Annual Surety Review: Deadline for Resolution of Cover Borrow Sources, Dane L Finerfrock to Tye Rogers of Energy*Solutions*, November 6, 2007

UDRC 2007b. Utah Division of Radiation Control, "Evaluation of Energy*Solutions* Submittals Related to Grayback Hill Pits 24 (11/07/2007, 11/21/2007, 12/06/2007, &

12/10/2007)", Memorandum from Johnathon Cook to Loren Morton, December 20, 2007.

UDRC 2007c. Utah Division of Radiation Control, "Energy*Solutions* Submittals Dated 11/07/2007 & 11/21/2007 and Emails Dated 12/06/2007 & 12/10/2007, Revisions to the 2006 Annual Surety Grayback Hills Gravel Pit 24: UT2300249 Surety Conditional Approval", Letter to Sean McCandless of Energy*Solutions,* December 21, 2007.

UDRC 2008. Utah Division of Radiation Control, "Assessment of Cover Materials IN Grayback Hills Gravel Pit 24", Memorandum from Charles Bishop to Loren Morton, January 18, 2008.

Para 4) This section states that "The LRA relies upon previously developed and submitted reports and evaluations, with little attention to demonstrating that current conditions are acceptable and satisfy applicable regulations." Even though this statement is true, it is very troubling. It seems that the very purpose of license renewal is to update items to their current situation not to rely on old submittals and reports. It is very evident that current conditions are not acceptable and the current conditions of the facility should be considered when renewing a license of such importance. The review should be updated to include current conditions.

- **Division Response:** The Commenter ignores the additional text in Section 1.2 of the SER which discusses the inspection program and the focus of the LRA review. "The scope of the Utah Division of Radiation Control's (Division) LRA review observations are consistent with Division's inspection program but will complement (without duplicating the scope of the Division's inspection program) by demonstrating whether the facility is being constructed and operated consistent with assumptions made in preparing and other bases present in calculations, evaluations, reports, and procedures that have been previously reviewed and approved. Division's current inspection program does not address this aspect." The LRA review did not ignore current operations.

d. Judd Page 4

*Para 1) This section reports that the review includes a concentrated effort in the area of "LLRW Financial Assurances." In fact it seems that there was very little review in this area, instead this review seems to have been left up to the Division only. In fact the SER states only that the financial requirements "have been **or will be met**". Questions were raised to the Division about the 2006 Surety and there are many huge concerns with the 2007 Surety. None of these issues have been addressed and yet the response seems to be that at some point "they will be met". The requirements of the Surety need to be met now, before the license is renewed. It is clear that the Division would not report that the requirement for waste leaving the site will be met in the future, but not now. Why would some requirements be allowed to meet in the future, but not now?*

- **Division Response:** Review of the Licensee's surety is an annual, ongoing project for Division staff. Therefore, it is evaluated at least 5-times more often than other elements left to the License renewal cycle. For additional information, see response to Judd Page 1, Paragraph 3.

SECTION 2

Para 2) This section is very clear that this review does not include any review of the 11e.(2) license. This is understood, however EnergySolutions continues to promote the thought that they have the authority to dispose of Class A wastes in the 11e.(2) cell. The SER needs to be clear that the

only places where Class A waste can be disposed of is in the Class A cell and the Class A North cells. For the purpose of this review that would mean that these are the only cells approved or even contemplated. With this in mind the capacity at the site should be listed as about 2 million cubic yards. It is very important that an accurate capacity of the site is known since there are many generators trying to use the site and a need to leave some capacity for proper closure of the site.

- **Division Response:** The Commenter is correct; the License renewal in question is for the LLRW operations at the site. Renewal of the 11e.(2) disposal license will be considered at a future date under a separate action. Currently the licensee is not authorized to dispose of Class A waste in the 11e.(2) disposal cell, as restricted by Condition 6 of their 11e.(2) Radioactive Material License (No. UT2300478). The physical location of the 11e.(2) Disposal Cell is fixed by latitude and longitude coordinates in Table 3 of the State Ground Water Discharge Permit, No. UGW450005 (hereafter Permit). The location and total capacity of the 11e.(2) Cell is limited by the approved engineering design drawings, referenced in the 11e.(2) License Condition 9.3 and cited in the Permit, Part I.D.3 and Table 2B. . Further, LLRW waste disposal is limited to the LARW (now closed), Class A, and Class A North Cells, as per Condition 40 of the LLRW License (No. UT2300249). Disposal capacity at these two cells is limited by the approved engineering drawings cited in Part I.D.4 and 5, and Tables 2C and 3 of the Permit.

  Adequate disposal capacity exists at the facility currently, as shown by the Division's review of the 2006 annual surety and annual as-built reports. From the Division-approved 2006 Annual Surety Report, the maximum Total Closure Volume required for 3rd Party Closure would be 1,031,364 cubic yards. In comparison, the Division-approved 2006 Annual As-Built Report, shows the remaining disposal cell capacity at 3,699,375 cubic yards.

SECTION 2.2

Para 3) As discussed in the remainder of this response, there are several significant items that demonstrate that the applicant is not conducting all activities under programs that would protect the health and safety of the facility workers, the general public and the environment. The proposed license itself states that the applicant is failing in the cover test pad verification and in proper human resource management issues. These are issues that the license says the applicant is supposed to answer in the future but these issues should be answered now before the license is renewed.

- **Division Response:** Regarding the Cover Test Cell, please see response to Judd Page 1, Paragraph 2 regarding data from the Cover Test Cell. As for human resource management, the proposed license makes no statements regarding adequacy or failure of these issues.

Para 4) The applicant has not provided financial assurance sufficient to fund the safe closure of the facility, as well as the long term monitoring and maintenance of the facility. On what grounds does the State believe that there are sufficient funds? Below is a summary of concerns with the current surety. Cedar Mountain also submitted a list of concerns to the State several months ago which listed concerns with the 2006 surety. All of these concerns need to be addressed and corrected before it is stated that there are sufficient funds.

- **Division Response:** The 2006 surety evaluation report by the Licensee was approved by the Division on June 1, 2007. Evidence of full funding of the surety was provided by the Licensee in a submittal dated July 23, 2007. For additional information, see response to Judd Page 1, Paragraph 3 regarding surety review.

Para 5) Problems with 2007 Surety –

The Surety is in place to "protect the State of Utah from having to provide funding for the closure of EnergySolutions LLRW disposal facility". To do this there are many factors that need to be considered.

- **Division Response:** No response required.

e. Judd Page 5

Para 1) It makes sense that the State would want to be somewhat conservative in the calculations so that the citizens of Utah do not have to foot the bill at the end of the project. The surety requires that any extra monies will be given back to EnergySolutions, so it makes sense to have a little bit extra instead of a lot less money in the account.

- **Division Response:** We agree that conservative calculations are needed.

Para 2) For the 2007 review it is important to calculate all of the steps necessary to close the site anytime up until August 2008. The first thing to calculate is the type of cell that would need to be constructed to close the site properly. As License Condition limits the open cell area within the Class A and Class A North disposal embankments where the waste disposal/placement has or may occur. Looking at this requirement and Figure A which is EnergySolutions area of temporary cover you can see the areas that have been opened for placement of waste or areas where waste placement may occur. The yellow line shows the limits of where waste would need to be placed to close the facility.

- **Division Response:** We agree that a detailed evaluation of all necessary closure steps is important in review of each annual surety evaluation report. However, upon receivership, the Division will not operate the facility for commercial purposes, but instead will work to expedite closure of the site. For this reason we disagree with the Commenter that the surety needs to include steps and costs for future activities, beyond the date of insolvency.

  As for the type of cells to be constructed, conceptual closure plans were provided by the Licensee during Division review of the 2006 surety report (see March 5, 2007 Energy*Solutions* submittal, Engineering Drawing 07001 V1, Rev. 0). Similar conceptual closure plans will be required of all future annual surety reports.

Para 3) This is at least how big the footprint must be if you consider the following: 1) You need to keep at least 300,000 cubic yards space for site cleanup (much more for proper placement of debris: see other comments about the 1:1 ratio change); a better estimate would 500,000 so that there is more soil with debris 2) between now and august 2008 you could receive up to 300,000 cubic yards of waste 3) you need 100,000 cubic yards for wastes that are in storage, 4) debris cannot be placed in the top foot or bottom foot (this depth is way to small when you consider that the embankment could settle 4 feet; see other comments) 5) debris should not be place in the top half of any embankment (see other comments), 6) large components and cwf should be placed in bottom lifts, 7) there is limited amount of space in the Class A cell: less than 700,000 cubic yards as of today.

- **Division Response:**

  (a) Site Cleanup Volumes – in fact, the 2006 annual surety evaluation, approved on June 1, 2007, includes more than 331,000 cy of disposal embankment capacity dedicated for: 1) soil and debris from decommissioning activities of on-site facilities (~258,000 cy), and 2) commercial LLRW wastes held in storage at the site at the time of

insolvency (73,000 cy). These volumes were arrived at after consideration of both proportions and current CQA/QC Plan disposal requirements for debris. For more information on the 1:1 debris ratio, see Division response to Judd Page 14, Paragraph 3.

(b) Future Waste Receipts (Prior to August, 2008) – the purpose of the surety is to provide sufficient funds to bring the facility to closure at the time of insolvency. Should that happen, the Division will stop incoming shipments of waste and not operate the facility for commercial purposes. Therefore, it is inappropriate to attempt to estimate any volumes of waste that might be received beyond the date of insolvency. Any such speculation is beyond the scope of the surety. For additional discussion of waste projection, see response to Judd Page 3, Paragraph 3.

(c) Wastes in Storage – the currently approved surety (2006) is based on a maximum storage limit of 73,000 cy of waste held on-site in storage, not unloaded, awaiting final disposal at the time of insolvency Further, the Division conducts periodic inspections to ensure that these limits on maximum storage volumes are not exceeded. In the event that inspections find these storage limits to be exceeded, enforcement action is taken by the Division.

(d) Debris Placement – we agree that the top foot and bottom foot of the waste form needs to be debris-free, in order to ensure integrity of the underlying clay liner and overlying clay radon barrier. This concern is addressed under the engineering re-design cost element defined in License Condition 73.B and accounted for under Section 303 of the approved 2006 surety. Recent improvements have also been made in embankment construction methods that include placement of a temporary cover and settlement monitoring to verify waste consolidation and stability before construction of the final radon barrier and other overlying cover system layers (see CQA/QC Plan, Revision 20).

(e) Large Components – we also agree with the comment, and these concerns are also addressed and accounted for under the engineering re-design provisions of License Condition 73.B and Section 303 of the approved 2006 surety.

(f) Limited Class A Cell Space – additional disposal space is also available in the CAN Cell, which was considered by the Licensee in the conceptual closure plan provided by the License during Division review of the 2006 surety report (see March 5, 2007 Energy*Solutions* submittal, Engineering Drawing 07001 V1, Rev. 0). Further, the final configuration of the disposal cells, at the time of insolvency, will be determined as a part of engineering re-design, which is already accounted for License Condition 73.B, and Section 303 of the approved 2006 surety.

Para 4) You must also consider that it is not possible to build a final cell that has concave edges. The final cell will need to be square or rectangle. Odd corners would create issues with runoff from the top of the cell. The cell may even have to be bigger than what is suggested here, but using these numbers the cover space needed would need to be

Class A	*2260 x 1410 = 3,186,600 s.f.*
Class A North	*1100 x 600 = 660,000 s.f.*
Total Open Now	*3,846,600 s.f.*

- **Division Response:** The maximum open area of both exposed waste and unfinished cover system at the facility is limited by License Condition 11 to 3,650,000 sf. The 2006 surety

accounts for construction of the cover system on this maximum allowable open area. If insolvency should occur, current embankment geometry and conditions will be considered, and engineering re-design made of the final disposal embankments. This is provided for under License Condition 73.B and Section 303 of the approved 2006 surety.

Para 5) To be conservative it would be best to use at least 4,000,000 square feet of cover system for the waste itself and then add more quantities for the ditches and other perimeter features.

- **Division Response**: We disagree. The 3,650,000 sf value is already set by License Condition 11. Facility compliance with this requirement is evaluated each year during the Division's review of the Annual As-Built report for the embankments, required by Part I.H.6 of the Permit. If non-compliance with this requirement is detected, enforcement action is taken by the Division.

Para 6) There is also a list of areas where there are obvious lower numbers than what is included in the current surety. For example:

- **Division Response:** No response required.

Para 7) The amount of soil required to be cleaned up around the two rollovers is way to low. The amount of soil that will be removed will be much deeper than 6" in these areas. The rollover was cleaned up once before after the Vitro project and the depth of excavation was often 8 feet, not 6 inches. Add $150,000.

- **Division Response:** The current approved surety is based on an average soil cleanup depth of 6-inches. This is based on the assumption that:1) waste at the rollover facilities is managed over concrete surfaces, and 2) wind dispersion will be the primary means of contamination there. The Division has considered the Vitro experience and cannot identify any plausible means by which soil could be contaminated to a depth of 8 feet. If new information becomes available to indicate that a different assumption would be more suitable, this item can be reevaluated in the Division's review of the subsequent annual surety report. In addition, unexpected conditions such as locally deep soil contamination can be managed under the contingency portion of the 2006 approved surety (Section 302).

f. Judd Page 6

Para 1) Portions of the new administration building may need to be disposed of after years of operation. Add $150,000.

- **Division Response:** The new administration building is outside of the licensed area (Section 32) and is not involved in receiving, processing, or using radioactive material. Since this building is not inside the licensed area or involved with receiving, processing, or using radioactive material, it represents no potential liability to the State and is not considered in determining the amount of sureties that should be provided.

Para 2) The rail line outside of the controlled area should not be assumed to be clean. Rail cars have been on the tracks when they have leaked. This area should be considered a potential area of contamination. Some must be added to clean tracks. Add $50,000.

- **Division Response:** The 2006 surety for disposal of the rail line outside of the controlled area is based on the rail line not being contaminated. The rail line is considered clean due to annual radiological surveys of the rail line and underlying ballast performed by the Licensee, and decontamination of specific areas as required.

Para 3) The area north of the new rollover but outside the controlled area has been contaminated with windblown materials. This area has been disturbed and contamination is further disbursed but will need to be cleaned. This type of windblown contamination should be accounted for at different places around the outside of the controlled area. Add $200,000.

- **Division Response:** The current rollover is a completely enclosed structure that controls and minimizes releases to the atmosphere and to adjacent land areas. Dust control measures are currently in place to reduce windblown materials. Monitoring shows some minor releases that are within acceptable limits. The Division disagrees with the suggestion that $200,000 should be provided for cleanup of windblown contamination.

Para 4) There are piles of materials on the inside and around the outside of the section 32 that will need to be restored to natural grades. EnergySolutions must restore the grade to natural grade all around the site. Costs should be included to move these piles. Add $50,000.

- **Division Response:** Money has been included in the surety for the restoration of grade within Section 32. The proposed revised License Condition 32 will require the evaluation of the restoration of grade in other nearby areas outside of Section 32, with an appropriate action to be decided by the Division in the near future.

Para 5) The depths of clean up will be much more than 6" in many areas. This is known from the clean up of the Vitro project in the same area. Contamination often penetrates lower than 6" and is also "pumped" into the lower soils by equipment running over the soil It is also hard to only clean up 6" with most equipment. Extra soils are almost always taken when heavy equipment is used. Add $250,000.

- **Division Response:** See response to Judd Page 5, Paragraph 7, above, regarding the currently approved 2006 surety.

Para 6) It is absolutely unacceptable to consider that equipment can be size reduced by 50%. There is no way to size reduce or cut up a locomotive. In fact the amount of space that is taken up by all of this equipment will most likely be more than actual volume of the equipment. There should be no size reduction for equipment. Equipment cannot be sized reduced very easily and a CLSM pour with most equipment will be hard to complete. The cost for disposing of equipment is too low. Where in the embankment can you place this type of material when it is some of the last material to be placed. Double CLSM for this item, Add $1,300,000.

- **Division Response:** The size reduction factor is based on a gross average of all the equipment used. Equipment to be disposed of at the facility will vary widely, ranging from golf cart and scissor lifts to locomotives. While it may be difficult or infeasible to size reduce some specific items, the size of the majority of the equipment can be significantly reduced, particularly the smaller sized equipment.

Para 7) A 4% inflation factor should be put on all costs after the time all the waste is placed because of the requirement that the cell must sit for 3 years before the cover can be placed. The State would have to wait two years before it can place the final cover over clean up wastes. Add $600,000.

- **Division Response:** Inflation calculations are consistent with NRC guidelines found in the NUREG-1757 Consolidated NMSS Decommissioning Guidance (NRC 2003).

REFERENCE

NRC 2003. NRC. "Consolidated NMSS Decommissioning Guidance: Financial Assurance, Recordkeeping, and Timeliness" NUREG-1757 Volume 3. September 2003.

Para 8) The potential for surcharging is much more than a strip 500 feet long. The area along the canyon in the Class A cell plus all of the areas along edges of the CWF and large component areas are 1000's of feet of transition between waste types. This area should be increased significantly. Add $500,000.

- **Division Response:** The Division has determined that surcharging has the benefit of accelerating the consolidation process, but it is not required. Surcharge will be limited to the 25,000 sf accounted for in the surety. In the event of third party closure, the Division has the option to wait for sufficient settlement to occur before construction of the final cover system.

Para 9) Monies need to be included to cover costs of future corrective actions. There have already been many instances where corrective actions have been needed. These include times when ridges are indentified in the cover which will redirect water flow; groundwater samples have shown elevated levels on contaminants, windblown materials, ineffective test pads, etc. History has shown a large number of these corrective action situations already. It is reasonable to assume that these types of corrective actions will continue into the future and will need to be paid for by someone. Add $2,000,000.

- **Division Response:** The Division can only ensure that the requirements of the regulations for which it is responsible are met. Currently, these regulations require that the Licensee provide sureties to cover the costs of facility closure and maintenance and monitoring during the "institutional control" period following facility closure and a short post-closure observation period. Beyond this, regulations do not require the Licensee to provide sureties to cover the costs of future corrective actions. However, these are the concerns for which the Perpetual Care Fund is designed to manage.

g. Judd Page 7

Para 1) Costs should be included to fill the huge holes in Section 29 since the applicant has yet to show that they will have no affect on the site, long term. Add $700,000.

- **Division Response:** This issue is to be addressed in the proposed License Condition 32, which will require evaluation of the restoration of grade in areas outside of Section 32. After review of this evaluation, appropriate action will be taken by the Division.

Para 2) The costs to cut up the rollovers are extremely low. The costs to make these materials acceptable for size reducing and disposal will be extensive. Add $200,000.

- **Division Response:** Current approved surety includes current cost to dispose of rollovers, including size reduction. If new information becomes available, this item will be reevaluated in the subsequent annual surety review.

Para 3) The clay material used for radon barrier is getting hard to find. To obtain this material the applicant will need to have longer haul distances. Add $500,000.

- **Division Response:** This item is evaluated in each annual updated surety reviews. The approved 2006 surety reflects current conditions.

Para 4) The applicant has a permit for only 10,000 cubic yards of rock. This rock will cost about $3 more per cubic yard to haul because it is about a 30 mile round trip. This rock may not meet the

requirements of the license anyway. The BLM has said it will not be allowing new pits in the area. Other people needing rock in the area have been considering Wendover. To haul this rock will cost at least $15 more per cubic yard. Add $10,000,000.

- **Division Response:** A new gravel source has been located by the Licensee in Section 24, T. 1 N. R. 12 W, approximately 7 miles north of the Licensee's facility. As a result, the 2006 surety has been adjusted accordingly. For additional information, see response to Judd Page 3, Paragraph 3 regarding rock source.

Para 5) The open area that would need to be closed as of today is at least 4,000,000 square feet instead of 3,650,000. All of the cover items would need to be increased by 10%. Add $1,000,000.

- **Division Response:** We disagree. The current area of waste embankment that is open, i.e., without a completed cover system, is less than the License limit of 3,650,000 sf. For additional information, see response to Judd Page 5, Paragraph 4.

Para 6) The current cover system has not been approved. The test pad is showing that the proposed cover may not work. With all the problems with differential settlement, biointrusion, failed test pads, possible frost affects, etc the State should at least assume that the radon barrier in the cover should be 4 feet instead of 2 feet. A 7 foot radon barrier is the one that is used by other facilities and for the LARW. For surety purpose the radon barrier depth should be doubled until an approved, properly functioning cover can be developed. Add $3,000,000.

- **Division Response:** We disagree. The Licensee has an approved cover system design. We do agree, however, that the test pad monitoring data has been called into question, and is scheduled for further evaluation. License Condition 28 of the proposed license requires that this issue be pursued and that the performance of the proposed and approved cover system confirmed. For additional information, see responses to Judd Page 1, Paragraph 1 and Judd Page 1, Paragraph 2.

Para 7) These items add up to an additional $20,650,000 which brings that Direct Costs to approximately $47,000,000. Indirect costs are approximately 51%, bringing the total to approximately $70,500,000. Items 400-502 add approximately $7,000,000. It is roughly estimated that the total surety should be $77,000,000 instead of the amount in the current surety which is $45,000,000.

- **Division Response:** We acknowledge the comments, but disagree with the basis for reasons we have listed above. The Division believes the currently approved 2006 surety is sufficient.

Para 8) A more realistic value for the surety shows that EnergySolutions should add $32 million to the amounts currently in the LARW surety.

- **Division Response:** We acknowledge the comments, but disagree with the basis for reasons we have listed above. The Division believes the currently approved 2006 surety is sufficient.

Para 9) The type of material that is accepted at EnergySolutions is significantly different than the wastes that were accepted five years ago. The amounts and types of wastes should be spelled more clearly before any of the work begins in licensing such a facility. EnergySolutions has taken up to 25 million cubic feet of waste in one year, the majority of which would be considered soil. EnergySolutions current proposal is for a facility that would only take 5,000,000 cubic feet a year, which would be large amounts of debris, containerized waste, and

large components. EnergySolutions should provide a break down of estimated types of waste and the quantities of these types of wastes that will be accepted over the next five years. The major problem is with the percent of debris vs soil that is being accepted.

- **Division Response:** We agree that the types and characteristics of waste already received and expected for disposal in the future is wide ranging, as outlined by License Condition 7.A. Since wastes received are limited to Class A LLRW materials (see License Conditions 9.A and B), waste types, physical form (e.g., soil, debris, large objects, etc.) and proportions, are not critical in and of themselves, so long as adequate engineering controls are provided to ensure construction of a stable embankment. As a result, engineering design, material placement methods, equipment, and quality assurance / quality control measures are key for construction of both the waste form and the cover system.

  The total amount of LLRW acceptable at the Clive facility is constrained by the approved engineering design of the disposal embankments, as referenced in the License and Permit. The annual LLRW receipt rate is not constrained by license condition nor by any regulatory requirement for which the Division is responsible.

h. Judd Page 8

Para 1) It is understood that EnergySolutions is currently seeking an exemption from the NRC to accept large components into the site that have not previously been allowed at the site. The effects of this exemption on how these wastes would perform in the cell should be considered in this license renewal.

- **Division Response:** The Division has confirmed with Energy*Solutions* that the latter has made no application to the US Nuclear Regulatory Commission (NRC) for an exemption of the type described in the comment (Rogers, 2007). Energy*Solutions*, with the support of several nuclear utilities, is, however, pursuing an NRC exemption regarding specific requirements listed in 10 CFR 50.82 that restrict the use of power plant decommissioning funds until decommissioning activities begin. Because of this restriction, several plants are currently storing large components such as steam generators and pressurizers at their facilities.

  The exemption request mentioned has nothing whatever to do with changing the acceptance criteria or making the disposal of higher-hazard waste possible at Energy*Solutions*' Clive facility, in that these components, if shipped today, would be Class A LLRW.

  Finally, the regulation of LLRW disposal in Utah is the sole responsibility of the Utah Division of Radiation Control (the Division), by virtue of the NRC's Agreement State Program. Accordingly, the NRC does not have direct jurisdiction over matters involving LLRW disposal in the State of Utah.

  The approval of large component disposal, beyond existing provisions of the license and approved version of the "LLRW and 11e.(2) Embankment Construction QA/QC Plan", is the purview solely of the Division. Any request for exemption from Utah regulations governing LLRW disposal would have to be submitted to the Division. To date, the Division has received no such request and the allegation is unfounded.

REFERENCE

Rogers, 2007. Tye Rogers, Senior Vice President of Energy*Solutions*, LLC, e-mail to Dane Finerfrock, Executive Secretary of Utah Radiation Control Board, November 13, 2007.

Para 2) At this point in time, closure of the site is imminent. With this in mind, a better description of the cleanup waste that will be needed should be included in all the studies. EnergySolutions has suggested they have over 100,000 cubic yards of debris that will need to be disposed plus maybe that much again in stored waste debris. This waste cannot be placed in side slopes and in small areas. A large area in the bottom part of the embankment should be reserved for these types of waste. The effects of how this waste will perform in the embankment should be included.

- **Division Response:** Closure of the facility is a function of the rate of waste receipts and the remaining disposal capacity approved by the Division. Because annual waste receipts are difficult to predict, so to is the closure date for the facility. Disposal volume for facility demolition wastes has been reserved in the currently approved 2006 surety. Final disposition of these materials will be determined at the time of closure. For additional information, see response to Judd Page 5, Paragraph 3.

Para 3) In accordance with Utah Code Annotated 19-3-105, the licensee may not receive Class B or C Waste. This requirement is in question because EnergySolutions has been rumored to tell customers that by different types of manifesting and combining waste streams that some types of B & C wastes can be accepted at the facility. This type of "downblending" is not acceptable. Safeguards need to be included in the license that would prohibit the altering of B & C wastes off site, therefore deeming them acceptable to the site. In other words, B & C wastes need to stay out of the facility and safeguards need to be in place to make sure they do not end up in the facility.

- **Division Response:** Refer to the response to HEAL item 2.d(5) in reference to "downblending."

Para 4) In the actual license, 9-E states that Class A waste can only be disposed of in the Class A and Class A North disposal cells, and in the Mixed Waste cell. At the present time, EnergySolutions is advertising to customers that they can dispose of waste in the 11-e2 cell, which is against their license. Safeguards need to be taken to assure that these wastes are not allowed to be disposed of in the 11-e2 cell, and EnergySolutions should be prohibited from advertising and selling cell space in the 11-e2 cell for waste to be accepted. Before waste could be placed in the 11e.(2) area a license amendment would need to be approved. It is clear that in order to be in accordance with this license there would need to be a separation between the 11e.(2) cell and the new Class A cell. This type of separation needs to be clearly stated in this license.

- **Division Response:** We agree that a license amendment would be required before disposal of any Class A LLRW in the area approved for 11e.(2) disposal. For additional detail, see response to Judd Page 4, Paragraph 2.

Para 5) The open cell area requirements, that is spelled out in Item 11, are in violation at the present time. The amount of area that would need cover if the site were to close right now would be approximately 4,000,000 square feet. A new license should not be allowed until the company is in accordance with this condition. Item 11 needs to be rewritten to include language that will protect the State of Utah from surety overruns. At the present time, EnergySolutions has at least 400,000 cubic yards of waste that would need to be disposed of if the site were to close.

- **Division Response:** We disagree with this comment. For details, see responses to Judd Page 5, Paragraph 4 (maximum open area), Judd Page 4, Paragraph 2 (site capacity), and Judd Page 5, Paragraph 3 (annual surety report).

i. Judd Page 9

Para 1) Settlement data from the previously closed LARW cell indicate that settlement has occurred already, with as much as 1.2 feet. Estimated settlements from reports show that this settlement could be up to 2 to 4 feet. Obviously, if this type of settlement is taking place, then a debris free zone surrounding the waste needs to be more than one foot. If the debris free zone is less than one foot it is likely that debris will puncture through the debris free zone and could damage the radon barrier or other materials. It is suggested that the debris free zone be at least 3 feet around all of the waste.

- **Division Response:** We agree that waste settlement issues are important. However, we disagree with the need to increase the thickness of the debris free layers to 3-feet. For details, see response to Judd Page 5, Paragraph 3.

Para 2) Settlement in the Class A cell and the Class A North cell will definitely be more dramatic than the LARW cell already closed. This is because of the amount of debris in the embankment, the type of waste in the embankment, the use of a canyon type disposal where no waste is placed in the middle of the embankment until very late in embankment construction, and other such factors. Therefore, more settlement will occur in the new cell and precautions should be taken to make sure that there aren't more problems than are already there. A new plan needs to be developed to adjust for the huge amounts of differential settlement that will occur in the two open cells.

- **Division Response:** These waste settlement issues were addressed by a revision to the Construction Quality Assurance / Quality Control (CQA/QC) Plan, Revision 20, approved by the Division on September 21, 2006. For other details, see response to Judd Page 5, Paragraph 3.

Para 3) In the previous LARW cell, waste with debris was not allowed in the top 40% of the embankment. Even with this restriction, settlement on the embankment has been fairly severe. Requirements should be put in place to limit debris placement in the bottom half of the embankment to limit differential settlement.

- **Division Response:** For bulk waste disposal, the debris free zone is currently restricted to the bottom and top 1-foot of the waste form. For other details, see response to Judd Page 5, Paragraph 3. At the Containerized Waste Facility (CWF) disposal of waste in containers is limited to the center of the disposal cell across the bottom half of the embankment.. Additional details can be found in the CQA/QC Plan, Revision 22F, approved by the Division on October 24, 2007.

Para 4) Condition 15 requires that before treatment of either Low Level or Mixed Waste is done calculations must be done to determine that the treated or processed waste is neither Class B nor Class C waste. EnergySolutions advertises that they process and treat the majority of low level debris including compactions, shedding, and other type of volume reduction. Are calculations performed for each waste stream that is shredded or volume reduced in any manner?

- **Division Response:** License conditions and regulatory requirements are subject to inspection by the Division. According to License Condition 15, calculations for the waste stream treatment are performed.

Para 5) EnergySolutions advertises that it can take certain free liquids. How is this possible if they are only to allow for disposal free standing and non-corrosive as reasonably achievable? If people

understand that they have liquids, they should change that fact before they are shipped to EnergySolutions.

- **Division Response:** License Condition 9.G states, "The Licensee may receive, treat, and dispose radioactively contaminated aqueous liquids and liquid mercury as characterized in the waste profile at the mixed waste facilities only, the waste must be Class A LLRW at receipt." Other restrictions for liquid waste receipt, treatment, and disposal are also found in License Condition 16.F.

Para 6) Is a list of all liquids that have been received at the site in the last 2 years available for the public to view?

- **Division Response:** The licensee is required to maintain records of all waste received and disposed at the site. The Division has performed inspections on these records in the past. The records from Division inspections are available for public review.

Para 7) Are there situations where EnergySolutions is shipping waste to itself? If that is the case, certain procedures should be in place to verify that the shipping records are reviewed by an independent person before they are prepared and sent to EnergySolutions. All shipments should be reviewed by an independent official before wastes are sent from Energy Solutions to Energy Solutions. This is especially important when Energy Solutions has been discussing downblending.

- **Division Response:** Internal transfers of waste received at Energy*Solutions* for disposal conform to requirements of the company's radioactive materials license for disposal and operating procedures, all of which have been reviewed and accepted by the Division.

  Refer to the response to HEAL item 2.d(5) in reference to "downblending." The Division is not aware of any downblending activities being performed at the Clive facility. Should the Commenter have substantive information that indicate the licensee is failing to comply with applicable requirements in connection with disposal of Class A waste outside of authorized areas at the Clive facility, the Division requests that he provide details to the Division.

j. Judd Page 10

SECTION 3.00

Para 1) The SER has done a good job of identifying the major issues that need to be identified and resolved. However, it is clear that the issues have not been resolved in a satisfactory manner. For example, the first issue is the characteristics and design of the embankment including the clay liner, waste emplacement, back fill, and the buffer zone and cover system. Obviously this is a big concern with the applicant. What is interesting is the design of the embankment has changed at least two or three times since the initial submittal of the applicant's renewal process. The only embankment design that has been approved properly is one where there is seven feet of radon barrier covered by a proper rock erosion barrier. Since that time, the applicant has changed the depth of the radon barrier several times, changed the filter zone in 2006 to a 24 inch thick type, has changed the shape of the embankment to a super cell and then back to the original design, has changed the depth of the radon barrier down to 2 feet, has tried to demonstrate a cover test pad which has failed, has changed the way it is placing material in a manner that the differential settlement will do significant damage to the cover, and has done many other things to alter the cover design and performance. What is necessary at this time is for the state of Utah to step back and do a comprehensive review of a design that can be

implemented properly. Many of the studies as far as seismic activities, settlement activities, site slope, infiltration, and help modeling were all done with different designs. Obviously, it's not acceptable to have these studies done on designs that are not going to be implemented into the facility. In summary, a specific and final design needs to be developed and implemented after all the proper studies have been done in all the appropriate areas to assure that this cover system is going to work. At the present time, there is really no approved cover design other than a 7 foot radon barrier with a rock erosion barrier. This design only works if the waste is placed in the proper manner including proper compaction and a proper amount of soil with debris so that there is no differential settlement. It would also be necessary to have an embankment that doesn't have canyons or large drop offs in the way that the waste is placed. In summary, the 7' radon barrier should be the one used for right now, including in the surety calculations, until a new design is fully approved. This would mean that the test pad results would need to be rectified. It may be years before this is done; but in the mean time the 7' radon barrier should be implemented.

- **Division Response:** The current cover system has been critically examined by the Division, and found to be acceptable. For details, see response to Judd Page 1, Paragraph 1.

Para 2) Since the time of the original submittal by the applicant the characteristics of the waste to be received, handled, and in place have changed drastically. The volumes have dropped off drastically and the types of waste have turned more to the types of waste that come from nuclear power plants including large components that previously not acceptable to the facility. At the present time, there is an exemption with the NRC which would allow new types of large components to come to the facility. A new summary of the types and volumes waste needs to be developed and used as the input into all of the design work for the license.

- **Division Response:** This concern has been previously addressed; see response to Judd Page 7, Paragraph 9.

Para 3) Another item of concern for the SER was the physical performance of the embankment including effects of cover design on projected differential settlement and consolidation, annual infiltration rates, and effective transit times for water and contaminants to migrate within and under the waste embankment. All of these issues here are the issues that are not resolved because there is not an effective cover design that has been approved and has been verified through a test pad. The differential settlement is the huge concern in as much as the original LARW cell already has differential settlement concerns even though the way that the waste was placed in that embankment was much more conservative than the new Class A cell. The new Class A cell is constructed with a 1:1 ratio of debris to soil, it is constructed with canyons, it is constructed with large amounts of oversized debris, and large amounts of CLSM. These kinds of things have made it so the cover design is faulty. The annual infiltration rates, the transit times, and other things are not modeled properly because they do not consider the damage that will be done to the cover and liner due to differential settlement, biointrusion, frost damage and other such factors.

- **Division Response:** These concerns have already been considered and addressed; see Division responses above to Judd Page 1, Paragraph 2 (differential settlement), Judd Page 1, Paragraph 2 (Groundwater Quality Discharge Permit), Judd Page 1, Paragraph 2 (cover test cell), Judd Page 5, Paragraph 3 (debris-free zone).

  Protection against frost damage was previously addressed by adding a 1-foot thick sacrificial soil layer between the Type A and B filter layers in the cover system. After opportunity for public comment, this design change was approved by the Division in a

Permit modification of October 22, 1998. Further, results of cover analysis indicate that the cover system, as designed and properly implemented, would meet requirements for cover quality. Please refer to Whetstone Associates, Inc., 2000, "Revised Envirocare of Utah Western LARW [Class A] Cell Infiltration and Transport Modeling." These requirements include, but are not limited to, water infiltration and biointrusion.

REFERENCE

Whetstone Associates 2000. Revised Envirocare of Utah Western LARW [Class A] Cell Infiltration and Transport Modeling. July 19, 2000.

k. Judd Page 11

Para 1) Section 3 suggests that there were several unrelated licensing actions that had been requested and granted that were not considered in part of this license renewal. What is concerning about this is that one of the issues that is not really considered in this review is the Class A North disposal embankment, when in reality that is the only embankment that is going to be used for this type of renewal because within the next year or so the Class A cell will be filled and the remaining waste will need to go in the Class A North disposal embankment because there is no other place to put the waste. So, the fact that they are not considering Class A North disposal embankment makes this license renewal application almost moot. This license review needs to be redone and the Class A North embankment needs to be the main focus of the review.

- **Division Response:** The Class A North (CAN) disposal cell design was critically evaluated by the Division, and found to be functionally equivalent to the Class A Cell. These findings were documented in an April 11, 2005 Statement of Basis. After public comment, CAN Cell design was approved by the Division in a June 3, 2005 Permit modification. Later, on November 14, 2005, the Division updated License Condition 9.E to reflect CAC Cell disposal in License Amendment 22A. The Licensee's June 20, 2005 revised LRA made multiple references to their CAN Cell design submittal and the on-going license amendment process. The process of review used for the CAN was similar to the review process used for the license renewal application. Due to the overlapping time frame, the Division is satisfied the CAN Cell review is sufficient, and explained as much in the June 14, 2007 SER. The Division does not feel repeating the CAN review at this point will reveal any additional information.

SECTION 4.

Para 2) The interviews that were completed for this license renewal were done in April 2005. Though this data is valuable, it is necessary to do new interviews now that is two and half years later. During the previous interviews, the company was in a transition phase between old management and new management and the real direction of the company and the philosophy of the company would have been from the previous ownership. Interviews should be done now to update the position of the employees that are in the field and the philosophies that are being incorporated.

- **Division Response:** Conducting interviews is by no means a necessary activity in the review of the license renewal application. In fact, the interviews conducted in 2005 grew out of the Division's desire to do something more than simply review written submittals. Useful information did indeed result from these interviews, as indicated in a few new license conditions of the proposed revised license. However, to suggest that they must be conducted before the license renewal process can be completed is erroneous.

Moreover, the Division ensures compliance, in part, through its ongoing inspection program. Interviews and inspections are implicit in this compliance process. These interviews and inspections allow the Division to assess the extent to which facility workers are informed and complying with existing requirements and procedures.

Para 3) On page 13, it talks about how the applicant had not given updated projections to the increased wastes receipts. This again shows the need for new information. The problem in 2005 was that there was more waste coming in than was expected and now the problem in reality is just the opposite, where there is much less waste than was expected; and the waste stream is more of a debris, equipment, metal debris type waste stream instead of the larger scale volumes of soil and debris. Therefore, updates again need to be made both for the types of waste, the volumes of waste, the kinds of waste that are coming in and the philosophy of the company and the direction it is going. These updates would be very valuable in assuring that the license renewal is done properly.

- **Division Response:** This concern has been resolved previously; see Division response to Judd Page 7, Paragraph 9.

Para 4) Item 10 on page 13 discusses how wastes are having to be excavated and replaced because they are being placed before the proper analysis have been received on the wastes. This kind of handling is troublesome in that wastes would often be mixed with other wastes and that lab results are not in place before wastes are being placed. It is not clear whether this unsafe practice in now resolved.

- **Division Response:** The practice of placing waste prior to receiving complete analytical results has been performed in compliance with the Waste Characterization Plan. Any time that waste has needed to be excavated, it has been done so in a manner that protected human health and the environment. The Division and the Licensee recognize that it is not desirable to excavate previously placed waste. The Licensee has implemented operational controls to reduce the disposal of waste prior to receiving analytical results.

l. Judd Page 12

Para 1) Page 20 discusses the ownership of the company and states that the applicant's new ownership is a large corporation with operations across the country. It also states that as a corporation the applicant announced in 2007 that it was going to make a public offering of stock. These two facts are not insignificant in license renewal. There are many issues that would need to be considered with this new type of ownership at the facility.

- **Division Response:** The Licensee is required to disclose ownership information to the Division. This will not change. Furthermore, a publicly traded company is required by the SEC to disclose financial and business practice information to the public.

Para 2) What would happen if this large corporation came into financial trouble in other areas of its operation? Is it possible for someone who is owed money by another part of the company to have access to the assets in the Surety?

- **Division Response:** No. The State of Utah is the only beneficiary of the surety.

Para 3) Is it possible for the violations and concerns of the company in other areas to overflow into the operations here?

- **Division Response:** While many things are possible, violations and unacceptable practices are minimized by the inspections and audits the Division performs on the Licensee.

Para 4) What is the protocol for waste being shipped from EnergySolutions to EnergySolutions where there are no outside inspections done; does this not lead to a situation where the integrity of the shipment could be in question?

- **Division Response:** Internal transfers of waste received at Energy*Solutions* for disposal conform to requirements of the company's radioactive materials license for disposal and operating procedures, all of which have been reviewed and accepted by the Division.

  The Division is also aware that Energy*Solutions* is acting as agent for waste generators/owners in other states by shipping waste to the Clive facility for disposal. In order to ship waste to the Clive facility, Energy*Solutions* must obtain separate Generator Site Access (GSA) Permits. GSA permittees are subject to the provisions of URCR R313-14 and R313-19-100 for violations of state rules or requirements in the current land disposal facility operating license regarding radioactive waste packaging, transportation, labeling, notification, classification, marking, manifesting or description. GSA permittees are subject to the Generator Site Access Permit Enforcement Policy, effective September 13, 2005. Should a GSA permittee fail to comply with applicable requirements, their access to the services provided at the Clive facility can be suspended or revoked.

  Moreover, Energy*Solutions*' activities as agent for generators/owners in other states are subject to regulatory requirements and inspections of either, the US Nuclear Regulatory Commission, the respective Agreement State, or the Department of Energy. In any event, Energy*Solutions* must comply with the same basic requirements that protect workers, public health, and the environment. These requirements address waste characterization, packaging, labeling, manifesting, and shipping. The Commenter's statement that " . . . there are no outside inspections . . ." is incorrect and misleading. For related discussion, see Division Response to HEAL Utah Comment 3 in Section 2.c, above.

  Should the Commenter have substantive information that indicate Energy*Solutions* is failing to comply with applicable requirements in connection with such shipments, the Division requests that he provide details to the Division so it can address Mr. Judd's concerns as an inspection item.

Para 5) How does EnergySolutions pay processing fees to the state of Utah as required by the Utah State Tax Code when it processing its own waste? It should be that EnergySolutions has to pay a certain amount for processed waste, regardless of whom the shipper is or if the waste is processed on site.

- **Division Response:** Enforcement of the Utah State Tax Code is beyond the statutory authority of the Division. We suggest the Commenter address his specific concerns to the Utah State Tax Commission.

Para 6) How much should EnergySolutions be charged on the processing fee for waste that is generates on site, then processes and disposes of it in the cell? If they do not charge themselves any value for the waste processed, theoretically this would be a way where EnergySolutions could generate, process, and dispose of waste and avoid the taxes due to the state of Utah.

- **Division Response:** Enforcement of the Utah State Tax Code is beyond the statutory authority of the Division. We suggest the Commenter address his specific concerns to the Utah State Tax Commission.

Para 7) Would the State be liable to shareholders of stock if they misrepresented something that led stock holders to belief things that were not true?

- **Division Response:** This question is beyond the scope of the authority of the Division. The Division makes every effort to provide accurate information which is compliant with the laws and regulations governing radioactive materials.

Para 8) On page 23, the SER states that the principal construction materials are the naturally low permeability clay taken between the ground surface and the unconfined aquifer. This statement is true, however it is not noted that this low permeability is running out at the site. In fact, the ability to mine this low permeability clay is diminishing quickly. The low permeability clay is only found in certain strata of the earth, and that small amount of clay is not enough at close locations to finish the radon barrier; especially in light of the fact that a thicker radon barrier might be necessary to finish the cover. More sources of this low permeability need to be found and the travel distances to find this clay and its accessibility need to be determined before license renewal is complete.

- **Division Response:** The approved 2006 surety reflects currently approved engineering design and clay availability conditions. As the cost of the clay changes, this item will be re-evaluated in future submittals of the annual surety review.

Para 9) Page 23 also states that the rock riprap and filter material is taken from pits located within 10 miles of the facility. At this time, EnergySolutions has access to no rock that is within 10 miles of the facility and they have failed to identify this to the state of Utah. The only rock that EnergySolutions has access to is approximately 17 miles away, and they only have access to 10,000 cubic yards. This makes it impossible to close the facility according to requirements at this time. It is not acceptable to renew a license to an applicant that does not have the ability to close the facility.

- **Division Response:** This concern has been resolved; see response to Judd Page 3, Paragraph 3.

m. Judd Page 13

Para 1) Page 26 of the SER discusses the groundwater hydrology in the area and discusses the unsaturated and saturated zone characteristics. What is not considered is the underground river that has been identified by EnergySolutions. During Cedar Mountain's application for waste disposal in Section 29, EnergySolutions suggested that there was an underground river running in the area that had not been addressed. This supposed underground river has not been addressed in this SER and the limits of this underground river and how this issue shall be resolved should be addressed before license renewal can be complete.

- **Division Response:** Waste disposal activities are limited to Section 32 under License Condition 10.A. The Division has received no information suggesting the presence of an "underground river" in Section 32, Township 1 South, Range 11 West (the area licensed for LLRW disposal). The Division has received no evidence that suggests the presence of any subsurface karst formations within the limits of Section 32 that could constitute an "underground river". Further, more than 80 monitoring wells have been installed inside Section 32, each of which has been slug tested to determine local aquifer permeability. These hydraulic conductivity data do not indicate the existence of any zone of preferred groundwater flow that could constitute an "underground river".

Para 2) On page 28, it states that the provisions of R-3-13-25-7-2 identify 11 required functions that the principal design features must perform. Out of those design features the current design fails to meet minimum requirements in the following areas: Minimizing infiltration of water, ensuring integrity of the cover for disposal units, ensuring the structural stability of backfill wastes and

covers, minimizing contact of waste with standing water, providing disposal site drainage, ensuring disposal site closure and stabilization, and eliminating to the extent practicable long-term disposal site maintenance. There are several reasons for the failure to meet these requirements that are discussed in other comments, but in general terms the major concern is that the cover provided over the embankment is not satisfactory. It has not passed the test pad requirements, the applicant does not have rock available, and the cover will crack due to differential settlement and be penetrated by biointrusion. The liner under the facility also will fail due to the way the wastes are being placed in the cell.

- **Division Response:** We disagree based on arguments made previously; see responses to Judd Page 1, Paragraph 1 (cover design), Judd Page 1, Paragraph 2 (Cover Test Cell), Judd Page 1, Paragraph 2 (differential settlement), Judd Page 1, Paragraph 1 (biointrusion and water infiltration), Judd Page 3, Paragraph 3 (rock source), and Judd Page 16, Paragraph 5 (biointrusion).

Para 3) Page 34 gives a description of the material used in evaluating the liner. The most recent settlement data from the applicant is not included, which shows that there is significant differential settlement in the entire LARW embankment which will in turn correlate to differential settlement in the liner system.

- **Division Response:** The Division disagrees that ". . . there is significant differential settlement in the entire LARW embankment which will in turn correlate to differential settlement in the liner system. . . " Settlement measured at the top of the waste embankment is a product of the consolidation of embankment foundation, clay liner, and the waste materials. However, most of the differential settlement will arise in portions of the waste column that lie above the clay liner. In any case, the currently approved CQA/QC Plan mandates that final cover construction not commence until the embankment is shown to be stable. See also response to Judd Page 1, Paragraph 2 regarding differential settlement.

Para 4) Page 35 states that the settlement calculations presented in the AGRA Report of 2001 indicate that the liner foundation will not adversely affect the cover. However, this data is all based on a different design and a different type of waste placement that is currently being used by EnergySolutions.

- **Division Response:** We disagree; see previous Division responses to Judd Page 1, Paragraph 1 (cover design), and Judd Page 13, Paragraph 3 (settlement).

Para 5) Page 36 begins a discussion upon the placement of waste in the embankment. This area is one of great concern in the integrity of the embankment performance. Over the past 5 years there have been, one by one, significant changes in the ways that wastes are placed which have made it so the embankment will not perform to required standards. Any one of these changes on its own might have caused the embankment to fail, but by changing many aspects of waste placement, the embankment is almost certain to fail. Certain factors need to be considered as a whole in trying to determine the best way to place wastes so that the embankment doesn't fail. The following things need to be considered:

- **Division Response:** No response required.

n. Judd Page 14

Para 1) The previous LARW cell is already showing signs of increased differential settlement to the point that even with the conservative approaches taken in the LARW, the embankment cover performance is in question.

- **Division Response:** Observed magnitudes of differential settlement are within acceptable limits. See response to Judd Page 1, Paragraph 2 regarding differential settlement.

Para 2) The new design of the radon barrier depth is only 2 feet, which creates a situation where any failures in the cover are magnified because the radon barrier is so thin.

- **Division Response:** The issue of initial differential settlement in the cover materials has been considered by the Division; see response to Judd Page 1, Paragraph 2 regarding differential settlement. Under the currently approved CQA/QC Plan requirements Energy*Solutions* will place the final cover layers following a settlement monitoring period of from one to three years after placement of the final lift of waste and temporary cover. This time period allows for observing and monitoring settlement behavior of the waste disposal embankment before the final cover system is constructed. This methodology will help to minimize differential settlement occurring between waste columns that were placed years apart. Consequently, the radon barrier is expected to maintain its integrity because much of the initial settlement will have already occurred prior to placement of the radon barrier layers.

Para 3) The debris ratio has been changed from 10:1 to 3:1, and now 1:1. This creates an extreme situation where even though placement and compaction is done properly, over 1,000 year there can be additional settlement from void spaces, from bridging of debris, from the decomposition, and other such things that will cause additional differential settlement. In the current Class A cell waste has been placed in tall columns and a huge canyon was left in the middle of the embankment which causes extreme differential settlement since some of the wastes have been in place for years before wastes are placed right next to those wastes. This huge difference in embankment depth creates large differential settlement problems. Another change is placing debris throughout the lifts instead of only the bottom portion of the embankment. For the LARW cell debris was placed mainly in the bottom half of the embankment and not in the top part. By placing waste in the top part of the embankment there is an increased amount of settlement that can occur due to void spaces, nesting, bridging, and other things that debris and decomposing debris can do over a 1,000 year time frame.

- **Division Response**: The change in the approved soil to debris ratio (1:1) was after critical Division review of the Licensee's requests to revise waste and debris placement procedures. Specifically this entailed use of new and advanced waste placement and compaction technology called Computer Aided Earthmoving System (CAES). This technology uses global positioning satellite (GPS) equipment to monitor both the number of passes and the elevation of the wedgefoot compactor (Caterpillar 846) to ensure proper waste compaction. When the surface elevation of a waste lift changes from one pass of the compactor to the next by 0.1 foot or less, the CAES system alerts the operator and the compaction process is deemed complete. The CAES system also measures horizontal coordinates to the nearest 1-meter, thereby significantly increasing the number of waste compaction measurements made on a given lift, compared to the previous waste placement method. The Division approved this method of waste compaction on July 13 2005. Final details were approved in the CQA/QC Plan on September 21, 2006. To ensure the CAES waste placement method and the 1:1 debris ratio can be relied on by the Division in case of insolvency, the Licensee has increased the surety amount to include purchase of new CAES equipment. For details, see Section 31 of the June 1, 2007 approved 2006 surety.

  Also relevant to the new debris ratio requirement is Energy*Solutions*' recent launch of their new shredder facility. The shredder greatly reduces the size and shape of much of the waste

debris to small pieces making it more amenable to CAES placement. This method also minimizes the presence of voids and the resulting potential for settlement. Shredded debris is mixed with soil into a heterogeneous mixture that is compacted to meet the approved specifications. Settlement will therefore be much more uniform than if there were a larger proportion of unshredded debris.

Para 4) Only having a l foot debris-free layer between the waste and the liners and cover creates a situation where debris can puncture through and affect the liner or the cover. This debris-free zone should be at least 2 feet, and preferably 3 feet.

- **Division Response:** This comment has been previously addressed; see response to Judd Page 5, Paragraph 3 regarding a debris-free zone.

Para 5) The overall amount of debris in the Class A cell is significantly more than that of the LARW cell, again creating a situation for more potential settlement.

- **Division Response:** This concern has been addressed previously; see Division responses to Judd Page 1, Paragraph 2 (differential settlement), and Judd Page 14, Paragraph 2 (settlement monitoring).

Para 6) The type of debris being placed now is much more diverse than what was placed in the LARW cell including large components, CLSM pour, and other types of large structures within the embankment.

- **Division Response:** Sufficient engineering controls are in place in the approved CQA/QC Plan to manage stability issues related to large components. These controls include: 1) establishment of a 3,000 psf maximum load limit for waste materials over the bottom liner, 2) requirement for the licensee to perform a case-by-case engineering review to ensure this load limit is not exceeded for each component disposal event, 3) requirement that the first 4 feet of CLSM around a large component be placed within 30-calendar days of component placement, 4) requirement for placement of CLSM inside the large component to fill voids inside, and 5) periodic Division inspection of waste placement activities and documentation. For additional information on this issue, see the May of 2001, Envirocare submittal entitled "Engineering Justification Report."

REFERENCE

Envirocare 2001. Engineering Justification Report, May 2001.

Para 7) The allowing of drums, boxes, and hicks to have up to 15% of the container volume full of voids creates a great opportunity for additional settlement.

- **Division Response:** The Division required a detailed evaluation of the potential for differential settlement following disposal of containers with up to 15 percent internal void. The placement of these containers is restricted to specific portions of the cell. As a result of these evaluations, Energy*Solutions* incorporated and the Division approved design changes to ensure that the maximum differential settlement would not compromise the integrity of the radon barrier. Observed magnitudes of differential settlement are also within acceptable limits. See response to Judd Page 1, Paragraph 2 regarding differential settlement.

Para 8) When you consider all of these different changes in the way that waste is placed in the cell, it is obvious there is significantly more potential for failure in the embankment, which translates into failure of the cover and the liner.

- **Division Response**: See response to Judd Page 1, Paragraph 1 regarding cover design.

Para 9) Page 39 states that in order to minimize potential differential settlement decomposable materials will not be accumulated into large piles for placement. No definition is given as to what is considered a large pile; however it is clear that any decomposable material will cause problems with the embankment when it decomposes.

- **Division Response:** The phrase in question on page 39 of the SER relates to bracing used in transportation of containerized waste bound for CWF disposal at the site. We agree that the term "large piles" is not well defined, and that a high proportion of decomposable material at the CWF facility has the potential to exacerbate cover system settlement. In order to alleviate this concern, a new License Condition 39.F was added to prohibit disposal of bracing and other related decomposable debris at the CWF operation.

o. Judd Page 15

Para 1) The placement of large components surrounded by CLSM in the embankment is a very different approach to waste placement. The weight of this type of a structure inside of the embankment needs to be studied long-term and monitoring needs to be done to see how this type of a structure would react during bath tubbing, increased moisture conditions, earthquakes, and other situations such as that.

- **Division Response:** This concern has been addressed previously; see response to Judd Page 14, Paragraph 6.

Para 2) Page 42 discusses the fact that new data on settlement shows that the differential settlement has only been .75 in 50 feet which is equivalent to a .015 calculation in 100 feet. The design allowable limit is .02. This settlement is already close to the limit and it has only been in less than 6 years. There are 994 years left for the remaining 25% of differential settlement. With all the different types of waste placement this concern is very justified and new methods need to be in place to ensure that the cover is not destroyed.

- **Division Response:** The limitation of 0.02 ft/ft of settlement is applicable once the final cover system has been installed. This requirement was established to ensure the integrity of the layers in the cover system. Any settlement that occurs before the final cover system is installed is favorable. Also, settlement is a dynamic process, and occurs at a rapid rate during the first 12 to 24 months. After this, the rate of settlement decreases significantly. The Division has taken precautions necessary and prudent to ensure that differential settlement will not compromise the integrity of the radon barrier (refer to the Division's response to Judd Page 14, Paragraph 7).

*Para 3) Page 32 discusses the idea that the liner will be at a level elevation of 4,265.0. This might seem like an achievable result, but it is not because with the settlement and the weighting of the embankment the clay liner will vary in elevations as much as **3** feet and the concern is that this differential settlement in the clay liner at different times will create a breach in the liner.*

- **Division Response:** The vast majority of settlement will occur in the waste column, not in the foundation. The Commenter provided no basis for the estimate that settlement in the liner will be 3 feet. The Division has evaluated settlement in the foundation soils and the liner and concluded that their magnitudes are acceptable.

Para 4) Page 46 gives a description of the supposed cover system that is to be placed, however the cover system has not been proven to work.

- **Division Response:** We disagree with this statement; see responses to Judd Page 1, Paragraph 2 (cover test cell) and Judd Page 1, Paragraph 2 (differential settlement).

Para 5) We know that the test cover pad is not functioning properly and we do not have data to show that this cover is performing.

- **Division Response:** We disagree with this statement; see response to Judd Page 1, Paragraph 2 regarding data from the cover test cell.

Para 6) There is no rock to cover the embankment as described.

- **Division Response:** A new rock source has been found; see response to Judd Page 3, Paragraph 3.

Para 7) The studies that have been done over the past 5 years, have all been done on different types of covers and have not been done exclusively on one cover design.

- **Division Response:** We disagree with this statement; see response to Judd Page 1, Paragraph 1 regarding the cover design.

Para 8) There are possibly even transitions of different types of cover materials in the middle of an embankment.

- **Division Response:** The comment is correct. As described in the Division's response to Judd Page 1, paragraph 1, the approved cover system designs have evolved from their initial characteristics to their currently authorized configurations for the LARW, Class A, and Class North disposal embankments. In the case of the LARW disposal embankment, design changes after construction was commenced with a previously approved design led to the requirement to transition from the older design to the newer design.

  As described in the response to Judd Page 1, paragraph 1, the Division has critically reviewed each proposed change to the cover systems to determine whether the proposed changes could be approved without violating applicable regulatory requirements and without compromising the projected performance of the disposal facility.

Para 9) The design changes on an annual basis and no consistent design has been in place. In 2005 there was one design, in 2006 there was another design, and now there is a third design which makes it hard for anyone to understand exactly which system is being reviewed and which one will work.

- **Division Response:** We disagree with this statement; see response to Judd Page 1, Paragraph 1 regarding the cover design.

Para 10) It is strongly suggested that until an approved upon consistent design is presented by the applicant that the applicant be required to stay with the original design which is the most conservative and the most likely to be successful on any embankment. That design calls for 7 feet of radon barrier and an erosion barrier on top of that. If additional filter zones or other materials are needed in the embankment they should be put in addition to the 7 feet of clay that has been used at many other facilities. These 7 feet of clay provides a way to heal a lot of the problems that might occur in the cover of the embankment.

- **Division Response:** The Division has approved the design the Licensee has submitted and justified. See response to Judd Page 1, Paragraph 1 regarding the cover design changes and history.

p. Judd Page 16

Para 1) To minimize infiltration, page 52 discusses that the primary fact relating to minimize infiltration is the permeability of the upper 1 foot of the radon barrier. This shows how critical that 1 foot is, and if it is punctured by debris, if it dries out, or if it is cracked due to differential settlement that this would severely affect the embankment. All of these situations are possible to occur and would cause damage to this very valuable 1 foot of radon barrier. It is strongly suggested that a thicker layer of (5 x 10)$^{-8}$ clay be included in the design of the facility.

- **Division Response:** This concern has been addressed; see Division responses to Judd Page 1, Paragraph 1 (cover design), and Judd Page 5, Paragraph 3 (debris-free zone). Further, the Division critically reviewed the Licensee's analyses of the potential of clay cracking if it were to dry through desiccation. The Division concluded, as stated in SER Section 5.4.2.3, that overlying soils adequately protect the clay layers on the basis of analyses the Licensee submitted.

Para 2) Page 53 states that the cover system must be constructed in a way that there is no slope reversal, however it has been described in the latest settlement report that there already a cresting or slope reversal in the LARW cell that was reported by the applicant's engineers. This type of slope reversal in the LARW only shows with more magnitude how important it is that new types of approaches be taken in the Class A and Class A North cell to protect from similar types of reversal.

- **Division Response:** Page 53 of the SER discusses the requirement for long-term stability and maintenance of the design slopes for maintaining positive drainage to ensure run-off of precipitation under both normal and abnormal conditions. To ensure clear communication, the two major slopes on the cover need to be defined. Longitudinal slopes are in the primary direction of storm runoff and are responsible for providing positive drainage away from the waste cell. Cross slopes are perpendicular to longitudinal slopes.

  Several changes in elevation have been observed on the cross-slopes of the LARW Cell. However, these changes in elevation do not constitute a slope reversal as it applies to precipitation run-off. Changes in elevation along cross-slopes do not increase the potential for ponding on the cell or increasing infiltration into the embankment.

  There are two occurrences where the imaginary "slope" line between two stands that are on opposite sides of the main ridge (the center brake-line of the LARW Cell [N5 - N6 and K5 - K6]) have changed direction. These changes in elevation do not constitute a slope reversal as it applies to precipitation run-off and do not increase the potential for ponding on the cell or increasing infiltration into the embankment. Instead they indicate that the slope on one side of the main ridge has changed a little bit more than the slope on the other side of the main ridge.

  The issue of slope reversal is closely tied to the matter of differential settlement. The Division has reviewed both aspects of settlement and concluded that the disposal embankment design provides assurance that the integrity of the radon barrier will not be compromised. Refer to the Division's response to Judd Page 1, Paragraph 2 regarding differential settlement.

Para 3) Page 53 discusses the importance of the Type B and Type A filter zones. It is important that studies be done to show that fine materials coming down from upper layers would not affect or plug this filter material.

- **Division Response:** Migration of fine-grained soils for overlying layers into underlying layers (also known as "filter design" that involves analysis of the process of internal erosion) was satisfactorily addressed is in Section 5.4.2.3 of the SER. The Division has concluded that the analyses provided by the Licensee follow U.S. Army Corp of Engineers guidance, and is therefore confident that the filter layers will perform as required and that fine-grained soils will not migrate into underlying layers. See also response to Judd Page 10, Paragraph 3 regarding results of cover analysis.

Para 4) Page 56 discusses the frost penetration and describes that the calculated frost depth 3.4 feet. The design of the current facility is to have the radon barrier only 3.5 feet down into the embankment. This is not acceptable to have only .1 foot difference between the calculated frost depth and the protection provided to the radon barrier. As described earlier, this top 1 foot of the radon barrier is the main and most important part of the radon cover. If the calculations are off just a slight amount this important radon barrier would be damaged. Other reports presented by the applicant have shown that their forecasted values are low. This indicates that it is very possible that the frost could penetrate past a 3.5 feet cover and damage the important radon barrier.

- **Division Response:** The frost penetration is not extreme in this part of the Great Salt Lake Basin. Building code requirements for this region include a 30-inch below-ground surface (bgs) footing requirement for structures. An Envirocare contractor (Montgomery Watson 2000), prepared frost penetration analyses and demonstrated, using the widely accepted Modified Berggren Equation, that a sacrificial soil layer thickness of only 8 inches is adequate to protect the underlying radon barrier. The actual sacrificial soil layer thickness is 12 inches and provides a margin of safety against freeze damage to the clay.

  The Energy*Solutions* cover design includes no structural loads and the bottom of the sacrificial layer is 30 inches bgs , which is an adequate value for frost penetration design.

REFERENCE

Montgomery Watson 2000. Montgomery Watson, "LARW Cover Frost Protection", letter report from John Pellicer and Patrick Corser of Montgomery Watson to Tim Orton of Envirocare of Utah, Inc. March 1, 2000

Section 5.4

Para 5) Studies done have shown that the deep rooted black greasewood has roots as deep as 13 feet deep. This concern does not seem to be included in the infiltration modeling in the fact that if the plants do grow on the embankment and then die, they could easily leave large holes in the cover that could create direct pathways for water to the waste. This concern is even stated on page 58, but it is not addressed. These potential holes in the cover need to be included in the studies and resolved.

- **Division Response:** The design of the cover systems for Class A and Class A North disposal embankments and their projected performance are summarized in Tables 3.2 through 3-4 of the 2005 revision of the LRA. The evaluation of the cover system performance considered various deviations from optimal or ideal conditions, including increased infiltration caused by cover degradation including biointrusion. The effects of burrowing animals are effectively eliminated by the large diameter rock in the erosion barrier (riprap layer) and upper filter zone.

Penetration of plant roots through the radon barrier was also examined. We agree that black greasewood (*Sarcobatus vermiculatus*) is the plant most likely to have deep tap roots in western Tooele County. Conditions likely to prevail should this plant become established in the cover system were evaluated, including siltation of the riprap layer. Under this scenario, the infiltration rate, even with tap roots penetrating the radon barrier, was projected to be less than the base case because of the low annual precipitation rate and the ability of the deposited silt and sacrificial soils to retain water until dry weather returns. Once dry weather returns, moisture in the cover system can evaporate from the cover system. It is also important to note that the Type B filter under the sacrificial soil layer will likely provide a capillary break. This may encourage plant roots to reside in the overlying sacrificial soil layer instead of penetrating deeper in the profile. For additional information, see response to Judd Page 10, Paragraph 3 (cover analysis), and Judd Page 1, Paragraph 1 (biointrusion and water infiltration).

q. Judd Page 17

Para 1) Studies done have shown that the deep rooted black greasewood has roots as deep as 13 feet deep. This concern does not seem to be included in the radioactivity leaving the embankment in the fact that if the plants do grow on the embankment and then die, they could easily leave large holes in the cover that could create direct pathways for radioactivity to leave the waste. These potential holes in the cover need to be included in the studies and resolved.

- **Division Response:** This issue has been considered and resolved; see response to Judd Page 16, Paragraph 5.

Para 2) Post closure analysis of the normal exposure to radioactivity does not consider that plant intrusion into the waste could create direct pathways to the atmosphere.

- **Division Response:** This issue has been considered and resolved; see response to Judd Page 16, Paragraph 5.

Para 3) The Allow Site Monitoring Section suggests that the temporary cover may need to be in place for up to three years. One would also assume that it would take a construction season to complete a large section of cover. With this in mind it makes sense that the last waste would be placed in the cell eight years after the cell was opened. With this in mind, a large amount of the Class A cell will need to be closed in 2008. A plan should be developed on tracking how the different portions of the cell will be closed. This will allow the State to monitor the time when certain parts of the cell will need to be closed to further waste placement. It should be noted that cell covers cannot be finished in small increments in the middle of the cell area. Cell coven would need to be constructed from the point of beginning to the edge of the cell.

- **Division Response:** The Division inspections each year evaluate compliance with the 12-year open cell requirement mandated by Part I.E.6 of the Permit. The process of cover construction is mandated by the approved CQA/QC Plan and good engineering judgment. For additional information, see response to Judd Page 4, Paragraph 2 regarding site capacity.

Para 4) Settlement monitoring has already proven to be a failure. Many years of data on the LARW system are in question. The results from the initial settlement of the embankment showed large amounts of differential settlement. The results showed that there was enough settlement to call into question the integrity of the cover. Some areas of the cover showed frost heave, some showed large amounts of settlement. After a few years the applicant decided to call the data into question themselves. Just throwing out data when it begins to look like a problem is not an

acceptable practice. The data showed problems and now the cell itself is showing problems. A recent report by the applicant stated that there were ridges forming on the embankment that would change the direction of the flow of water off the cell.

- **Division Response:** The Commenter's claim that "recent report by the applicant stated that there were ridges forming on the embankment", could not be located. Concerns regarding differential settlement have been resolved; see Division response above to Judd Page 1, Paragraph 2. The other referenced data and reports are not specific enough to be appropriately located and evaluated. Should the Commenter have substantive information that indicate the licensee has submitted faulty data, the Division requests that details be provided to the Division.

Para 5) Settlement monitoring costs should be included in the surety and monies should be included in the surety to protect the State from when the cover needs to be repaired. All indications are that the cover is already in need of repair and the new covers will be even worse because of the way that wastes have been placed in the Class A and Class A north cells.

- **Division Response:** The approved 2006 surety report includes funds for settlement monitoring. These costs can be found on Line item #205 in the 2006 approved Annual Surety Report.

Para 6) In the section titled "Mitigate Differential Settlement" it states that "the maximum projected differential settlement was estimated to be 0.009 ft/ft under abnormal conditions evaluated by the Applicant (AGRA 2000a)". Settlement data collected on the LARW cell for 6 years show that the actual differential settlement has already exceeded 1.18 feet in 100 feet or 0.0118. This means that in reality the abnormal condition has already been exceeded in 6 years. There are 994 years left for concern. Obviously the projections by the applicant are wrong. The big question is "HOW MANY OTHER PROJECTIONS ARE WRONG ALSO?" As more and more data is collected it needs to be included in projections and corrections need to be made. This item is just one of many items that show that he cover is going to fail. Corrections need to be made now, not later.

- **Division Response:** The Commenter is mistaken in his claim that ". . . the projections by the applicant are wrong . . . "As mentioned in other responses, 1.18 feet is the maximum total settlement observed; not differential settlement. For additional information, see response to Judd Page 1, Paragraph 2 regarding differential settlement.

REFERENCE

AGRA 2000a. AGRA Earth & Environmental, Inc. Evaluation of Settlement of Compressible Debris Lifts: LARW Embankments, Clive, Tooele County, Utah. June 1, 2000.

r. Judd Page 18

Para 1) URS is very smart to make the statement they did on page 61 of the SER. "the design criterion for distortion were met, for the initial phases of the LARW Cell cover placement and facility closure (with the placement techniques in use prior to 2006). They are right in qualifying their statement. The techniques that were used prior to 2006 were much more effective than those used today. The LARW cover may be saved but the Class A and Class A north cells are so different than the LARW cell. The new placement techniques are sure to make the newer cells fail. Wastes should not be allowed to be placed with a debris ratio of 1:1. This new approach does not include the affects of bridging of debris, long term degradation of the debris and other such items. Over 1000 years the bridged areas will fail, the wood, paper and metals will

degrade and leave void spaces. All this will lead to more differential settlement and more cover failure. The 1:1 ratio of debris to soil needs to be revoked.

- **Division Response**: See response to Judd Page 14, Paragraph 3 regarding the issue of debris ratio.

Para 2) Internal erosion cannot be ruled out since test pads of the cover have not been able to show that the cover is affective [sic].

- **Division Response:** Internal erosion was considered in detail, and the Division is confident that the approved design will prevent internal erosion; for details see Division's response to the comment on Judd Page 16, Paragraph 3. With regards to the cover test cell, see Division responses to Judd Page 7, Paragraph 6 (test cells); and Judd Page 10, Paragraph 3 (cover analysis).

Para 3) The applicant has not rock to cover their immense cells. The rock needed as stated in this report is rock with the proper gradation and with a rock score. The applicant has access to 10,000 cubic yards of rock that has not been tested to determine its gradation or its rock score. Currently there is no way to close the cells already constructed. How can a license be renewed if there is no way to close the cells according to the regulations.

- **Division Response:** This concern has been resolved; see Division response to Judd Page 3, Paragraph 3 regarding rock source.

Para 4) The performance of the filter zones need to be reviewed to determine the affects of fine materials from the overlying layers migrating down into the filer material. This type of migration could severely impact the filter zones.

- **Division Response:** Internal erosion has been carefully examined and the Division has approved the cover system design. For details, see response to Judd Page 16, Paragraph 3.

Para 5) The Ensure Structural Stability -Settlement sections improperly suggests that settlement should be okay because in the Salt Lake Valley, embankments for pavements and bridges have performed adequately. Roads and bridges are built in a much different was than the Class A embankment. The Class A embankment was built with a canyon in the middle. Bridges and roads in Salt Lake are not a reasonable comparison to the Class A embankment at Clive.

- **Division Response:** It is true that the design and construction of a radioactive waste disposal cell and embankments for pavements and bridges are different. The comparison that was being made in Section 3.1.3.4.1 of the LRA and the "Ensure Structural Stability – Settlement" section of the SER was in the maximum total design settlement of the Class A Cell. The Division is satisfied that the maximum total settlement shall be less than or equal to 15 percent of the embankment height and that a total settlement of 15% will not cause slope reversal or compromise the drainage capability of the cover. It should be noted that based on settlement data, the LARW Cell is showing currently showing far less settlement than this.

Para 6) Page 68 states that the projected settlement for the embankment would be 3 feet. With the way that the Class A facility was constructed this means that it is likely that the clay liner has been or soon will be breached. The north and south sides of the embankment were constructed about 5 years ahead of the middle portion. The loading on the north and south would cause the settlement in these areas to happen 5 years ahead of the middle section. When the middle

section does settle the liners will no longer match up but will be as much as 3 feet away from each other.

- **Division Response:** The referenced discussion of projected settlement gives 3.0 feet as the maximum magnitude that would occur in the entire embankment, not the magnitude that would be experienced on the liner. This value of 3.0 feet is the upper-bound value of projected settlement, and is not expected to occur. In any case, the vast majority of the consolidation in question would occur across the waste form, and not in the underlying soil foundation. Therefore, there would be little if any disruption of the underlying clay liner beneath the waste.

Para 7) The statement that the large components would be placed below the crest would tend to improve the cover conditions is not founded. If a bowl shaped depression occurs in the cover it will drastically affect the performance of the cover no matter where it is located in the top cover. In fact it would be argued that the crest of the embankment would be the worst place to have a bowl shaped depression.

- **Division Response:** Large components (and the CLSM that accompanies them) are solid objects and are therefore incompressible. Consequently, there is less potential for settlement in their waste columns than in waste columns composed entirely of compressible waste materials. The Licensee submitted an analysis that demonstrated that the placement conditions (geometry, voids, backfill, long-term consolidation, differential settlement, and distortion) preclude slope reversal under worst reasonable conditions. As stated in Table 3-4 of the LRA, even if the total potential settlement were focused at the crest of the embankment, the overall drop in elevation from the crest to the shoulder in the approved design eliminates the potential for slope reversal.

Para 8) Page 67 suggests that four durability tests will be run on the rock. These have not been completed on any rock sources available to the applicant. Approval cannot be given until a suitable rock source has been identified.

- **Division Response:** Rock quality testing has been completed on a new gravel source located in Section 24, T. 1 N., R. 11 W. The Division has reviewed this information and found the new gravel borrow material to be adequate (see Division memo of December 20, 2007). The new gravel borrow source was approved, along with a change to the 2006 surety in a Division letter of December 21, 2007. For additional information, see response to Judd Page 3, Paragraph 3.

s. Judd Page 19

Para 1) Page 68 states that because of the information in the 2005 revision that the requirements for the rock cover have been met. These requirements cannot be met since the rock source the applicant has is not longer available to them.

- **Division Response:** A new rock source has been identified and found acceptable by the Division. For additional information, see Division responses to Judd Page 3, Paragraph 3 (rock source) and Judd Page 18, Paragraph 8 (rock quality).

Para 2) Page 69 discusses the drainage systems around the site. The drainage around the site needs to be studied again. The clay areas are a concern as stated, but other items need to be included in the study. Other items include the newly constructed rail spur on the north end of the site which would block sheet flow around the site and channel water to other areas of the site. It would also be important to study the sheet flow around the embankments if the CAN cell were not fully

developed. If the site closed in the next two years there would be a three sided containment area with Vitro on the east, Class A on the south and CAN on the west. As the sheet flow collected in this area it would need to be channeled between the embankments and drastically change the sheet flow.

Division Response: This concern has been resolved in that: 1) The approved 2006 Surety contains funding for removal of all track and restoring grade along the track bedding/ballast in Section 29,2) The final perimeter channels around the Vitro, LARW, Class A, and Class A North Cells will be designed to the Probable Maximum Precipitation Flood event. The drainage system, as contained in the 2005 revision of the LRA and other relevant documents, meets the requirements of URCR R313-25-7(2), 3) In the event of third party closure, the 2006 Surety contains sufficient funding for design and construction of the final perimeter channels around the embankments, and 4) Sheet flow west of Section 32 is towards the west, away from the disposal cells.

Para 3) The ditches around the site need to be studied again. With the new 2 foot radon barrier instead of the 7 foot radon barrier the flow line of the ditch is moved much closer to the waste. In fact when the ditches flow with water the flowing water will be directly over the waste. This was not considered in previous studies.

- **Division Response:** This comment is in error. While the radon barrier thickness was decreased from 7 to 2 feet, the corresponding waste elevation was increased by 5 feet in order to maximize disposal capacity. Consequently, the centerline of the perimeter ditch is in the same location as before.

Para 4) The transport modeling discussed on page 78 should include at least two other strong possibilities; first, that the liner below the Class A cell has been breached and second, that that cover has been breached by differential settlement and by biointrusion.

- **Division Response:** We disagree with the claim that the liner has been breached; see Division response to Judd Page 13, Paragraph 3. We also disagree with the claim that differential settlement has breached the cover; see the Division's responses to Judd Page 1, Paragraph 2 (differential settlement) and Page 14, Paragraph 2 (radon barrier design). Contrary to these claims, observed magnitudes of differential settlement are within acceptable limits. Analyses of settlement, differential settlement, and distortion in the radon barrier have demonstrated to the Division's satisfaction that the integrity of the cover system is unlikely to be compromised. Construction, QC, and QA procedures also provide additional assurance that the design criteria are actually realized in the constructed embankment. The Division reviews periodic reports of settlement in cover systems and has not observed development of deleterious conditions.

  We also disagree with the concern for biointrusion. For details, see the Division's responses to Judd Page 10, Paragraph 3 (cover analysis), Page 1, Paragraph 1(biointrusion and water infiltration), and Page 16, Paragraph 5 (biointrusion).

Section 6.0

Para 5) Page 83 discusses the site closure plan. The site closure plan has not been well thought through and leaves out many key items. First of all, the amount of air space left in the Class A cell is not relevant. The amount of space left for waste, especially debris, placement is relevant. Much of the cell space cannot be used for placement of closure items, such as equipment, since there's not space for that in the debris-free zone and other areas in the embankment. Second, the amount of material that will be needed for waste placement at closure is severely

underestimated. For example, it is unlikely the 1:l debris ratio will be acceptable for this type of debris. It is more likely that a 3:l soil to debris ratio should be used for cell closure with this type of debris. Also, the thought that equipment, such as locomotive and dump trucks, can be placed at a 1:l ratio is unacceptable. In reality, the amount of cell space needed for closure should be 500,000-600,000 cubic yards. The closure plan is also deficient and misleading in an August 31, 2007 Surety update premature closing plan document. EnergySolutions tries to mislead the State by suggesting they have a 5 year contract for material in the Central Grayback Community Pit, which has the reserve of at least 1.1 million cubic yards of material. The fact of the matter is that EnergySolutions only has a permit for 10,000 cubic yards of this rock. They also say they are working to develop a pit with the BLM, which is a 1.2 million cubic yard pit, again trying to mislead the State into thinking they have plenty of rock available. In reality, the BLM is not looking at developing any new sand or gravel pits in the area. These types of misleading statements are unacceptable and are a prime reason why instead of having in-house engineers stamp and approve drawings such as this that an independent engineer needs to be hired. This is a prime example of the situation where an independent engineer would not try to mislead the State to the advantage of EnergySolutions. The closure plan is also not effective in the fact that the plan for premature closure is not decided until after it is announced that there is closure. It is much more acceptable to have plans in place of how to close the different facilities at any point in time, especially since the facility is nearing closure and is limited in cell space at this point in time.

- **Division Response:** We disagree with the Commenter. Specifics for the Division's findings are found in the following sections of this document.

  (a) Site Closure Plans – see responses to Judd Page 5, Paragraph 2.

  (b) Debris Volumes in Surety – see response to Judd Page 5, Paragraph 3.

  (c) Rock Source – see response to Judd Page 3, Paragraph 3.

t. Judd Page 20

Para 1) It has become necessary at this point in time to have a State reviewed "cell space availability" report on at least a bi-annual basis. There is little doubt that the time that EnergySolutions will be open is limited and that cell space is limited. In fact, at this point in time, the only real place left for waste is in the Class A North embankment. When considering all of the cell space that will be used for closure of the facility, it is critical that wastes not be contracted that cannot be disposed. Therefore, it is important for a report to be prepared at least twice a year which gives exactly how much cell space is left, and also reports how much waste EnergySolutions is contracted to take in the future. It is important that they not be allowed to contract for wastes that are not going to be able to be placed into the cell.

- **Division Response:** This concern regarding total authorized disposal capacity has been resolved previously; see Division response to Judd Page 4, Paragraph 2. Compliance with these capacity limits is evaluated during periodic engineering inspections conducted by the Division, and during review of the Annual As-Built Reports required under Part I.H.6 of the Permit.

Para 2) Page 84 suggests that after the embankment is covered with a temporary cover that verification that the waste form is stable needs to be done. No specific description is given on how this verification is to be done or at what limits of differential settlement would need to be at before closure could happen. This is a great concern because much of the cell needs to be closed now in order to make sure that the 12 year open cell requirement is not violated. In the middle of the

cell is the first area where waste was placed in 2000, meaning that completed cover needs to be done by 2012. If you realize that for stabilization to occur it will take at least three years, and 1 emphasize at least 3 years, and 1 year to put the final cover on then waste placement should stop in the embankment in 2008. This means that a majority, if not all of the Class A cell needs to receive temporary cover in 2008.

- **Division Response:** The 12-year open cell limit is mandated by Part I.E.6 of the Permit, and was established with infiltration models to estimate when an open cell condition could cause a greater annual seepage rate than the closed cell simulations used previously to support the approved engineering design basis.

  We agree that after deployment of the temporary cover that a minimum of 1 year must pass and a maximum of 3 years can pass before the final cover can be constructed. We also agree that this time period is to be within the 12-year open cell period. Limits for maximum temporary cover settlement distortion between adjacent grid points have also been set by the Division. For details, see the currently approved CQA/QC Plan (Revision 22F, p. 64 of 100).

Para 3) The State needs to keep track of the open cell requirement in a definite manner and provide a way in which they can make sure that the waste will stabilize and have a complete cover before the 12 years is up. Currently there's a large amount of the Class A cell that needs to stop accepting waste, receive its temporary cover and prepare for the final cover to be placed in the next 3 to 4 years.

- **Division Response:** We agree that review of the 12-year open cell requirement is an important compliance item. As such, the Division includes this element in its annual engineering inspections for the facility. When non-compliance is discovered the Division takes appropriate enforcement action.

Para 4) Page 87 makes a clear statement that the applicant expects to receive a maximum waste volume of about 11 million cubic feet per year. This means that the facility is only licensed to be open for approximately 4 years. The cell space that is left in the Class A North is less than 2 million cubic yards, when you consider that a lot of the space needs to be reserved for site closure and decontamination. Therefore, it should be made clear that the current license is only able to be in effect for approximately 4 years before the cell will be full. A license condition should be included which caps the receipt of waste at 11 million cubic feet per year so that the facility does not fill up without having a place for site closure. Other LLW sites in the nation have volume caps for waste acceptance.

- **Division Response:** This concern has been resolved previously; see Division responses to Judd Page 3, Paragraph 3 (waste projections), Page 4, Paragraph 2 (cell footprint and disposal capacity), Page 5, Paragraph 3 (site cleanup volumes), and Page 8, Paragraph 2 (demolition volumes). Further, the claim that only 4 years of site disposal capacity remain is in direct contradiction with a previous statement by the Commenter that recent waste "… volumes have dropped off drastically." (Judd Page 10, Paragraph 2)

u. Judd Page 21

Para 1) Page 88 suggests that only 331,000 cubic yards would be generated during facility closure, this number is low because of the fact that they assume this type of debris can be placed at a 1:1 ratio which is not an effective way of placing waste. It is also low because they are assuming that locomotives and large trucks can be shredded or crushed to one half their original size, but this type of assumption is not correct and produces a number that is extremely low. Also based

on previous Vitro experience, there will be more cleanup wastes than they are currently projecting. During the Vitro project clean up at the same location, the amount of waste anticipated before clean up and the amount that actually was incurred was significantly different. The State should take into account that the contamination is always more extreme than is expected. The State should take consideration of a conservatively high number which would be more in the lines of the 700,000 cubic yards for site closure. It is much better to have too much space for site cleanup than not enough. What would happen if the amount of cell space left was not enough for site cleanup?

- **Division Response:** These concerns have already been resolved; see Division responses to Judd Page 5, Paragraph 3 (site cleanup volumes, debris ratio, debris-free zone, and large components), Page 7, Paragraph 9 (large components), Page 14, Paragraph 3 (1:1 debris ratio), Page 14, Paragraph 6 (large components). We agree that even after care is taken in making cleanup estimates, that it is common for these projects to exceed the planned on volumes. For this reason, the surety includes a 11% contingency factor, as calculated on the direct costs (see June 1, 2007 Division approval of the 2006 surety, Section 302).

Para 2) Page 104 says that the applicant needs to show that they have the necessary funds to complete all activities. Previous reviews of the financial surety show it to be $32 million short of a safe level for the State's protection.

- **Division Response:** We disagree with this claim; see Division responses to Judd Page 1, Paragraph 3 (surety review) and Page 7, Paragraphs 7 and 8 (total surety costs).

Para 3) Page 108 suggests that the long-term stability is controlled at this point in time, however many items indicate that long-term stability will not be effective because of already indicated with the cover test pad, problems with differential settlement, problems with the placement of the waste and other such items. The authors of the SER seems to agree with this by suggesting that they only agree that the site will have long-term stability if all the required criteria discussed above is met, which a review shows they are not being met.

- **Division Response:** The Division's concerns for the Cover Test Cell are not related to long term settlement performance of the cover system, see responses to Judd Page 1, Paragraph 2. The Commenter's concerns regarding differential settlement and waste placement have been resolved, see Division responses to Judd Page 1, Paragraph 2 (differential settlement.), Page 1, Paragraph 4 (differential settlement and waste placement), Page 9, Paragraphs 2 and 3 (waste placement), Page 13, Paragraph 3 (differential settlement), Page 14, Paragraph 1 (differential settlement), and Page 15, Paragraph 2 (settlement).

Para 4) Page 110 indicates that it is clear that the financial surety requirements as required under 5.8.9 are currently being met by the applicant. Page 122 states that the Division has concluded that the site of the embankments does not lie within the 100-year flood plain, this is not consistent with other areas in the report that suggest that during flooding that the embankment would have 1 foot of water running past the embankment. It is true that there may not be any surface water normally in the area, but during flood conditions there would be water going past the embankments.

- **Division Response:** The Final Environmental Impact Statement prepared for the Vitro site indicates that stream flows from the Cedar Mountain area usually evaporate and infiltrate into the ground before reaching the lower, flatter lands where the Clive facility is located. Based on this information and supplemental information submitted by the Licensee, the Division has concluded that the site of the embankments does not lie within a 100-year

flood plain. The design studies indicated were based on flow next to the embankments generated by the probable maximum precipitation (PMP). These concluded that the embankment is able to withstand flooding from the PMP.

Para 5) On page 124 it suggests that the ground water would not raise more than 13 feet in the next 500 years. This is something would need to be looked at more closely due to changes in the climate over a 500 year time frame.

- **Division Response:** Regulatory authorities do not allow the Division to consider climate change is assessing the suitability of the existing site nor projected facility performance. Based on current and historic conditions at the site, the Division has concluded that all applicable requirements have been satisfied. Monitoring data is submitted to the Division on a semiannual basis and provides the required information for license renewal and permit compliance. Reference Section 2.6.1.1 of the 2005 LRA.

Para 6) Page 129 discusses contaminants being detected at the applicant's environmental monitoring stations however it is unclear if at any point that any of the environmental monitoring stations have seen an increase in radioactive contaminants. This would include any wells that have seen elevated levels of radioactivity, any air monitoring stations, soil monitoring stations, or vegetative sampling. Is there a record currently available for the public to see any times when any of these levels have been exceeded the background levels?

- **Division Response:** Existing license conditions require the Licensee to monitor environmental media in the vicinity of the facility and to submit periodic environmental monitoring reports. The division has evaluated these reports to determine whether the observed results conform to applicable regulatory requirements and license conditions. The Division has concluded that all conditions are within acceptable limits. Should any conditions be observed that did not comply with applicable requirements or that might suggest facility failure, the Division is authorized to and would take action to protect the environment, public health, and worker heath and safety. Monitoring data submitted to the state is available for public review. Please contact Shaun Buttars at 801.536.4250 to schedule an appointment to review this data.

v. Judd Page 22

Para 1) Page 131 states that another 700,000 cubic yards of staged waste material awaiting final disposal is also accounted for in the surety as stockpile storage on the Class A and Class A North embankments. A review of the 2 sureties, 2006 and 2007, show no reference to 700,000 cubic yards of staged waste. It needs to be clear if EnergySolutions was in violation of their surety at any point in time and what the limits are at this point in time.

- **Division Response:** No violation exists in that the 700,000 cy of stored waste in question is included in the Division approved 2006 surety. For details, see the spreadsheets found in the May 22, 2007 Licensee submittal, and refer to the 112th line of Section 204 Disposal Volumes and Liner Construction in the 2006 Annual Surety. The text of this line reads, "Assume Maximum Disposal Volume = 700,000 cy". The 117th line of this same section reads, "Note: Up to 700,000 cy of this volume may already be placed or stored within the embankment footprint without final cover". Additionally, 28,000 cubic yards of material of containerized waste and 45,000 cubic yards of bulk waste that have been received and not moved into disposal cells are accounted for in the 2006 Annual Surety. The 2007 Annual Surety is currently under review.

Para 2) A record should be kept of stored materials on at least a monthly basis so that the State can review and assure that there are not more wastes in storage than are allowed.

- **Division Response:** According to licensee procedure ADMIN 8.0, the Licensee does have a process for controlling and verifying waste storage amounts and this is performed on a monthly basis. The reports from this process are available to the Division during inspections. This procedure insures compliance with various license conditions which limit the amount of materials and time materials can be stored. The inspection process insures ongoing compliance with license requirements and licensee obligations.

w. Judd Page 23 (Figure A)

- **Division Response:** This page contains a figure. No response is needed; see Division responses to Judd Attachment 1, Page 26, below.

x. Judd Attachment 1, Pages 24 and 25 (April 6, 2007 Cover Letter, Charles Judd to Dane Finerfrock)

- **Division Response:** These pages contain a cover letter. The comments contained in the letter are further detailed and responded to in subsequent pages.

y. Judd Attachment 1, Page 26

CONCERN #1
SITE CLOSURE IS COMING FAST

Para 1) Energy Solutions has provided significant information in it's new SEC filing. One of the company's major risks is the length of time the Clive facility would be open before it would be full to capacity. They claim that the Clive facility is "vital" to their company. The company claims that it should have capacity for 19 more years. Our calculations show that this is only true if the facility brings in less than half the waste each year that it is currently using. At the current rate of LARW acceptance the facility will be full to it's current licensed capacity in about 4 years. Table 1 is a summary of Site Capacity and Profits Until Closure. The table shows the capacity of the different cells at Energy Solutions and the rate at which they will be filled if current volumes are accepted at the facility. The table also shows the estimated income from the years of operation.

- **Division Response:** The Division does not regulate the licensee's SEC filings or advertising practices. Claims regarding closure of the site in 4 years are speculative; see Division response to Judd Page 20, Paragraph 4.

Para 2) One of bits of information that we do know is that they used approximately 400.000 cubic yards of space in their LARW facility in 2006 and have a lot of cubic yards still in storage. See Attachment 1 which is a page from Energy Solutions as-built drawings from 2006. Attachment 2 is two pages from Energy Solution SEC filing which are the Unaudited Pro Forma Income Statement for 2006. During 2006 they claim to have made $34 million in net income. If you credit some for the capital improvements and then round the annual volume used to 450,000 cubic yards then it makes sense to round the net income up to $50 million for every 450,000 cubic yards of waste they dispose.

- **Division Response:** No response required. The Division regulates the facility with regards to public health/safety and environmental protection.

Para 3) The company is hoping to expand on it's current LARW license by using the space now licensed for 11e(2) for LARW disposal. Figure 1 is a layout of the site and shows the proposed location of the new cell. Figure 2 shows how the new facility would need to be separated from the existing 11e(2) cell. If they get approval to expand into the new area, they will need to close up the 11e(2) cell and then start a new LARW cell since, all 1le(2) facilities (wastes) are separated from low-level facilities (wastes). If, and that may be a big if, (they have withdrawn their last three attempts to expand after years of review) they get this request for expansion approved it would add five years to the life of the facility at the current waste acceptance rate.

- **Division Response**: This concern has been resolved above; see Division Response to Judd Page 4, Paragraph 2.

Para 4) Attachment 3 is page 32 of Energy Solutions SEC filing and shows the Long Term Debt for the company. At the end of 2006, the long term debt was listed at $753 million. Much of this debt was to buy companies in other States and other countries.

- **Division Response**: No response required. The Division regulates the facility with regards to public health / safety and environmental protection.

Para 5) Energy Solutions can continue to bring in current rates of LARW and fill up the Clive site in 9 years and make about $450 million or they can bring in half that waste each year and stay open for 19 years and make less than $450 million.

- **Division Response**: No response required. The Division regulates the facility with regards to public health / safety and environmental protection.

Para 6) Is the State ready to take over the Energy Solutions Clive site in either 4 years or 9 years? How will any debt be handled at that time? Does it make sense that the $450 million income from the Clive facility be spent out of State? Who should benefit from all of the waste coming to Utah?

- **Division Response**: The Division has required surety funding sufficient to close the facility during the coming year using an independent third party (contractor). Should the facility become insolvent and the Licensee be unwilling or unable to conduct required closure activities, sufficient funding is in place to cover all closure costs without financial burden to the State. Similar arrangements will be required each year until the facility is actually closed.

  The State is not responsible for any debt the Licensee may hold at any time.

  The Division does not regulate how the Licensee chooses to use its income; nor is the Division authorized to determine who should benefit from LLRW disposal. The Division's mission is to regulate the facility with respect to public health / safety and environmental protection.

z. Judd Attachment 1, Pages 27 (Table 1) and 28 (Table 1 Notes)

CONCERN # 2
Para 1) Table 1 on Page 27

- **Division Response:** This page contains a table as mentioned in the Commenter's text of April 6, 2007. No response required, see Division responses to Judd Attachment 1, Page 26, above.

Para 2) Table 1 Notes on Page 28

- **Division Response:** No response required, see Division responses to Judd Attachment 1, Page 26, above.

aa. Judd Attachment 1, Page 29

Insufficient Closure Funds

Para 1) Energy Solutions is required to provide enough funds to close the facility at any time to make sure that the State of Utah does not get left with closing the facility without funds to complete the project. The last documented review we could obtain was done in August of 2006. When this review is compared to the recently submitted as built drawings it seems that Energy Solutions has expanded its cells beyond what it has the funds to close.

- **Division Response**: We disagree with the comment; see Division response to Judd Page 1, Paragraph 3 regarding surety review. As mentioned above, the Division has reviewed and evaluated the information contained in the Licensee's 2006 Surety Report. The 2007 Surety Report is currently in the process of being reviewed. The Division has addressed all conditions and considerations related to closure, should the facility need to be closed by a third party.

  Specifically, the Division has examined the Commenter's allegation that as built drawings indicate ". . . that Energy *Solutions* has expanded its cells beyond what it has the funds to close." The Division has concluded that required surety funding is sufficient to close the facility, given conditions that exist today.

Para 2) Energy Solutions currently has 2 LARW cells open as shown in their as-built drawings attached at Figure 3 and 4. Figure 3 shows the area that would need to be covered in the Class A cell and Figure 4 shows the area that would need to be covered if the old B&C cell needed to be closed at this time.

- **Division Response**: No response required.

Para 3) Table 2 is a comparison of the licensed amounts of different line items that Energy Solutions has funds set aside in accordance with their August 2006 Surety Agreement compared to what their as-built drawings now show that they would need to close the facility properly. The list always indicates areas where Energy Solutions may be in violation of their trust agreement limits if our calculations are correct.

- **Division Response:** The Division has reviewed the applicable license conditions and conditions that existed at the facility at the time the 2006 surety was approved. From this review, the Division has determined that sufficient surety funding is provided to close the facility using an independent third party (contractor), see Division response to Judd Page 1, Paragraph 3 regarding surety review.

  As for the material quantities from the approved 2006 surety outlined on Judd Attachment 1, Table 2, the majority of these are accurate and were based on the conceptual closure plan submitted by the Licensee on March 5, 2007 (Engineering Drawing 07001-V1, Rev. 0), including cover area, and expected volumes for radon barrier, erosion barrier, sacrificial soil, and filter zone. Minor errors were made by the Commenter in the case of drainage area and fence length in that the Division approved quantities were actually larger than represented (29,071 square yards and 11,324 linear feet, respectively). As for road volume the Division approved value in the 2006 surety was smaller than quoted (6,957 cubic yards), and will be re-examined during review of the 2007 surety.

Para 4) Our Concern is that the State may not be properly protected under the current funding of the Energy Solutions Surety Agreement and that Energy Solution may have many violations of their current license requirements. A detailed review needs to be done of the surety and violations need to be given if Energy Solutions has exceeded their limits in these areas. The amount for erosion barrier needs to be addressed to cover the costs to haul rock in from the Salt Lake valley.

- **Division Response:** The Division has considered existing conditions in its evaluation of the Licensee's 2006 Surety Report and ensured that sufficient surety funding is provided to close the facility using an independent third party (contractor). See response to Judd Page 1, Paragraph 3 regarding surety review. A new rock source has been located nearby on the Grayback Hills; see Division response to Judd Page 3, Paragraph 3.

ab. Judd Attachment 1, Page 30 (Table 2)

CONCERN #3
Para 1) Table 2 on Page 30

- **Division Response:** No response required, see Division response to Judd Attachment 1, Page 29, Paragraph 3, above.

ab. Judd Attachment 1, Page 31

Settlement Causing Failure in 10-8 Radon Barrier

Para 1) Energy Solutions new cover design calls for only 1 foot of 10-8 radon barrier. If the radon barrier cracks or fails then radon gas is likely to escape into the atmosphere. The way in which Energy Solutions has constructed their Class A cell invites large amounts of differential settlement.

- **Division Response**: This concern has been resolved, see Division responses to Judd Page 1 Paragraphs 1 (radon barrier design) and 2 (settlement), Page 14, Paragraph 2 (temporary cover), and Page 20, Paragraph 2 (temporary cover and settlement monitoring), above.

Para 2) Figure 5 shows two cross sections of the Class A Cell. The areas marked A are areas where wastes have been placed for many years (some wastes have been placed there for 6 years). In these areas the initial settlement has already occurred. This initial settlement is estimated to be 1 to 2 feet. In Area B there currently is no waste but waste will be placed there in the next year or so.

- **Division Response**: See response to Judd Page 1, Paragraph 2 regarding the differential settlement.

Para 3) If the 1 foot barrier is placed soon after the Area B waste is placed then the initial settlement in Area B will occur after the radon is placed. This one to two foot settlement could easily damage the 1 foot radon barrier. This engineering concern needs to be studied and it may be necessary to require a 2-3 year "settlement period" before radon barrier can be constructed over recently placed wastes.

- **Division Response:** Observed magnitudes of differential settlement are within acceptable limits. See response to Judd Page 1, Paragraph 2 (differential settlement). The currently approved CQA/QC Plan already calls for a temporary cover and a 1-3 year "settlement period, see Division responses to Judd Page 14, Paragraph 2 (temporary cover) and Page 20, Paragraph 2 (temporary cover and settlement monitoring).

Para 4) This issue needs to be decided quickly because the "Open Cell" requirements only allow a cell to be open 12 years before it is completely closed. The Class A cell began taking wastes in 2000 and would need to be completely closed by 2012. Cover construction would take at least 1 year and if you needed three years of settlement time then wastes should only be placed in the Class A cell for one more year.

- **Division Response:** This concern has been resolved previously, see Division response to Judd Page 17, Paragraph 3(open cell), Page 20, Paragraph 2 (temporary cover and settlement monitoring) and 3 (open cell inspections).

ac. Judd Attachment 1, Page 32

Concern #4
Will History Repeat Itself?

Para 1) The State of Utah is in a situation where it needs to learn from past experiences.

- **Division Response:** No response required.

Para 2) In May, 1979 the Utah Board of Oil Gas and Mining authorized Atlas to use a reclamation contract with the State of Utah,- a general corporate obligation, in lieu of a bond to assure the stabilization of the Atlas uranium tailing pond outside Moab, Utah.1 Estimates of the magnitude of the Atlas tailings range from 10.5 million to 13 million tons. In 1984 Atlas Corporation shut the mill down and began negotiating with the NRC about site cleanup. The State of Utah estimated clean up costs of $77 million but there were remaining unsolved water contamination problems. When it became clear that cleanup might be as much $250-300 million, Atlas filed for bankruptcy, leaving a $5.25 million reclamation bond. NRC had no funds for clean up. PricewaterhouseCoopers was appointed trustee and attempted to stabilize the pile until a permanent solution could be found. The ultimate solution includes a 10 year tailings removal project costing $320 million and treatment of groundwater contamination for 75 years, costing $70 million.

- **Division Response**: No response required.

Para 3) In either 2011 or 2016 Energy Solutions will have over 13 million tons of waste at the Clive facility. The site will be full and it will be time to clean up and close the site. There will be no more money to be made from the site. They will be ready to turn the site over to the State of Utah. There are significant differences between Atlas and EnergySolutions. There is no river adjacent to EnergySolutions, but the nearby exposed population is much larger. There are significant similarities – the size of the waste pile, the fact that EnergySolutions bond is inadequate to cover costs, and the fact that EnergySolutions public statements in its IPO filing indicates that EnergySolutions will not have income to cover the remediation costs.

- **Division Response**: The actual date when the Licensee's disposal embankments are filled is conjecture. Each year the Division ensures that adequate sureties are provided to close the facility in accordance with current site conditions and License requirements, using an independent third party (contractor).

  The conclusion of revenue-generating disposal operations is inconsequential to the Division. Surety funds to close the facility do not arise from current revenues but are secure financial instruments provided by the Licensee as required by regulation. These financial instruments have positive controls that protect the State from any financial burden associated with facility closure, independent of the financial health of the Licensee.

Under expected conditions, the landowner or a custodial entity will provide care and maintenance of the closed facility during the institutional control (post-closure) period. In the case of the Clive facility, the Licensee (Energy*Solutions*) is the landowner. No custodial entity has been identified at this time for the LLRW disposal facilities, nor has the state defined a process by which the custodial agency would be identified. It is overly simplistic to assume that the State will be responsible for the facility once it is closed.

Mention of "remediation costs" in the Comment is misleading. No condition is currently known to exist that would indicate or even suggest that the facility has not performed or will not perform as required and as designed. Therefore, no remediation costs are presently anticipated

The Commenter failed to identify a critical difference between the Atlas and Energy*Solutions* facilities, that being the fact that the regulatory agency requires Energy*Solutions* to update its surety each and every year. This was not the case at the Atlas site. The Licensee has provided and the Division ensures that it continues to provide adequate surety arrangements to cover all closure costs so that the State shoulders no financial burden in connection with facility closure.

Para 4) Is the State of Utah ready to take over the Clive site; clean up the site and take all responsibilities for the site into the future? It will be no easy task and there are huge consequences.

- **Division Response**: This concern has been resolved, see Division response to Judd Attachment 1, Page 31, Paragraph 3, above.

Conclusion

Several of the comments discussed in this document led to modifications of the Radioactive Material License, No. UT 2300249 beyond what was issued for public comment. The modifications and the associated justifications are shown in the table below. The entire license, with changes marked in red-line format, is included in Appendix D.

License Condition Modifications	**Reason**
9. H. Reserved. ~~The Licensee may receive and utilize as a training device one radioactively contaminated USDOT Specification 7A Type A shipping cask at the Containerized Waste Facility. The cask is to be maintained as referenced in License Condition 88.T.(2).~~	As stated in the Division's response to Comment 1.a "Condition 9.H", the Division agrees the license condition is no longer applicable. The condition has been removed from the final License
26. The operational environmental monitoring program shall be conducted in accordance with the License Renewal Application, Appendix R (revised), dated July 3, 2007 ~~October 3, 2006~~.	As stated in the Division's response to Comment 1.a, "Condition 88", a revision to Condition 26 that references Appendix R of the license renewal application has been reviewed and approved by the Executive Secretary dated July 3, 2007.
27. Vehicles, containers, facilities, materials, equipment or other items for unrestricted use shall not be released from the Licensee's control if contamination exceeds the limits found in Table 27-A. Except as provided in 49 CFR 173.443(d), conveyances used for commercial transport of radioactive waste or materials, may not be returned to service until the radiation dose rate at each accessible surface is 0.005 mSv per hour (0.5mrem per hour) or less, and there is no surface removable (non-fixed) radioactive surface contamination as specified in paragraph (a) of 49 CFR 173.443. ~~Vehicles, containers, facilities, materials, equipment or other items for unrestricted use, except conveyances used for commercial transport of radioactive waste, shall not be released from the Licensee's control if contamination exceeds the limits found in Table 27-A.~~	As stated in the Division's response to Comment 1.a."Condition 27", the Division has revised the language to explain what the release criteria will be for conveyances. The revised language simply clarifies the release criteria for conveyances in the license condition.
28. A. The Licensee shall submit a corrective action plan for the Cover Test Cell for Executive Secretary approval by no later than July 23, 2008 ~~June 30, 2008~~. The corrective action plan shall identify all means necessary to collect valid data to verify actual performance of the cover system. Said plan shall include Cover Test Cell design, construction, instrumentation, monitoring, reporting, and comparison of actual performance to projected performance. The Cover	As stated in the Division's response to Comment 1.a."Condition 28", the additional public comment period and response timeline has made the current date in the License Condition infeasible. The request for additional investigation time by the licensee is granted, and the date will be revised

Test Cell corrective action plan shall include: …	to July 23, 2008.
39. C. Waste delivered in a shielded transportation cask shall remain in the cask until the waste is approved for disposal and the disposal location is prepared for the shipment. Waste received for disposal in the Containerized Waste Facility shall not be handled, stored or transferred within the contaminated portion of the Restricted Area without the approval of the ~~Containerized Waste Facility~~ Corporate Radiation Safety Officer.	As stated in the Division's response to Comment 1.a. "Condition 39.C", To correctly reflect the Licensee's current organization
39. F. Disposal of non-containerized decomposable or compressible waste at the Containerized Waste Facility is prohibited. Such waste shall be disposed of as debris in bulk waste portions of the Class A or Class A North disposal embankments, in accordance with debris placement requirements of the currently approved LLRW and 11e.(2) CQA/QC Manual.	As stated in the Division's response to Comment 3.n (Judd Page 14. Para 9), the Division agrees the term "large piles" is not well defined, and that a high proportion of decomposable material at the CWF facility has the potential to exacerbate cover system settlement. In order to alleviate this concern, a new License Condition 39.F was added to prohibit disposal of bracing and other related decomposable debris at the CWF operation.
45. All engineering related soil tests conducted by the Licensee to demonstrate compliance with Condition 44 shall be performed by a laboratory certified and accredited by the AASHTO Materials Reference Laboratory (AMRL). Said certification / accreditation shall apply to clay liner, clay radon barrier, soil filter layers, sacrificial soils, and riprap materials, or other soil or man-made materials as directed by the Executive Secretary. Said certification shall include all engineering test methods required by License Condition 44, or as directed by the Executive Secretary. ~~The Licensee shall secure said certification and accreditation on or before December 31, 2006.~~	As stated in the Division's response to Comment 1.a, "Condition 45", the Division has confirmed the receipt of the licensee's AASHTO Materials Reference Laboratory (AMRL) accreditation.
73. G. The Licensee shall prepare and maintain current a gravel resource evaluation report on-site that quantifies the gravel reserves remaining in the Grayback Hills Gravel Pit located in Section 24 of T. 1 N., R. 12 W (SLBM). Such report shall be prepared and certified on or before August 31 of each year by a professional engineer or professional geologist currently registered in the State of Utah.	As stated in the Division's response to Comment 3.c (Judd Page 3, Para 3), the rock source the Licensee has previously relied upon is no longer available to the Licensee. In response, the Licensee has opted to use an alternate rock source, the Grayback Hills Gravel Pit 24 (Pit 24). The Licensee has demonstrated through appropriate analyses that the rock taken from Pit 24 will satisfy all applicable requirements (including

	that the rock must have a minimum score of 50 following guidance presented in Table D-1 of NRC 2002) and that sufficient rock will be available to support complete facility closure.
76. Reserved. ~~The Licensee shall revise the currently approved surety to account for future reclamation, decontamination and decommissioning of new facilities, as follows:~~ ~~Rotary Dump Facility – before handling, storage or processing of any radioactive waste at the Rotary Dump Facility, the Licensee shall submit a revised surety estimate for Executive Secretary review, and receive approval thereof. Said estimate shall include the Rotary Dump Facility and all related conveyances and appurtenances; and be submitted in conjunction with the As-Built Report required by Part I.I.5 of the GWQ Permit.~~ ~~East Side Drainage Project – on or before February 28, 2007, the Licensee shall submit a revised surety estimate for the East Side Drainage Project for Executive Secretary review. Said estimate shall be submitted in conjunction with the As-Built Report required by Part I.I.7 of the GWQ Permit.~~	As stated in the Divisions response to Comment 1.a, "Condition 76", the Division agrees the license condition is no longer applicable.
88. A. License renewal application, ~~revision 6, dated 16 March 1998.~~ Revision 2, dated June 20, 2005. ~~B. Letter dated October 23, 1998.~~ ~~C. Letter dated January 15, 1999.~~ ~~D. Letters dated February 16, 1999, March 10, 1999, and March 23, 1999.~~ ~~E. Letter dated April 19, 1999, and the U.S. Nuclear Regulatory Commission's Order dated May 7, 1999, and other administrative changes.~~ ~~F. Letter dated July 15, 1999.~~ ~~G. Letter dated September 1, 1999.~~ ~~H. Letters dated July 15, 1999, June 28, 1999, August 27, 1999, October 19, 1998 and August 19, 1999.~~ ~~I. Letters dated October 15, 1999, and November 4, 1999.~~ ~~J. Letters dated June 3, 1999, November 5, 1999, February 16, 2000, and March 21, 2000.~~ ~~K. Letters dated April 28, 2000, May 5, 2000, May 10, 2000,~~	As stated in the Division's response to Comment 1.a "Condition 88", the Division agrees all matters from communications dated prior to the Licensee's issuance of the revised LRA (June 20, 2005) should be addressed in the LRA, with the exception of unrelated licensing efforts (such as approval of capital improvement projects that were resolved after that date). The Division has added a new Item 88.A to document the revised LRA. The Division has revised License Condition 88 by deleting Items 88.A through 88.X as published for public review. The Division has, however, retained but renumbered Items 88.Y through 88.DD (as listed in the draft License published for public review). The Division recognizes that, with this resolution, some of the referenced documents may be repetitive or

~~and June 6, 2000.~~ ~~L. The following documents refer to the Class A disposal cell.~~ ~~(1) Letters dated September 24, 1999, March 6, 2000, April 14, 2000, July 21, 2000, July 26, 2000, August 8, 2000 and August 15, 2000.~~ ~~(2) Revised Run-On/Run Off Berm Calculations dated May 26, 2000.~~ ~~(3) Revised Engineering and Modeling Analysis dated June 19, 2000.~~ ~~M. Request for License Amendment: Containerized Class A LLRW Disposal, dated Apr.12, 2001.~~ ~~N. Engineering Justification Report, Addendum "Fifteen Percent Void Space Criteria" (Revision 1 dated October 10, 2001).~~ ~~O. AMEC letter to Envirocare of Utah, Inc. "Placement of Drums and B-25 Containers with 15 Percent Voids; Envirocare Class A - Containerized Waste Facility Near Clive, Utah" (dated October 2, 2001).~~ ~~P. AMEC letter to Envirocare of Utah, Inc. "Response to Interrogatory Number 2: Placement of HICs in Caissons; Envirocare Class A Disposal Facility Near Clive, Utah"(dated October 1, 2001).~~ ~~Q. The following documents refer to revisions made in Amendment 14.~~ ~~(1) Letters dated January 22, 2002, June 28, 2002.~~ ~~(2) Appendix I, *Organization* (dated July 31,2002, Revision 14d). Letter dated July 31, 2002.~~ ~~(3) Site Radiological Security Plan (dated June 27, 2002, Revision 0). Letter dated June 27, 2002.~~ ~~(4) In reference to Thermal Desorption treatment, letter dated May 13, 2002.~~ ~~R. Letter CD02-0475, dated November 19, 2002, (Change of Address)~~ ~~S. Letter CD03-0045, dated January 24, 2003 refers to revisions made in Amendment 16.~~ ~~T. The following documents refer to revisions made in Amendment 17:~~ ~~(1) Letter CD03-0259, dated June 6, 2003 refers to increase in open cell area.~~ ~~(2) Letter CD03-0249, dated May 29, 2003 refers to maintenance of a contaminated shipping cask used as a training aid device.~~ ~~(3) Letter CD03-0145, dated March 31, 2003 refers to revisions to Appendix I, *Organization*.~~ ~~(4) Letter CD03-0139, dated March 27, 2003 refers to~~	otherwise incorporated into the license renewal application.

personnel title changes. (5) Email: Tye Rogers to Dane Finerfrock, 4/14/03 11:12AM, Subject: Amendment 16. (6) Letter CD02-0447, dated October 31, 2002 refers to revisions to Appendix R, *Environmental Monitoring and Surveillance Plan*. U. The following documents refer to revisions made in Amendment 18: (1) Letter CD02-0374, dated September 16, 2002 refers to initial amendment request. (2) Email: Tye Rogers to John Hultquist, August 5, 2003 correspondence regarding several issues regarding proposed changes to Waste Characterization Plan. (3) Letter from Radiation Control to Tye Rogers dated August 26, 2003 refers to proposed changes to the Waste Characterization Plan. (4) Letter CD03-0371 dated August 27, 2003 response to DRC letter dated August 26, 2003 and revised Waste Characterization Plan dated August 27, 2003. V. The following documents refer to revisions made in Amendment 19: a. *Envirocare of Utah Mixed Waste Cell Infiltration and Transport Modeling*, Whetstone Associates, November 22, 2000. b. Letter CD01-0377, dated August 23, 2001, addendum to Class A Cell modeling (Whetstone Associates, Inc August 21, 2001 Technical Memorandum). c. Letter DRC, dated March 5, 2003 acceptance of Mixed Waste disposal cell cover system design. d. Letter CD03-0123, dated March 24, 2003, initial request to allow full Class A LLRW at the Mixed Waste Facility. e. Letter CD03-0428, dated October 20, 2003, response to DRC's request for additional information regarding Class A waste at the Mixed Waste Cell. f. Letter CD03-0430, dated October 22, 2003, justification for allowable concentrations of Californium isotopes at the Mixed Waste Cell. g. Letter CD03-0257, dated June 5, 2003, initial request to allow placement of mobile wastes in the sideslopes of the LARW Cell. h. Letter CD03-0295, dated July 7, 2003, response to DRC concern regarding the transition zones between the non-mobile and mobile cover designs. i. Letter DRC, dated October 9, 2003, authorization	

~~for Licensee to dispose of mobile wastes in accordance with the Groundwater Discharge Permit modification prior to amending the License.~~ ~~j. Letter DRC, dated April 23, 2004, approval of open cell area expansion request.~~ ~~W. The following documents refer to revisions made in Amendment 20:~~ ~~(1) Letter CD03-0303, dated February 14, 2003: Waste Management Plan (WMP).~~ ~~(2) Email: Tye Rogers to John Hultquist, dated August 6, 2003 regarding several issues proposed to the Waste Management Plan.~~ ~~(3) Letter dated November 12, 2003, regarding four issues pertaining to the Waste Management Plan.~~ ~~(4) Letter CD03-0495, dated December 1, 2003, Response to November 12, letter regarding issues pertaining to the Waste Management Plan.~~ ~~(5) Letter dated December 9, 2003, Waste Management Plan issues.~~ ~~(6) Email from John Hultquist to Tye Rogers, regarding meeting held January 13, 2004.~~ ~~(7) Letter CD04-0033, dated January 22, 2004, Waste Management Plan issues.~~ ~~(8) Letter dated February 6, 2004, responding to Envirocare's letter dated January 22, 2004.~~ ~~(9) Letter CD03-0303, dated July 9, 2003, Organization rev. 15a.~~ ~~(10) Letter CD04-0082, dated February 19, 2004, rev 16, and Letter CD04-0195, dated April 23, 2004, rev 16; Appendix I, *Organization*.~~ ~~(11) Letter CD03-0405, dated September 23, 2003, request to amend license conditions 37, 76, and 78.~~ ~~(12) Meeting notes from two meetings held with Envirocare dated November 19, 2003 and June 17, 2004.~~ ~~(13) Email from Boyd Imai to Mark Ledoux dated June 22, 2004.~~ ~~(14) Letter CD04-0338, August 25, 2004, amendment request regarding license conditions 76 and 78.~~ ~~X. The following documents refer to revisions made in Amendment 21:~~ ~~(1) Letter and renewal application CD04-0549, dated December 23, 2004, request to change license condition 1.~~ ~~(2) Letter CD04-0499, dated November 8, 2004,~~	

~~Radiological Security Plan revision, license condition 54.~~ ~~(3) Letter CD04-0508, dated November 17, 2004, Radiological Security Plan revision, license condition 54.~~ ~~(4) Letter CD05-0071, dated February 17, 2005, request to amend license conditions 39(C) and 39(E).~~ ~~(5) Letter CD05-0073, dated February 16, 2005, request for interim storage/corrective action plan.~~ ~~(6) Email from John Hultquist to Mark Ledoux, dated February 11, 2005, regarding interim storage/corrective action plan.~~ ~~(7) Email from Mark Ledoux to John Hultquist, dated January 27, 2004, regarding interim storage/corrective action plan.~~ ~~(8) Email from Dane Finerfrock to Mark Ledoux, dated November 2, 2004, regarding interim storage/corrective action plan.~~ ~~(9) Letter CD05-0024, dated January 20, 2004 self identification concrete overpack QA/QC deficiencies.~~ ~~(10) Letter CD05-0095, dated February 28, 2005, changes to the license application regarding electronic dosimetry.~~ ~~(11) Email from Joe Heckman to John Hultquist dated 12-17-2004, regarding revised documents to eliminate 50 mR/hr investigation.~~ ~~(12) Letter CD05-0064, dated February 10, 2005, request to amend license condition 11.~~ ~~(13) Letter from Dane Finerfrock to Tye Rogers, dated February 22, 2005, increase open cell approval.~~ ~~(14) Letter and renewal application CD01-0089, dated March 1, 2001, application for license renewal (UT 2300320).~~ ~~(15) Email: Brian Clayman to Julie Felice, dated January 7, 2002, request for the addition of another gauge storage location and the designation of a different Radiation Safety Officer for license (UT 2300320).~~ ~~(16) Memo: Brian Clayman to Clark Clements, dated March 11, 2002, supplementary information for renewal of license (UT 2300320).~~ ~~(17) Email: Brian Clayman to Clark Clements, CD02-0132 dated April 3, 2002, supplementary information for renewal of license (UT 2300320).~~	

~~(18) Letter CD02-0304, dated August 2, 2002, request to add sealed sources for whole body counter to license (UT 2300320).~~ ~~(19) Letter CD02-0471, dated November 15, 2002, request for approval to move nuclear gauge storage location (UT2300320).~~ ~~(20) Letter CD03-0055, dated February 3, 2003, supplementary information regarding gauge storage in Engineering Lab Trailer (UT2300320).~~ ~~(21) Letter CD03-0091, dated June 5, 2003, request to purchase a model MC-S-24 strata nuclear gauge (UT 2300320).~~ ~~(22) Letter CD03-0320, dated July 22, 2003, request to change Site Radiation Safety Officer for UT 2300320.~~ ~~(23) Letter CD04-0057, dated February 5, 2004, request to add a sealed source (contained in a calibrator) for the calibration of electronic dosimeters (UT2300320).~~ ~~(24) Letter CD04-0216, dated May 3, 2004, request to change Corporate Radiation Safety Officer and add radioactive materials to UT 2300249.~~ ~~Y.~~ B. The following documents refer to revisions made in Amendment 22: (1) Letter CD04-0481, dated October 27, 2004, Amendment and Modification Request – Class A North Embankment. (2) Letter CD04-0548, dated December 23, 2004, Revised Class A North Disposal Embankment License Amendment Request. (3) URS Review of Revised Class A North Embankment Amendment Request, dated December 29, 2004. (4) Letter CD05-0024, dated January 17, 2005, Class A North Disposal Embankment License Amendment Request Revision 2. (5) Letter CD05-0265, dated May 20, 2005, Revision of Appendix R, Environmental Monitoring and Surveillance Plan. (6) Letter CD05-0266, dated May 25, 2005, Surety Calculations for the Class A North Disposal Cell. (7) Memo: Treesa Parker to John Hultquist, dated May 25, 2005, Proposed revisions to RML for Amendment 22 (8) Email: Treesa Parker to Christine Hiaring, dated	

June 1, 2005, License Amendment 22 Minor Changes for Consistency. ~~Z.~~ C. The following documents refer to revisions made in Amendment 22A: (1) Division letter dated November 14, 2005. ~~AA.~~ D. The following documents refer to revisions made in Amendment 22B: (1) Letter CD05-0333, dated June 30, 2005, RML no. UT 2300249 Request for approval of revisions to Appendix I, Organization, and amendment of License Condition 32 A. (2) Memorandum dated August 2, 2005, Subject; Review of Appendix I (3) Letter CD05-0398, dated August 16, 2005, Request for approval of revisions to Appendix I, Organization and amendment of license condition 31.A,B,C, and 32A. (4) Letter CD05-0507, October 26, 2005, Additional information regarding proposed revisions to Appendix I, Organization and amendment of license condition 31.A,B,C, and 32A. (5) Letter CD05-0453, dated September 19, 2005 Request for amendment of License Condition 9.10 RML UT2300478; Organization. (6) Letter dated November 22, 2005, Request for information regarding request to revise Appendix I of the 11e(2) License Application and Amendment of L.C. 9.10. (7) Letter dated October 11, 2005, Re: Request for Information: Revision to Appendix I and amendment 31A. B. C. and 32A. dated August 16, 2005 (CD05-0398). (8) Memorandum, dated October 3, 2005, Subject; Appendix I, revisions to RML UT2300249 conditions 31 A, B, C, and 32 A. (9) Letter CD05-0411, dated August 23, 2005, Payment of administrative cost for Appendix I amendment request dated August 16, 2005. (10) Letter CD05-0472, dated September 30, 2005, License condition 39.E amendment (11) Email dated August 10, 2005, Subject: Draft amendment for LC 39.E and attached august 10, 2005, License Condition 39 E. amendment "draft". (12) Email dated September 16, 2005, Subject: RE: FW: Draft amendment for LC 39.E.	

(13) Letter CD05-0285, dated June 1, 2005, Envirocare containerized waste facility concrete overpacks corrective action plan. (14) Letter dated June 2, 2005, filling waste package voids at the containerized waste facility using controlled low strength material (CLSM) (15) Letter CD05-0326, dated June 27, 2005, Re: Letter to Mr. Dane Finerfrock, dated April 13, 2005, CD05-0181. (16) Letter CD05-0366, dated July 26, 2005, Re: Letter to Dane Finerfrock, dated June 27, 2005, CD05-0326. (17) Letter CD06-0011, dated January 12, 2006, Request to amend License Condition No. 2, Address. (18) Letter CD06-0043, dated February 3, 2006, Request to amend License Condition No. 1, Company Name. (19) Letter dated February 6, 2006, evidence of name change with the Utah Department of Commerce. (20) Email dated October 6, 2005, Subject: License condition 39.E. (21) Memorandum from Woodrow W. Campbell through Loren Morton and Dane Finerfrock to Envirocare File, dated January 13, 2006 regarding AMRL Soils Lab Certification for the Envirocare Soils Lab. (22) Email dated February 15, 2006 from Loren Morton to Dan Shrum, Subject: License Amendment for Condition 73. (23) Email dated December 23, 2005 from Loren Morton to Dane Finerfrock, Subject: Proposed Changes to License Condition 73 - Annual Surety Evaluation Report. (24) Letter dated February 22, 2006, Subject: Revise void remediation procedure OPC-6.0. ~~BB.~~ E. The following documents refer to revisions made in Amendment 22C: (1) Letter CD05-0435, dated September 8, 2005, Request to amend RML UT 2300249: Condition 58, Waste Characterization Plan. (2) Letter CD05-0557, dated December 5, 2005, RML UT 2300249; Condition 58 Waste Characterization Plan –Revised License Amendment Request. (3) Letter CD06-0072, dated February 27, 2006, Radioactive Material License UT 2300249: Condition 58 Waste Characterization Plan – Revised License Amendment Request. (4) Email dated February 24, 2006 from Boyd Imai to	

Sean McCandless Re: Waste Characterization Plan. (5) Letter CD06-0059, dated February 15, 2006, Radioactive Material License UT 2300249 –Self Identified Noncompliance. (6) Letter dated March 17, 2006, from the DRC regarding the February 15, 2006 letter of noncompliance. (7) Letter CD06-0055) dated February 9, 2006, Request to Amend RML UT 2300249 to show addition of Liquid Radioactive Sources to License Condition 6.E. (8) Letter (CD06-0092) dated March 8, 2006, RML UT 2300249; Request for administrative amendment. Conditions 21A and B and Condition 81. ~~CC.~~ F. The following documents refer to revisions made in Amendment 22E: (1) CD06-0389, "Request to amend Radioactive Materials License No. UT 23000249 and 11e.(2) Radioactive Materials License No. UT 23000478 – Request for approval revised Appendix I, *Organization*," October 6, 2006. (2) Shredder Facility a. CD05-0448, "Radioactive Materials License No. UT 2300249 (RML) and Groundwater Quality Discharge Permit UGW450005 (GWQDP). Request to Construct Shredding Facility," September 15, 2005. b. CD05-0532, "Request to Construct Shredding Facility – Revised Design and Interrogatory Response," November 14, 2005. c. CD05-0556, "Request to Construct Shredding Facility – Additional Information," December 2, 2005. d. CD06-0036, "Request to Construct Shredding Facility – Response to Round 2 Interrogatories", February 1, 2006. e. CD06-0098, "Request to Construct Shredding Facility – Response to Round 3 Interrogatory," March 10, 2006. f. ASTM F-1417, "ASTM Method F 1417-92," March 29, 2006. g. CD06-0188, "Request to Construct Shredder Facility – Response to Round 4 Interrogatory," May 9, 2006. h. CD06-0211, "Request to Construct Shredder Facility – Response to Round 4B Interrogatory," May 25, 2006. i. CD06-0234, "Requests to Construct Shredder and Rotary Dump Facilities – Revised Wastewater Management Process," June 19, 2006. j. "EnergySolutions LLC Low-Level Radioactive Waste Closure & Post-Closure Trust License UT 2300249 Trust #16673400," June 29, 2006. k. CD-0346, "Interim Wastewater Management Plan for	

the Shredder Facility – Response to August 18, 2006 Request for Additional Information," August 31, 2006. l. CD06-0388, "Radioactive Material License UT 2300429 and Groundwater Quality Discharge Permit (GWDP) No UGW450005 Shredder Facility – Request to Operate," October 5, 2006. m. CD06-0407, "Comment on Proposed Amendment of Radioactive Material License UT 2300249 and Groundwater Quality Discharge Permit (GWDP) No UGW450005, October 18, 2006. n. CD06-0414, "Radioactive Material License UT 2300249 and Groundwater Quality Discharge Permit No UGW450005 Shredder Facility – Submittal of Revised Drawings" October 25, 2006. o. CD06-0425, "Groundwater Quality Discharge Permit No UGW450005 (GWQDP) Submittal of Revised Appendix J and K," November 7, 2006. (3) Rotary Dump Facility a. CD05-0564, "Request to Construct – Rotary Dump," December 12, 2005. b. CD05-0570, "Request to Construct Rotary Dump 00 Submittal of Dose Assessment," December 16, 2005. c. CD06-0086, "Request to Construct Rotary Dump Facility – Response to Round 1 Interrogatory", March 2, 2006. d. ASTM F-1417, "ASTM Method F 1417-92," March 29, 2006. e. CD06-0147, "Request to Construct Rotary Dump Facility – Revised Drawings," April 10, 2006. f. CD06-0210, "Request to Construct Rotary Dump Facility – Response to Round 2 Interrogatory," May 25, 2006. g. CD06-0211, "Request to Construct Rotary Dump Facility – Response to Round 4B Interrogatory", May 25, 2006. h. CD06-0226, "Request to Construct Rotary Dump Facility – Response to Round 2B Interrogatories," June 8, 2006. i. CD06-0234, "Requests to Construct Shredder and Rotary Dump Facilities – Revised Wastewater Management Process," June 19, 2006. (4) Intermodal Container Wash Building a. CD05-0291a, "Radioactive Materials License No. UT 2300249 (RML) and Groundwater Quality Discharge Permit UGW450005 (GWQDP). Request to Construct Intermodal Container Wash Building and Access Control Building," June 9, 2005. b. CD05-0388, "Request to Construct Intermodal Container Wash Building – Revised Design and	

Supplemental Information," August 8, 2005. c. CD05-0432, "Request to Construct Intermodal Container Wash Building – Revised Design and Interrogatory Response," September 1, 2005. d. CD06-0110, "MARSSIM Release for New Intermodal Container Wash Facility," March 22, 2006. e. CD06-0206, "Radioactive Material License UT 2300249 and Groundwater Quality Discharge Permit No UGW450005 Intermodal Container Wash Building – Request to Operate," May 22, 2006. f. "EnergySolutions LLC Low-Level Radioactive Waste Closure & Post-Closure Trust License UT 2300249 Trust #16673400," June 29, 2006. g. CD06-0259, "Groundwater Quality Discharge Permit (GWDP) No UGW450005 Intermodal Container Wash Building – Revised Appendix J and K," July 10, 2006. (5) Decontamination Access Control Building a. CD05-0291b, "Radioactive Materials License No. UT 2300249 (RML) and Groundwater Quality Discharge Permit UGW450005 (GWQDP). Request to Construct Intermodal Container Wash Building and Access Control Building," June 9, 2005. b. CD05-0367, "MARSSIM Release of New Boxwash Access Control", July 26, 2005. c. CD06-0139, "Radioactive Material License UT 2300249 and Groundwater Discharge Quality Permit (GWDP) No UGW450005 Decontamination Access Control Building – Request to Operate", April 6, 2006. d. "EnergySolutions LLC Low-Level Radioactive Waste Closure & Post-Closure Trust License UT 2300249 Trust #16673400," June 29, 2006. e. CD06-0245, "Groundwater Discharge Quality Permit (GWDP) No UGW450005 Decontamination Access Control Building – Revised Appendix J and K and Drawing No 05015-S100," June 30, 2006. (6) East Side Drainage Project a. CD06-0175, "Request to Construct East Side Drainage and Gray Water System Modifications," May 1, 2005. b. CD06-0244, "East Side Drainage and Gray Water System Modifications – Response to DRC Review," June 30, 2006. c. CD06-0293, "Groundwater Discharge Quality Permit No UGW450005 East Side Drainage and Gray Water System – Revised Design and BAT Plans," August 4, 2006. d. CD06-0327, "Groundwater Discharge Quality Permit No UGW450005 East Side Drainage and Gray Water System – Revised Appendix J BAT Performance Monitoring Plan and Appendix K BAT Contingency	

Plan," August 23, 2006. e. CD06-0328, "Groundwater Discharge Quality Permit No UGW450005 East Side Drainage and Gray Water System – Revised Drawings," August 24, 2006. ~~DD.~~ G. The following documents refer to revisions made in Revision 0 of the License Renewal Application: (1) AGRA Earth & Environmental, Inc. 1999. Summary Seismic Stability and Deformation Analysis: Envirocare LARW Disposal Facility, Clive, Tooele County, Utah. September 1, 1999. (1998 LRA Appendix J) (2) AGRA Earth & Environmental, Inc. 2000a. Evaluation of Settlement of Compressible Debris Lifts: LARW Embankments, Clive, Tooele County, Utah. June 1, 2000. (3) AGRA Earth & Environmental, Inc. 2000b. Evaluation of Settlement of Incompressible Debris Lifts: LARW Embankments, Clive, Tooele County, Utah. June 1, 2000. (4) AMEC Earth & Environmental, Inc. 2000a. Letter Report: Allowable Differential Settlement and Distortion of Liner and Cover Materials. October 4, 2000. (5) AMEC Earth & Environmental, Inc. 2000b. Letter Report Stability Considerations: Proposed LLRW Embankment. October 25, 2000. (6) AMEC Earth & Environmental, Inc. 2000c. Letter Report Stability Considerations - Addendum: Proposed LLRW Embankment. November 8, 2000. (7) AMEC Earth & Environmental, Inc. 2001. Response to Interrogatory Number 2: Placement if HICs in Caissons. October 1, 2001. (8) AMEC Earth & Environmental, Inc. 2002. Placement of Large Liners in Caissons. June 19, 2002. (9) Bingham Environmental. 1996. Project Memorandum HEC-1 and HEC-2 Analysis, LARW Application for License Renewal, Envirocare Disposal Facility, Clive Utah. November 26, 1996. (1998 LRA Appendix KK) (10) EnergySolutions (Rebeccah McCloud) to Utah Division of Radiation Control (Dane Finerfrock). 2006. Correspondence concerning corporate ownership and name changes. February 6, 2006. (11) EnergySolutions (Tye Rogers) to Utah Division of Radiation Control (Dane Finerfrock). 2006.	

Correspondence concerning corporate ownership and name changes. February 3, 2006.

(12) EnergySolutions LLC. 2007. "2006 Annual 083106 Rev 052107.xls" [annual surety review], Revision 22, May 21, 2007

(13) EnergySolutions to Utah Division of Radiation Control. 2006. Letter number CD06-0348, Radioactive Materials License No. UT2300249 – Revision to License Condition 26, Appendix R request submitted to DRC on March 17, 2006. September 1, 2006.

(14) Envirocare of Utah, Inc. to URS Corporation. 2005. Personal communication via electronic mail (Sean McCandless and Robert D. Baird, PE). January 27, 2005.

(15) Envirocare of Utah, Inc. to Utah Division of Radiation Control. 2004. Letter number CD04-0287, Updated Specific Gravity Report and Request for Eliminating Specific Gravity Monitoring. June 9, 2004.

(16) Envirocare of Utah, Inc. to Utah Division of Radiation Control. 2005. Letter number CD05-0487, Cover Test Cell Evaporative Zone Depth (EZD) Report. October 13, 2005 June 9, 2004.

(17) Envirocare of Utah, Inc. 2000a. Pre-Licensing Plan Approval Application for a License Amendment Allowing Disposal of Class B & C Low-Level Radioactive Waste. (revision of January 5, 2000 plan) March 15, 2000.

(18) Envirocare of Utah, Inc. 2000b. Rock Cover Design. July 26, 2000.

(19) Envirocare of Utah, Inc. 2001. "Clive Facility Total Ditch Flow Calculations." October 30, 2001.

(20) Envirocare of Utah, Inc. 2003c. Application for Renewal: Radioactive License Materials License Number UT-2300249. July 2, 2003.

(21) Envirocare of Utah, Inc. 2005d. Application for Renewal: Radioactive License Materials License Number UT-2300249, Revision 2 (including all Appendices). June 20, 2005.

(22) Montgomery-Watson (John Pellicer and Patrick Corser) to Envirocare of Utah, Inc. (Tim Orton). 2000. Letter Report LLRW Cover Frost Penetration. March 1, 2000.

(23) Rogers and Associates Engineering for the Utah Division

of Radiation Control. 2000. Siting Evaluation Report for Proposed Disposal Under URCR R-313-25-3 of Class B & C Low Level Radioactive Waste. May 2, 2000.

(24) Shrum, Dan to Robert D. Baird, PE, CCE (URS Corporation). 2005. Via electronic mail. February 28, 2005.

(25) SWCA Environmental Consultants, Inc. 2000. Assessment of Vegetative Impacts on LLRW.

(26) Tooele County Recorder. 1993. Entry No. 5489, Book 348, Page 104. March 16, 1993.

(27) Utah Bureau of Radiation Control (Larry F. Anderson) letter to Envirocare of Utah, Inc. (Khosrow B. Semnani, President). 1987. "Radioactive Material License No. UT 2300249." November 18, 1991.

(28) Utah Department of Environmental Quality (Diane R. Nielson, Executive Director) and Envirocare of Utah, Inc. (Khosrow B. Semnani, President). 1993. "Agreement Establishing Covenants and Restrictions." March 16, 1993.

(29) Utah Division of Radiation Control (Dane Finerfrock) to Envirocare of Utah, Inc. (Daniel Shrum). 2007. "EnergySolutions 2006 Annual Surety Submittal, May 21, 2007 Update." June 1, 2007.

(30) Utah Division of Radiation Control (Dane Finerfrock) to Envirocare of Utah, Inc. (Tye Rogers). 2004. "Restoration of Site Drainage." November 12, 2004.

(31) Utah Division of Radiation Control (Dane Finerfrock) to Envirocare of Utah, Inc. (Tye Rogers). 2005a. "Response to December 4, 2004 Report - Restoration of Site Drainage: Request for Additional Information." February 23, 2005.

(32) Utah Division of Radiation Control (Dane Finerfrock) to Envirocare of Utah, Inc. (Tye Rogers). 2005b. "Response to March 25, 2005 Envirocare Response to the February 27, 2005 DRC Request for Information - Restoration of Site Drainage." April 22, 2005.

(33) Utah Division of Radiation Control (Dane Finerfrock) to Envirocare of Utah, Inc. (Tye Rogers). 2007. "Restoration of Grade - Round 1 Interrogatories: Notice of Upcoming Requirements and Request for Schedule." February 16, 2007.

(34) Utah Division of Radiation Control (Loren Morton) to

EnergySolutions (Tye Rogers) . 2006. Correspondence regarding "DRC Response to Eight Submittals by EnergySolutions Regarding Proposed Class A Combined (CAC) Disposal Cell: Request for Additional Information, Round 3 Interrogatory." March 3, 2006.

(35) Utah Division of Radiation Control to EnergySolutions, LLC. 2006. Letter of approval of Revision 20 of the CQA/QC Manual. September 21, 2006.

(36) Utah Division of Radiation Control (William Sinclair) to Envirocare of Utah, Inc. 2000. Correspondence concerning expectations in addressing the land ownership issue. March 6, 2000.

(37) Utah Division of Radiation Control. 2006a. Memorandum: Analysis of the December 20, 2005 Envirocare Submittal of Settlement Monitoring Plan Update. February 2, 2006. (Johnathan P. Cook to Loren Morton)

(38) Whetstone Associates, Inc. memorandum to Envirocare of Utah, Inc. 2000. Technical Memorandum 41010 Infiltration Through Lower Radon Barrier, Class A, B, & C Cell Cover. November 7, 2000.

(39) Whetstone Associates, Inc. 2000a. Revised Envirocare of Utah Western LARW [Class A] Cell Infiltration and Transport Modeling. July 19, 2000.

(40) Whetstone Associates, Inc. 2001a. "Travel Time Through Class A Cell Cover." June 22, 2001.

(41) Whetstone Associates, Inc. 2003b. Memorandum to Dan Shrum, Envirocare of Utah, "Open Cell Modeling Results for Years 7 – 12," Technical Memorandum 4101T, August 28, 2003.

(42) Whetstone Associates, Inc. 2004. Revised Western LARW Cell Infiltration and Transport Modeling. July 19, 2004.

(43) Zion's Bank and Energy Solutions, LLC, 2007. Surety Details. March 27, 2007.

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