

Public Participation Summary

Dawn Mining Alternate Feed Amendment Request
Energy Fuels Resources (USA) Inc. (Energy Fuels)
(Utah Radioactive Material License UT1900479)
White Mesa Uranium Mill
San Juan County, Utah

July 10, 2014

A. INTRODUCTION

The White Mesa Mill is licensed by the Utah Division of Radiation Control (DRC) under State of Utah Radioactive Materials License No. UT1900479 (License or RML). This license and its amendments authorize Energy Fuels Resources (USA) Inc., (Energy Fuels or EFRI)¹ to receive and process natural uranium-bearing ores and certain specified alternate feed materials, to dispose of certain specified byproduct materials, and to possess byproduct material in the form of uranium waste tailings and other uranium byproduct waste generated by milling operations.

Energy Fuels submitted a License Amendment Request in a letter with supporting attachments dated April 27, 2011, to the DRC. The amendment request would allow Energy Fuels to receive and process up to a total of 4,500 tons (dry weight) of alternate feed from the Dawn Mining Corp. (DMC) Site (the Midnite Mine) located in Wellpinit, Washington. This proposed alternate feed is referred to as the Uranium Material; commenters also referred to it as Midnite Mine Material. Uranium Material results from treatment of pumped groundwater and surface water at the Midnite Mine site's Waste Treatment Plant using either centrifuge or filter press technology.

The DRC engaged the services of URS Corporation to review the Amendment Request. On September 3, 2013, the DRC began a forty-five day(s) public comment period for the proposed Amendment Request. The public notice was placed on the DRC's web page and an electronic mail message was sent out to stakeholders. In addition, the notice was placed in the Salt Lake Tribune, the Deseret News, and the San Juan Record, in accordance with Utah Admin. Code R313-17 Administrative Procedures. The DRC accepted comments until the close of business on October 18, 2013. The DRC made available to the public a draft License along with a Statement of Basis describing the License change(s) and Safety Evaluation Report (SER) describing the environmental analysis regarding the Amendment Request. In addition, documents related to the amendment request were available throughout the review process at the DRC's website at:

¹ The entity that owns the White Mesa Uranium Mill Site has changed or gone by different names over the life of the Mill, including International Uranium Corporation, Denison Mines Corp., and Energy Fuels Inc. To avoid confusion and unless otherwise specified, the name "Energy Fuels" will be used in this Public Participation Summary to refer to the owner of the White Mesa Mill.

http://www.radiationcontrol.utah.gov/Uranium_Mills/IUC/Denison_IUC/dawn_mining.html

As part of the public comment process, a public hearing took place on Thursday, October 9, 2013, from 2 pm to 5 pm in the DEQ board room, Room 1015, at the Utah Department of Environmental Quality, 195 North 1950 West, Salt Lake City, Utah. The purpose of the public hearing was to take comments and include an opportunity for questions and answers, therefore meeting the requirements of 42 U.S.C § 2021(o)(3)(A) as described in the DRC's letter to Deborah Jackson of the Nuclear Regulatory Commission dated August 6, 2013. Interested parties were asked to submit their questions to the Director at least 10 calendar days before the hearing. In addition, the DRC held a public meeting in Blanding, Utah, on October 16, 2013 to accept oral comments from local citizens. Transcripts of both public meetings were produced and are part of the record, and are included with this Public Participation Summary as Attachment A. As a result of the public comment period, four sets of written comments were provided to the DRC. Written comments were received from Uranium Watch, Ute Mountain Ute Tribe, Grand Canyon Trust, and Kuipers & Associates (Engineering firm) on behalf of the Grand Canyon Trust. Comments received from Uranium Watch were submitted on behalf of Uranium Watch, Living Rivers, the Glen Canyon Group of the Sierra Club and the Information Network for Responsible Mining. In total, approximately 85 comments were received from the four entities. Comments are included as Attachment B. The specific comments are provided below (italicized) along with the DRC's response to the comment.

B. GENERAL RESPONSES

The following general responses apply to many comments received.

Several comments have suggested that there are environmental concerns at the White Mesa Mill that are not being adequately addressed and that should prevent this License Amendment. It is fair to say that the DRC does not see the White Mesa Mill the same way these commenters do. The DRC sees an industrial site with some typical problems that industrial sites have: historical contamination, expected and allowable levels of contaminants on site, and some limited evidence of off-site contamination but at levels that warrant further sampling and review to assure that standards are being met, not at levels that warrant emergency response. The picture of the White Mesa Mill as an operation with uncontrolled contamination is not in accord with the available evidence, and the commenters have not provided evidence to the contrary that will stand up to scrutiny.

Although the comments about the Site as a whole should not be considered relevant to this limited licensing action (see General Response, Part 6), the following information is provided about environmental conditions at the White Mesa Mill.

General Response 1. Environmental Conditions and Regulatory Activities at Energy Fuels

1.1.1 Mill Description

The White Mesa Uranium Mill processes natural uranium ores and alternate feeds for Uranium Oxide (U₃O₈). The tailings management system at the site is comprised of five cells. Five impoundment cells, each 40 acres (Cells 4A and 4B) or larger (Cells 1, 2, and 3), have been constructed and approved as tailings disposal cells, although, as described below, some have been used to dispose of tailings while others are being used for other purposes. A map showing where the cells are located is included with this Public Participation Summary at Attachment C.

- Cell 1: Cell 1 was approved by the Nuclear Regulatory Commission (NRC) in June of 1981. It is used as an evaporation pond for process water, storm water, and water from groundwater pumping. This water is used (or re-used) by the Mill for its milling process. Tailings have never been disposed of in this cell.
- Cell 2: Cell 2 was approved by the NRC in May of 1980. It was no longer being used for disposal of tailings at the time the DRC took over regulatory authority of the Mill in 2004. Closure began when disposal of tailings ended, and water is currently being removed from the cell in preparation for installation of a final cover. Dewatering must be completed before the cover is installed to minimize settlement that could impact the cover's ability to prevent precipitation infiltration and to contain radon. There is a 6" to 24" of interim clean soil cover on this cell.
- Cell 3: Cell 3 was approved by the NRC in September of 1982, and is one of the Mill's two operating cells. It is currently near capacity, but is still accepting byproduct material such as in situ leach waste for direct disposal, an activity authorized by the Mill's license. This material is currently going to Cell 3 rather than Cell 4A. Because byproduct material for direct disposal is delivered by truck rather than by slurry, there must be a minimum amount of tailings in a cell in order to protect the integrity of the cell's liner and other structural elements (e.g., the leak detection system). Cell 4A does not yet have enough tailings in it to allow trucks to drive on it safely, ensuring the liner is properly protected. For that reason, and consistent with its License, Energy Fuels has indicated that it intends to continue to use Cell 3 for direct byproduct disposal until those materials can go into Cell 4A. All but approximately seventeen acres of Cell 3 are covered by a clean soil liner.
- Cell 4A: Cell 4A was licensed by the NRC as a uranium tailings disposal cell in 1990. It was either unused or used for temporary storage of vanadium raffinate until, pursuant to DRC requirements, it was retrofitted with a new liner and leak detection system. The DRC approved that retrofitting in September 2008, and Cell 4A is now being used for disposal of tailings.

- Cell 4B: Cell 4B was licensed by the DRC as a tailings cell in June of 2010. This cell receives process water that is then reused by the Mill. It has never been used for disposal of tailings.

1.2 Construction of Impoundment Cells

Impoundment Cells 1, 2, and 3 were approved by the NRC. Each has a single polyvinyl chloride flexible membrane liner and each has an integral leak detection system, although the systems installed would not meet current Best Available Technology standards. (See General Response 1, Part 1.5.1 for more information about additional measures taken to address leak detection.) Cells 4A and 4B were approved by the DRC and are designed and constructed to meet improved design and construction standards under then-existing Best Available Technology requirements for liners and leak detection.

Although the leak detection systems in the older cells would not meet current Best Available Technology, the system in Cell 1 has been demonstrated to work with leaking detected in June, 2010. The level of liquids in Cell 1, which holds process and stormwater liquids, was lowered to allow inspection and repair of the liner. When liquid levels were raised, the leak detection system again had fluids from the cell. A repeat repair, completed in the 2nd Quarter of 2012 was successful, a conclusion that has been verified by the DRC during an on-site inspection.

1.3 Summary of Regulatory Activities at White Mesa Uranium Mill

The White Mesa Mill was originally licensed by the NRC in August, 1979. The License was transferred to the DRC in August, 2004, after Utah obtained Agreement State status for 11e.(2) byproduct material with the NRC.

Energy Fuels holds Radioactive Materials License No. UT1900479 (License) and Ground Water Discharge Permit No. UGW370004 (Permit)² for the White Mesa Mill. Energy Fuels is also subject to a "Corrective Action Plan for Nitrate," dated December 12, 2012. A second corrective action plan to address chloroform ground water contamination is also expected to be completed in the near future. Activities under these plans are described further below.

Energy Fuels Resources is required to conduct various kinds of environmental monitoring at the White Mesa Mill. The reports for these sampling events are made available to the public on the Energy Fuels webpage on the DRC website. The reports placed on the DRC website (http://www.radiationcontrol.utah.gov/Uranium_Mills/denison/index.htm) are as follows:

² The Permit is issued under the authority of the Utah Water Quality Act, Utah Code Ann. § 19-5, but is issued by the Director of the DRC as provided by Utah Code Ann. § 19-5-102(6).

- Quarterly Groundwater Monitoring Reports;
- Semi-Annual Effluent Monitoring Reports;
- Annual Tailings Wastewater Sampling Report;
- Annual Seeps and Springs Sampling Report;
- Quarterly Chloroform Monitoring Reports; and,
- Quarterly Nitrate Monitoring Reports.

Energy Fuels' ground water monitoring program is comprehensive in that it includes all of the 73 monitoring wells at the facility, as described above, although not every well is sampled every quarter. Samples are taken and analyzed for a large number of groundwater contaminants including heavy metals, nutrients, general chemistry analytes, radiologics, and volatile organic compounds (VOCs). Exceedences of standards found during this monitoring program have been addressed as described below.

One of the ways that DRC oversees Energy Fuels' ground water monitoring program is by taking split samples, which began in May, 1999, before Utah became an Agreement State.

The DRC performs approximately 18 routine inspections at Energy Fuels each year, 14 more than it is obligated to do as an Agreement State and 17 more than the NRC did when it regulated the facility. Inspections cover areas of health physics, ground water, and engineering. The Director has issued and resolved 36 Notices of Violation since 2004. Additional inspections will also be done as appropriate for reported incidents. Finally, the DAQ inspects the facility as a "minor source" approximately once every three years.

A comparison of activities under DRC's authorities and activities under the NRC's authorities is included as Attachment D.

1.4 Radioactive Materials License and Ground Water Permit: How They Work Together and Renewals

Energy Fuels holds both a Radioactive Materials License and a Groundwater Discharge Permit for the White Mesa Mill. Although the contents of the License and Permit should be reviewed for a detailed understanding of which subject matters are handled under each regulatory vehicle, the following table provides a summary.

Table 1

Radioactive Materials License No. UT1900479 (License)	Ground Water Discharge Permit No. UGW370004 (Permit)
<ul style="list-style-type: none"> • Reclamation and decommissioning plans, including cell cover closure requirements. • Requirements for alternate feeds. • Surety requirements. • Requirements for disposal of material and equipment. • Limitations on disposal of in-situ leach waste and other 11e.(2) disposal. • Environmental sampling and reporting requirements (incorporates ground water permit requirements by reference). • Leak detection program for Cells 4A and 4B. • Cell settlement monitoring. 	<ul style="list-style-type: none"> • Ground water compliance limits. • Ground water monitoring requirements. • Seep and spring monitoring requirements. • Analytical procedures for samples. • Reporting requirements. • Cell, other impoundment and storage area groundwater-related performance and design standards. • Tailings wastewater sampling.

The License was last renewed in March, 1997 by the NRC for a period of ten years. Energy Fuels submitted a timely application for renewal on February 28, 2007. Under R313-22-36(1), with a timely application the License continues in effect until the Director makes a final determination. A draft license renewal was issued for public comment on August 24, 2012. After consideration of the comments submitted, the Director determined that additional analysis was required and that new opportunities for public comment should be allowed so that interested commenters would be able to meet new statutory requirements for public comments associated with license challenges. See Utah Code Ann. § 19-1-301.5(4). A new draft License is expected to be sent out for public notice and comment in the near future.

The Ground Water Permit was originally issued on March 8, 2005, by the DRC for a period of five years. Energy Fuels submitted a timely application for renewal of the Permit on September 1, 2009. Under R317-6-6.7, with a timely application the Permit continues in effect until the Director makes a final determination. The DRC plans to issue a Draft Permit and Statement of Basis in the near future.

1.5 Ground Water Protection

1.5.1 General

Under the License, the Permit, and the Corrective Action Plans, Energy Fuels has completed and is monitoring 73 ground water monitoring wells:

- 27 monitoring wells placed to detect any leaks from the cells. Because the leak detection systems for Cells 1, 2, and 3 utilized older, less sophisticated technology, the DRC required eight new wells be installed adjacent to the tailings cells in 2005. These wells were to be used as a first line of defense to detect any tailings cell leakage. These supplemented the original seven required by the NRC. When the DRC undertook oversight of the facility, it also began requiring Energy Fuels to sample on-site upgradient and far downgradient wells. Additional wells have been constructed associated with the construction of Cells 4A and 4B.
- 34 monitoring wells associated with characterizing the chloroform groundwater contamination, as described below.
- 12 monitoring wells associated with characterizing the nitrate groundwater contamination, as described below.

The location for these monitoring wells can be seen in Attachment C to this Public Participation Summary. Sampling results are available on-line:

http://www.radiationcontrol.utah.gov/Uranium_Mills/denison/index.htm

The monitoring results for each well that is sampled are evaluated for compliance with standards for 38 different constituents and, regardless of whether standards are met, for trends in the data that may show a need for further action.

Some of the commenters are particularly concerned about potential leakage from Cell 1. Four indicator parameters (chloride, uranium, fluoride, and sulfate) are used for the site to determine if there has been cell leakage. These constituents were chosen because they are the most mobile and are expected to be seen first with an upward trend. If Cell 1 were leaking, it is expected that all four parameters would show increasing trends within two years, based on Kd values and other transport characteristics for the contaminants and site. The time concentration plots for indicator parameters found in wells (MW-24 and MW-28) adjacent to Cell 1 are included as Attachment E. Neither well shows upward trends for all indicator parameters.

To understand ground water movement at the White Mesa Mill site, it is also important to know about the Wildlife Ponds which were constructed to lure wildlife away from tailings ponds. Energy Fuels reports that two of these unlined ponds were constructed in the early 1980's, and the third one was constructed in 1995. The water for the ponds was piped from Recapture Reservoir, north of Blanding City. In 2001, the DRC required Energy Fuels to place a series of piezometers around the site to learn more about rising ground water elevation observed in monitoring well MW-4. That well showed an increase in ground

water elevation of 24 feet from 1995 to 2001. This increase was caused by water leaking from the unlined Wildlife Ponds, the only possible source of such a substantial amount of water. This increase in the water table would likely have leached and mobilized natural uranium and other constituents as a result of new saturation of zones beneath the site that had previously been unsaturated. It could also have mobilized contaminants in and around the wildlife ponds themselves. Both of these results were discussed in the University of Utah Study described in General Response, Part 1.5.5 and are consistent with well samples.

The ground water head elevation continued to rise in well MW-4 until the Mill drained the two north wildlife ponds in 2012.

1.5.2 Chloroform Plume Corrective Action

During a DRC split sampling event in May, 1999, excess chloroform concentrations were discovered in monitoring well MW-4, which is located along the eastern margin of the site. Because these concentrations were above the Utah Ground Water Quality Standard of 70 µg/L, the DRC initiated enforcement action against Energy Fuels on August 23, 1999, by issuing a Ground Water Corrective Action Order. The Order required completion of: 1) a contaminant investigation report to define and find boundaries for the contaminant plume, and 2) a groundwater corrective action plan to clean it up. Twenty new monitoring wells (since increased to 33 wells) were installed at the site as part of the investigation, and monitoring showed a chloroform plume. Other VOC contaminants associated with chloroform have also been detected in these samples.

A map showing the location of the chloroform plume, as determined by evaluating sampling results, is included as Attachment F to this Public Participation Summary. Maps showing ground water direction, both current and recent past, are included as Attachment G.

The Director ultimately agreed with Energy Fuels that the source of the contamination was most likely to be historic laboratory wastewater disposal activities. Historically, laboratory waste was sent to sewage leach fields. All laboratory wastes have been disposed of in Cell 1 since its construction in 1981.

The Director's determination that the laboratory wastewater sent to sewage leach fields, and not leaking from tailings cells, was the most likely source of the chloroform plume was based on:

- The location of the highest levels of chloroform contamination is at or near the sewage leach fields;
- The contaminant plume is upgradient or cross-gradient from the tailings cells;
- Monitoring wells that are downgradient from the tailings cells do not show chloroform contamination; and,
- As described below, the remediation program has been effective in reducing contaminant concentrations, indicating that there is no continuous source for the contaminants, as would be the case if the cells were leaking.

As with every ground water corrective action, the corrective action plan is developed based on assumptions about the source (assumptions that in this case are based on the evidence cited above), and those assumptions are tested continuously with ground water monitoring as corrective action proceeds. If the results of remediation conflict with the assumptions, the DRC will evaluate the data to determine whether the matter will be reopened.

In this case, the monitoring results support the assumptions made about the source. Energy Fuels began in April, 2003 to pump contaminated groundwater and place it into Cell 1, where the water is either evaporated or used by Energy Fuels in its milling process. Groundwater monitoring results show this initial remediation effort has been effective as shown in the table below.

Table 2

Chloroform Plume Monitoring Results				
Chloroform plume monitoring well	Date of Sampling with Highest Concentration	Highest Chloroform Concentration, µg/L	Most Recent (9/13) Chloroform Concentration, µg/L	Percent Decrease from Highest to Current Chloroform Concentration
MW-4	05-Aug	3,500	1,520	56.57%
TW4-1	05-May	3,080	1,150	62.66%
TW4-4	05-Aug	3,200	1,380	56.88%
TW4-11	05-Mar	4,400	865	80.34%
TW4-6	10-Feb	1000	5.93	99.41%

Reduction of contaminant concentrations indicates both that the pumping program is working and that there is no continuous source for the contaminants, as would be the case if the cells were leaking.

A final corrective action plan has been proposed by Energy Fuels, but the DRC has requested changes to the proposed plan. When a draft corrective action plan is approved by the Director, it will be subject to public comment. A public meeting will also be held to give the public a chance to comment on the proposed path forward. The plan is expected to be released for public comment shortly; in the meantime, corrective action is continuing.

Once the DRC accepts a revised plan as a draft, the revised plan will be subject to public notice and comment. The final plan is expected to require that pumping and monitoring continue.

1.5.3 Nitrate Plume Corrective Action

During a review of the Energy Fuels April 30, 2008 New Wells Background Report and other Energy Fuels reports, Nitrate + Nitrite (as N) (hereafter Nitrate) concentrations were observed above the Utah Ground Water Quality Standard (10 mg/L) in five monitoring wells in the mill site area.

After the Nitrate Plume was identified and the information was shared with Energy Fuels, the Executive Secretary and Energy Fuels entered into a January 28, 2009 Stipulated Consent Agreement that required Energy Fuels to complete a Contaminant Investigation Report to determine the potential sources of the Nitrate contamination. Nineteen additional wells were installed to determine the extent of the contamination.

A map showing the location of the Nitrate Plume, as determined by evaluating sampling results, is included as Attachment H to this Public Participation Summary. Maps showing ground water direction, both current and recent past, are included as Attachment G.

Energy Fuels has submitted two reports to the DRC. The reports identify the extent of the Nitrate plume but Energy Fuels and the DRC disagreed about what the reports indicated about the likely source of the plume. Energy Fuels does not believe that the results adequately demonstrated an on-site source. The DRC believes that the reports provide sufficient evidence to conclude that the Ammonium Sulfate Crystal tank on the Mill site is the primary or sole source of the plume. The Director's bases for this preliminary determination are:

- The location of the highest levels of contamination at or downgradient from the tanks;
- The contaminant plume is upgradient or cross-gradient from the tailings cells, demonstrating that the tailings cells are not contributing to the contamination; and
- Monitoring wells that are downgradient from the tailings cells do show nitrate, but not in concentrations above standards or in increasing trends. Nitrate occurs naturally in ground water, so its presence in concentrations below standards is not considered an indication of a problem.

Although Energy Fuels did not agree with that analysis, it did agree to implement a corrective action plan to clean up the plume. Energy Fuels completed and submitted the Nitrate Corrective Action Plan to the DRC on May 7, 2012. The Corrective Action Plan was approved following a public comment period, and was incorporated into a December 12, 2012, Stipulation and Consent Order, Docket Number UGW12-04. This approval is subject to conditions, stipulated penalties and timelines outlined in the Stipulation and Consent Order. The remediation plan requires Energy Fuels to pump the groundwater and treat it by evaporation and/or use as process water. Pumping under the remediation plan began in January, 2013. It is too early in the remediation process to determine whether there are trends in ground water monitoring results that are responsive to the pumping.

As with every ground water corrective action, the corrective action plan is developed based on assumptions about the source (assumptions that in this case are based on the evidence cited above), and those assumptions are tested continuously with ground water monitoring as corrective action proceeds. If the results of CAP implementation conflict with the assumptions, the DRC will evaluate the data to determine whether the matter will be reopened.

1.5.4 Monitoring Well MW-20 and MW-22

Monitoring wells MW-20 and MW-22 were installed in 1994 and are located at a distance of more than $\frac{3}{4}$ mile and one mile south of the tailings cells, respectively. When the State of Utah began oversight of the Mill in August 2004, there was no monitoring data for these wells. The DRC required monitoring in a March 17, 2008, Permit modification.

The Ute Mountain Ute Tribe has commented that these two wells should be treated as points of compliance. When a well is specified as a point of compliance, it means that if there is any exceedence of a compliance limit, the Licensee must perform an assessment of the sources, extent and potential dispersion of the contamination, and an evaluation of potential remedial action to restore and maintain ground water quality to insure that Permit limits will not be exceeded at the compliance monitoring point.

In order to determine whether these two wells should be considered points of compliance, the DRC required Energy Fuels to submit a report with information about background groundwater quality for the wells and groundwater velocities in the vicinity of wells MW-20 and MW-22. Based on this report, submitted on June 1, 2012, the Director determined that there was not sufficient information to deem the monitoring wells as points of compliance wells. This determination was based on:

- The distance between monitoring wells MW-20 and MW-22 and the nearest tailings impoundment. MW-20 is about three quarters of a mile away and MW-22 is about a mile away and cross gradient from the downgradient edge of Cell 4A making it unlikely that groundwater quality in samples from these wells today has been influenced by potential tailings cell seepage.
- The calculated average linear groundwater velocities for MW-20 and MW-22 of 0.33 feet per year (ft/yr) and 0.43 ft/yr, respectively. Therefore, it would take several thousand years before wastewater from the tailings cells could impact wells MW-20 and MW-22. This also means that any exceedences in the two wells would likely be attributable to another source.
- The presence of two other far-downgradient monitoring wells (MW-3 and MW-3A) between MW-20 and the nearest tailings cell. Results from these two monitoring wells located near the tailings cells would show evidence of any leakage before MW-20 and MW-22.

Monitoring at MW-20 and MW-22 have showed some exceedences of standards, mostly for uranium. The DRC was concerned that these observations could be related to tailings cell leakage. The Study described in Part 1.5.5 of this General Response was conducted to answer this question; for the reasons described in that section, the evidence shows that the tailings cells are not impacting the wells.

Monitoring at the wells shows that there are constituents present at levels greater than standards. These results will continue to be monitored for concentrations and trends but the DRC is not requiring any further action at this time for these reasons:

- The evidence shows that the increased concentrations of constituents are not the result of tailings leakage (see General Response, Parts 1.5.5 and 1.5.6).
- The best explanations that fits the evidence are groundwater has become acidic as a result of pyrite leaching, or that the increased water table caused other constituents to leach and mobilize.
- Three out of the four indicator parameters show a decreasing trend, suggesting that the source of the contamination is not continuing.

1.5.5 University of Utah Study of Source of Elevated Metal Concentrations in Monitoring Wells

When the DRC began oversight of the Mill, it noted that ground water monitoring had showed elevated concentrations of metals, primarily uranium, in wells MW-3, MW-3A, MW-14, MW-15, and MW-22 on the Mill site. The DRC was concerned about whether the observations meant that tailings cells were leaking. To address its concerns, the DRC commissioned the University of Utah to investigate in July 2007. The University completed its study and published a report in May 2008 (2008 University Report), available here:

http://www.radiationcontrol.utah.gov/Uranium_Mills/IUC/uofu_gwifstudy/index.html

After review of the 2008 University Report, the DRC determined that downgradient wells with elevated total uranium concentrations (including well MW-22) were not being impacted by leaking tailings cells. This conclusion was based on at least three lines of isotopic evidence:

1. Tritium Signature. Wells MW-3, MW-3A, MW-14, MW-15, MW-22 had tritium signatures in groundwater at or below the limit of detection of 0.3 Tritium Units (2008 University Report p. 26). These values are more than an order of magnitude below the corresponding surface water results found in either the tailings cells or the wildlife ponds. This means that the groundwater in these five downgradient wells is older than water in the tailings cells, and is of a different origin than the tailings wastewater.
2. Stable Isotopes of Deuterium and Oxygen-18 in Water. The Deuterium and Oxygen-18 content of the groundwater matrix and tailings wastewater matrix was tested in all of the water sources studied. The 2008 University Report results showed that wells MW-3, MW-3A, MW-14, MW-15, and MW-22, all downgradient wells with elevated uranium concentrations, had Deuterium and Oxygen-18 signatures that were almost twice as negative as any of the surface water results. (2008 University Report, p. 42.) This shows that groundwater in these downgradient wells had a different geochemical origin than the tailings cell wastewater.
3. Stable Isotopes on Dissolved Sulfate. The University Study evaluated two stable isotopes found on sulfate minerals dissolved in the water samples, Oxygen-18 and Sulfur-34. The evaluation showed that the sulfate solutes in groundwater from downgradient wells MW-3, MW-3A, MW-14, MW-15, and MW-22 had a different

isotopic signature than the sulfate minerals dissolved in the tailings wastewater. In the case of Oxygen-18 on sulfate, the downgradient wells showed more negative values than the tailings cells wastewater. For Sulfur-34, the results were inverted, with groundwater showing more positive values than the negative values seen in the tailings wastewater. (2008 University Report p. 46.) This shows that the sulfate dissolved in the downgradient wells, with elevated uranium concentrations, has a different origin than the tailings wastewater.

In summary, the University Study concluded that wells with high concentrations of metals (MW-3, MW-14, MW-15, MW-18, and MW-22) bear very different isotopic fingerprints than those of the surface water sites (e.g. wildlife ponds, and tailings cells) (2008 University Report p. 58). Regarding uranium concentrations in well MW-22, the University Study stated that "...it does not appear that the elevated uranium values are the result of leakage from tailings cells...." (2008 University Report p. 45).

The 2008 University Report further theorized that the cause of the increasing contaminant concentrations on the site was artificial recharge from wildlife ponds constructed in early 1980's and 1995, described in Part 1.5.1. This recharge likely leached and mobilized natural uranium and other constituents as a result of new saturation of zones beneath the site that had previously been unsaturated. The Mill drained the north wildlife ponds in March, 2012.

1.5.6 Decreased pH

The DRC's review of Energy Fuels' 2010 quarterly ground water monitoring data showed acidity (pH) in ground water at levels that were out of compliance for several monitoring wells. In May 2011, the DRC issued a Notice of Violation and Order requiring Energy Fuels to do a source assessment and submit revised statistics for those wells.

Energy Fuels responded initially by presenting additional information to the DRC showing that pH decreasing (i.e., more acidic) trends appeared to be a site-wide occurrence, observable in monitoring wells upgradient, downgradient, and crossgradient of the Mill. This showed that there was likely a regional root cause. It could also indicate that other ground water parameters that were out of compliance, e.g. metals, may be attributed to increased leaching as a result of decreases in pH, and thus also attributable to the root cause.

Based on this additional information, the DRC extended the time schedule for the pH statistical evaluation in order to allow Energy Fuels to include a plan to evaluate the root cause of the site-wide decreasing trends in pH. Energy Fuels subsequently submitted the following:

- A Source Assessment Report, White Mesa Uranium Mill (October 10, 2012), prepared by Intera Geosciences & Engineering (Intera). This report provided source assessment study of parameter exceedences, not including pH. It provided statistical analysis of data.

- A pH Report, White Mesa Uranium Mill (November 9, 2012), prepared by Intera. This report provided source assessment study for monitoring wells that are out of compliance for pH.
- An Investigation of Pyrite in the Perched Zone White Mesa Uranium Mill Site (December 7, 2012), prepared by Hydro Geo Chem, Inc. This report provides findings of a study to support the regional geochemical process explaining decreasing pH trends at monitoring wells. The study analyzed quantities of iron pyrite (from monitoring well cores and cuttings) and models of dissolution in the Burro Canyon Formation.

Based on its review of the reports, the DRC agreed preliminarily that the evidence supported a conclusion that dissolution of pyrite is likely a significant root cause for area-wide pH decreasing trends.³ Like all determinations about sources of ground water contamination, this explanation will continue to be evaluated through analysis of trends in ground water monitoring results. If results are obtained that are not consistent with this explanation, the DRC will review the data to determine whether the matter will be reopened.

The Director's preliminary determination will be subject to notice and comment during a Permit modification proceeding to increase the affected ground water concentration limits.

1.5.7 Deep water supply well WW-2

Deep water supply well WW-2 is installed in the Navajo Sandstone aquifer. In the process of writing the original groundwater permit for the site, DRC staff reviewed well construction as-built drawing for the wells on site. DRC staff found that the construction of deep water supply well WW-2 appeared to be inadequate, in that it failed to show an annular seal that would isolate the deep confined aquifer from the shallow unconfined aquifer. Energy Fuels committed in January, 2010 to verify the well casing and annular seal integrity of well WW-2 and agreed to remediate, if needed. On January 24, 2012 Energy Fuels submitted an investigation report for well WW-2. The DRC review determined that the findings of the report were inconclusive to prove that well WW-2's well casing and annular seal have physical and hydraulic integrity.

Because well WW-2 is a deep water supply well and the water in the well could be used for drinking water, the DRC met with Utah Division of Drinking Water (DDW). The DRC learned that the DDW requires Energy Fuels to sample the well and submit the results to

³ There is also another theory that was proposed by Energy Fuels that the DRC will consider as it reviews future monitoring results. Not long before the site-wide decreases in pH were seen, Energy Fuels redeveloped every well on the Mill property. Redevelopment pumping can introduce oxygen into the ground water, and oxygen will also decrease pH. The evidence that supports this theory is the short period between well redevelopment and the beginning of the decreasing trend for pH. Well development and pyrite leaching could both have been factors in creating the site-wide decreasing trend seen for pH.

the DDW. If any of these constituents sampled exceed a maximum contaminant level or if there is any detectable concentrations of volatile organic compounds observed, the DDW will require Energy Fuels to implement remedial action.

The DRC Director determined that DRC would not pursue further action on WW-2. This determination was based on the following:

- Well WW-2 is located upgradient of the tailings cells and the Chloroform and Nitrate plumes; therefore, it is unlikely groundwater in this well has been affected or will be affected by these potential sources.
- Well WW-2 currently provides the Mill with water for eye wash stations and showers, is pumped several times a day, and yields about 160 gallons per minute. The deeper confined aquifer is protected due to the artesian conditions in the confined aquifer and the repeated removal of water from well WW-2. This active pumping will deliver any potential contaminants back to the ground surface for use in the Mill operations.
- Well WW-2 is regulated by the DDW. Energy Fuels is required to sample the well and submit the results to the DDW. The DDW has informed the DRC that if any samples exceed standards for any constituent or if there is any detectable concentrations of VOCs observed, the DDW will enforce remedial action.

1.6 Surface Water

Energy Fuels is required by its Ground Water Discharge Permit to sample surface water locations (Ruin Spring, Westwater Seep, Cottonwood Spring, and Entrance Spring) near the White Mesa Mill on an annual basis. Sampling in these locations began in 2009 and sampling results for each location have been below Utah Drinking water standards, with the exception of the 2013 uranium sample in Entrance Spring. See General Response Number 2, Part 2.4 for more information.

There is essentially no surface water on the White Mesa Mill site itself, except stormwater. A copy of a 2013 EPA inspection report is included as Attachment I. The Report notes "no significant findings" (violations), but does recommend that the "Stormwater Best Management Practices Plan be updated to include the sophisticated stormwater diversion efforts made at the site to control stormwater that has come into contact with ore materials as well as the clean stormwater diversion practices on site."

1.7 Airborne Radionuclides and Dust

The White Mesa Mill has five high-volume continuous air sampling stations around the site, as required by its License. Energy Fuels analyzes results from those stations and submits reports to the DRC on a semi-annual basis. Effluent monitoring results are compared to Effluent Concentration Limits established in the License and have been found well below

those limits. The following table summarizes recent information from the data results provided here:

http://www.radiationcontrol.utah.gov/Uranium_Mills/denison/effluent_rpt.htm.

Table 3. Air Effluent Concentrations Summary

Year	1 st Half Semi-Annual	2 nd Half Semi-Annual	ALARA Goal
2009	< 10%	< 8%	< 25%
2010	< 10%	< 10%	< 25%
2011	< 8%	< 8%	< 25%
2012	< 16%	< 20%	< 25%
2013	< 9%	< 6%	< 25%

Five Environmental Stations analyze particulate samples for Uranium, Radium 226, Thorium 230, and Lead 210. All results are less than percent provided in the table.

The Effluent Concentration Limits established in the License are derived from Tables 1 and 2, Appendix B, 10 CFR Part 20.

See also General Response, Part 2.2 and, for information specific to the Uranium Material, Response # 16.

1.8 Air Quality Minor Source Oversight

The White Mesa Mill is a minor source under Utah Air Quality rules. The DAQ approval order establishes a number of requirements:

- It limits Energy Fuels to 720,720 tons of ore processing;
- Limits on fuel consumption for the two dryers of 267,960 MMBtu heat input;
- Limits on the superior boiler of 220,752 MMBtu heat input;
- Visible emission limitations on ore loading areas (15% opacity);
- Visible emission limitations on the vanadium circuit (15% opacity);
- Visible emission limitations on baghouses and boilers (10% opacity);
- Visible emission limitations on all other points (20% opacity);
- Stack testing limits for PM10 on the vanadium circuit scrubber stacks and the yellowcake dryer stacks;
- Requirements that Energy Fuels use only propane or liquid natural gas in the dryers, calciner, furnaces and boilers;
- Numerous requirements to minimize fugitive dust from unpaved operational areas, haul roads and storage piles;
- Requirements that the ore grizzly is be enclosed on 3 sides and have water sprays to minimize fugitive dust; and,

- Requirements for minimization of fugitive dust from the tailings retention areas.

The DAQ also oversees the application of NSPS Subpart Dc, which applies to Energy Fuels' boiler.

As one of approximately 1,300 "minor sources" in Utah, the DAQ is required pursuant to its EPA delegation under the Clean Air Act to inspect the White Mesa Mill once every five years. The DAQ has been able to inspect the facility once every three years, however.

General Response 2. US Geological Survey Report

Many of the comment received rely on a 2011 U.S. Geological Survey Report (USGS Report). See <http://pubs.usgs.gov/sir/2011/5231/>. Following is a response to the most significant issues raised in that report.

2.1 Off-site Particulates: Regulatory Background

Many of the comments received assume that it is illegal or unsafe for any contaminants to blow from the Mill site to off-site areas. Completely eliminating blowing contaminants is not realistic for an industrial facility and it is not the regulatory standard. R313-15-301(1)(a) and (b) establish the standard:

(1) *Each licensee or registrant shall conduct operations so that:*

- (a) *The total effective dose equivalent to individual members of the public from the licensed or registered operation does not exceed one mSv (0.1 rem) in a year, exclusive of the dose contributions from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released, under Rule R313-32 (incorporating 10 CFR 35.75 by reference), from voluntary participation in medical research programs, and from the licensee's or registrant's disposal of radioactive material into sanitary sewerage in accordance with Section R313-15-1003; and,*
- (b) *The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released in accordance with Rule R313-32 (incorporating 10 CFR 35.75 by reference), does not exceed 0.02 mSv (0.002 rem) in any one hour*

In addition, off-site effluent standards are established as specified in R313-15-302. See especially R313-15-302(2)(b)(i):

(2) *A licensee or registrant shall show compliance with the annual dose limit in Section R313-15-301 by:*

- ...
 - (b) *Demonstrating that:*

- (i) *The annual average concentrations of radioactive material released in gaseous and liquid effluents at the boundary of the unrestricted area do not exceed the values specified in Table II of Appendix B of 10 CFR 20.1001 to 20.2402, (2010), which is incorporated by reference*

See <http://www.nrc.gov/reading-rm/doc-collections/cfr/part020/part020-appb.html> for the provisions of Table 2.

2.2 Sediment Results

The USGS Report identifies seven off-site sediment samples that have uranium concentrations that are in excess of local background concentrations determined by the USGS. All of those samples were taken in areas northeast of the Mill site. (USGS Report, Figure 33.) Analytical results for uranium for those samples are listed in Table 4. As also indicated in Table 4, USGS performed statistical analyses on those sample results and determined that four of those samples could be attributed to "natural weathering" rather than "ore migration."

TABLE 4: Off-Site Sediment Samples that Exceed Highest Uranium Background Level*

Sample Site	Caused by "Ore Migration" or "Natural Weathering"**	U (ppm)***	V (ppm)***
MW2-S2A	Ore Migration	6.6	73
MW2-S3A	Ore Migration	5.9	73
MW2-S4A	Natural Weathering	5.7	71
MW2-S5A	Ore Migration	4.9	79
MW2-S7A	Natural Weathering	3.7	58
MW2-S8A	Natural Weathering	3.9	66
MW2-S9A	Natural Weathering	3.6	60

* See USGS Report, Figure 33. Highest background level is 3.6 ppm, from location WMS-32; see USGS Report, Figure 31 for map of location.

** See USGS Report, Figure 38.

*** Values are from USGS Report, Appendix 2, p. 110.

One other site with analytical results below background levels was also identified as having uranium that came from "ore migration" rather than "natural weathering." For that site, WM2-S10A, the analytical results show 2.6 ppm Uranium and 56 ppm Vanadium.

These results do show that additional sampling and analysis is appropriate to determine whether the requirements outlined in Part 2.1 are being met. That additional study should also address at least the following:

- Appropriate background levels. USGS's Study was similar to a screening study and three background samples are appropriate for that purpose. For regulatory purposes, we would generally require more background samples in order to ensure

that the area has been appropriately characterized. The appropriate background level would have to be selected after considering the range and variation of the background sample results, and also after consideration of the relevance of background concentrations established during the National Uranium Resource Evaluation program.

- Additional sampling and analysis for better characterization. Where there is evidence of off-site contamination, seven samples would not ordinarily be considered a sufficient number of samples to characterize that contamination. Additionally, the nature of the uranium (e.g., whether it is present alone or with daughter products) will affect the analysis.
- Whether contamination is continuing. The nature of the regulatory response will vary depending on whether the contamination is from a continuing source. There are a number of potential sources for the contamination that would not be continuing: past practices at the Mill that have since been improved, potential historical sources, such as the ore-buying station at Shirrtail Junction and ore trucks delivering to and exiting from that station. One way to determine whether the contamination is continuing is to collect particulates at air effluent sampling sites. That collection and analysis show that there is currently very little off-site migration of air effluent, suggesting that contamination may be from historical rather than current practices. See General Response, Part 1.7. New sampling locations are being proposed to be added to further assure that conclusion is accurate.
- The source of the contamination. To be effective, a regulatory response must address the source of contamination. If contamination is continuing from the Mill site, it could be from wind-blown particulates from the ore pad or the tailings cells, or from stack emissions. Practices at the Mill have changed since the site opened as an ore station in the late 1970's. There were also historical sources of potential radionuclide contamination in the area that are no longer in operation: there was an ore buying station located south of Shirrtail Junction, and there were also trucks of ore going to and from that station. In contamination investigations, it is necessary to establish causation. DRC would also want to consider whether the USGS's determination that most of the exceedences over background resulted from "natural weathering" rather than "ore migration" continues to make sense in the light of additional sampling information.
- The actual and potential uses of the affected off-site area. Understanding use is an important component of evaluating risk. In this Part 2.2, the risks have been compared to the EPA's residential risk screening levels, although there are no residents in that area.

Some of the comments requested that licensing activity should be held up until these questions are resolved. DRC has evaluated these requests and concluded that, while additional sampling and analysis is appropriate, it is not appropriate to put a moratorium on additional licensing actions at this time. Until the additional sampling and analysis described above is completed, the data is too limited and does not support such a significant regulatory action. As described below, the sample results are also not at levels that warrant immediate action.

Although the dose analyses specified in Part 2.1 of this response are used to determine regulatory compliance, that information will not be available until additional analysis is done as described in this Part 2.3. In the meantime, DRC has evaluated sample results against guidance used by the EPA to determine whether additional, immediate action is warranted at this time. Specifically, it has looked at the following results from the USGS Report:

- The value of all of the uranium samples ranges from 2.6 ppm (WM2-S10A) to 6.6 ppm (MW2-S2A). This includes samples that are below background and samples that USGS determined were the result of "natural weathering" rather than "ore migration."
- The value of all of the vanadium samples ranges from 56 ppm (WM2-S10A) to 79 ppm (MW2-S5A).

Residential soil screening levels

The EPA has established screening levels for residential soils for hundreds of contaminants based on specified exposure assumptions that the EPA determined were reasonable for a residential scenario. Levels at or below EPA screening levels are considered to be "no action" levels -- levels where impacts are very unlikely to be seen. For cancer risks, levels between "no action" levels and 100 times "no action" levels are considered to warrant further study to determine whether the levels present result in a significant risk, based on site-specific considerations.⁴

For uranium, the EPA's no action level for a residential scenario is 2.07 ppm for cancer risks⁵, and 230 ppm for non-cancer risks⁶. For vanadium, EPA's no action level for a residential scenario is 390 ppm for non-cancer risks; there are no expected cancer risks from vanadium in its naturally-occurring form.

All of the off-site values in Table 4 are below screening levels except that all off-site samples exceed the "no action" level for uranium for cancer risks. DRC has determined that it is appropriate to gather additional site-specific data about the area rather than initiating an immediate response to address cancer risk for uranium for several reasons:

- Although the analytical results in Table 4 above exceed EPA's "no action" level, they are all substantially lower than 207 ppm, the level at which the EPA immediate action would be triggered.
- The assumptions behind the "residential" scenario for cancer risk evaluation are likely to be very conservative for this site. For example, a resident is assumed to be

⁴ This statement is based on EPA's cancer risk range, which is 10⁻⁶ (one in one million excess cancer risk, the "no action" level), to 10⁻⁴ (one in 10,000), which is the level EPA uses for immediate action.

⁵ See http://epa-prgs.ornl.gov/radionuclides/download/res_soil_rad_prg_august_2010.pdf.

⁶ See http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/docs/composite_sl_table_run_NOV2013.pdf.

on site for 350 days per year, 24 hours per day, for 70 years, including six years as a child. Adults are assumed to ingest 100 mg of contaminated soil per day, and children are assumed to ingest 200 mg of contaminated soil per day as a child. All of these assumptions are conservative for the area where samples were collected, since the land in that area is uninhabited.

- The USGS data by itself is insufficient, for the reasons described above, to support denial of a license amendment.

Soil levels established to protect ground water

The EPA also establishes levels for soils to ensure that ground water is protected from soil contaminants. For uranium, that level is established at 14 ppm to ensure that the ground water meets MCLs (30 µg/L). All of the off-site values are below this level.

For vanadium, the level for soil contamination to protect ground water is established at 63 ppm⁷. Most of the samples taken by USGS are above this level. DRC has determined that it is appropriate to gather additional site-specific data about the area rather than initiating an immediate response to address risks to ground water from vanadium for several reasons:

- The levels found were very near the EPA soil level for protection of ground water. Just as for cancer risks, the EPA will not take immediate action at sites that are near that level, but will instead study a site further to determine what the site-specific risks are. The EPA does not take immediate action unless the levels present are significantly greater than the EPA soil level for protection of ground water.
- As for the residential scenario discussed above, EPA's screening levels are based on generic inputs rather than site-specific ones. Some of the generic inputs are designed to be conservative. For example, the analysis assumes that the source of contaminants is infinite. The specific levels that would be protective of ground water east of the White Mesa site will have to be derived using site-specific values.
- The USGS data by itself is insufficient, for the reasons described above, to support denial of a license amendment.

2.3 Sagebrush Results

The primary purpose of the sagebrush study was to determine where there were areas of eolian – wind-blown – transport of materials from the Mill site. (USGS Report, p. 57.) The study provides helpful information that DRC will consider as it evaluates a new environmental monitoring plan that Energy Fuels will be required to submit pursuant to expected conditions in the License renewal.

The sagebrush study was not intended to and cannot provide compliance information that can be used in a regulatory context. However it did provide insight regarding the spatial distribution of wind-blown uranium and vanadium contaminants resulting from Mill operations. Samples taken in the northeast part of the study area did display elevated

⁷ *Id.*

uranium and vanadium concentrations and that spatial pattern does correlate with the sediment uranium and vanadium concentrations. It should also be noted that of the 12 samples taken in the eight eastern sample grids, only one – Site 15-1 – was clearly elevated above samples taken in less affected areas.⁸ That area is near sediment samples taken at the location WM2-S2A; see Table 5 and associated text above.

Because the twigs and unwashed leaves of each of the sagebrush were ashed and analyzed as one (USGS Report, p. 7), there is no way to distinguish between contaminants from dust deposited on the leaf surface, which will be derived from wind-blown dust, and contaminants coming up through the root system, information that would be critical to determining the causal mechanism for the spacial concentration patterns observed, and how to respond as a regulator.

To be clear, these were not faults with the USGS sagebrush study. The Study was designed only to show the spatial patterns of contaminants in and on local vegetation.

In summary, the sagebrush study provides valuable information for the purpose for which it is intended: it shows where elevated uranium and vanadium vegetation concentrations that appear to coincide with elevated sediment concentrations. It is still unclear if this is due to wind distribution of contaminants onto plant tissue, root uptake from contaminated soils, or both.

2.4 Ground water Sampling Results

The USGS sampled wells and springs in the area. The USGS Report concluded that the $^{234}\text{U}/^{238}\text{U}$ and $^{235}\text{U}/^{238}\text{U}$ activity ratio values at all well and spring sampling sites other than Entrance Spring are indicative of natural sources of uranium and are not evidence of offsite migration of uranium. USGS Report, Figure 45, p. 68.

The primary ground water concern raised by the USGS Study, then, was with respect to periodic elevated levels of uranium in Entrance Spring. Entrance Spring is a seep on the east side of Highway 91, offsite from the Mill's property. It is considered to be a surface expression of ground water.

Two of USGS's eight samples showed results that are greater than the maximum contaminant level of 30 ug/L.⁹ One of the last six Energy Fuels monitoring results also showed a level elevated above 30 ug/L. As the USGS Report indicated, these results could be due to nearby sediment contamination that is concentrated in the arroyo where the spring is located, or it could be due to ground water contamination.

⁸ Because the purpose of the study was to show wind-blown contaminant distribution, USGS did not identify and sample background areas.

⁹ See USGS Report, Appendix 1, at p. 99, Entrance Spring samples collected on 12/13/07 and 3/13/08.

The DRC agrees that these results indicate a need for continued monitoring. DRC does not agree that they suggest a need for corrective action at this time for a number of reasons:

- Both the USGS (USGS Report, p. 99) and Energy Fuels' results (http://www.radiationcontrol.utah.gov/Uranium_Mills/denison/seepsspringsampling_rpt.htm) have been temporally inconsistent, with a few samples above the drinking water standard but more of them below the standard. More monitoring is needed to determine whether there is a trend or an explanation for the inconsistent results.
- Spatial and temporal trends must be considered. As the first water elevation map in Attachment G shows, Entrance Spring was directly downgradient from the Wildlife Ponds in 2012. As described in General Response, Part 1.5, those ponds caused ground water mounding centered at the Wildlife Ponds, and at least 24 feet of new saturation. Two of the most likely explanations of contamination in Entrance Spring are that the new saturation of those previously unsaturated zones would increase the ground water and contaminant travel speed and would also cause leaching of previously unsaturated natural uranium into that ground water, or that contaminants in and around the wildlife ponds were mobilized and entered the ground water. Entrance Spring is nearly directly downgradient from the ground water mounding caused by the Wildlife Ponds. Because those ponds have recently been drained, the ground water elevation and direction has changed as seen in the second map in Attachment G, which is from the most recent report. A downward trend would be expected in the future if the saturation of previously unsaturated zones is the source; the length of time for that trend to be seen would depend on the speed of the ground water.
- The mechanism for contamination must be understood in order to ensure effective corrective action, if that becomes necessary. There are several mechanisms for contamination that should be considered if further monitoring demonstrates a problem; most of these were acknowledged by USGS:
 - The ground water could be contaminated from a source somewhere along its travel route, either from Mill activities, from natural uranium minerals in the vadose zone between the former location of the wildlife ponds and the spring, or from another source;
 - Contamination from particulates wind-blown from the Mill could be mobilized by precipitation and affecting the ground water, which later emerges at the spring; or,
 - Contamination from particulates that were deposited on or near Highway 191 as a result of historical activities (e.g., ore trucks) could be moved by stormwater to locations in the immediate vicinity of Entrance Spring, which could in turn affect the water after it emerges.
- More study is also necessary to determine whether the results are sufficient to have statistical confidence.

- Entrance Spring is upgradient or cross-gradient from the tailings cells so contamination at Entrance Spring does not suggest leaking from tailings cells that would require more immediate action.

For these reasons, DRC will be including requirements to develop additional monitoring in its draft Ground Water Permit renewal. The results do not warrant additional corrective action at this time. In 2014 and coming years, the DRC will collect split samples at the location to determine if there is any trend.

2.5 New License Condition

Based on the public comments received during the public comment period, along with the DRC's review of the USGS Report and the conclusions in this Public Participation Summary, Part 2, the Director will place a new license condition regarding the Environmental Monitoring Program into the Dawn Mining license amendment so additional monitoring and improvements to the monitoring program can be implemented more quickly.

The new draft license condition will read:

- 11.9 The licensee shall submit a revised Environmental Protection Manual for the White Mesa Mill within 60 days of license approval. The revised Environmental Protection Manual shall include 2 additional air monitoring stations, a revised soil sampling program, and a vegetation sampling program. In addition, air particulate sample analysis shall include Thorium 232, and every air monitoring station shall also monitor for radon (Rn222) and gamma detection devices on a quarterly basis. Implementation of the revised environmental monitoring program shall be completed 90 days after Director approval of the revised Environmental Protection Manual.

2.6 Summary

The USGS Report presents three lines of evidence for off-site contamination:

- Entrance Spring. Samples above maximum contaminant limits have been found for both USGS and Energy Fuels sampling events. For the reasons described in Part 2.4, it is appropriate to continue monitoring the spring. This is particularly true since one likely source of contamination – artificial recharge from the now-drained Wildlife Ponds – has been removed. If that was the source of contamination, downward trends would be expected in a timeframe regulated by the water velocity.
- Sediment samples. Seven off-site samples showed levels of sediment contamination above levels identified by USGS as background (although USGS concluded that four of those samples have indications that they are from natural weathering rather than ore deposition). These results provide a basis for requiring additional sampling and analysis. They do not provide a basis for immediate response, using EPA guidelines. Further sampling and analysis will be required; that sampling and analysis will have

to address the likely source of any off-site contamination in order to ensure an appropriate regulatory response.

- A sagebrush study that shows that wind-blown dispersal of uranium ore has occurred, and there is a pretty clear correlation between the direction of dispersal from the Mill indicated in that study and the increased levels of uranium in the sediment. This study is appropriate to use to evaluate plans for further study and analysis. A revised monitoring plan is being required in License Condition 11.9. One of the purposes of the license condition is to evaluate the source of the off-site deposition. For the reasons described in Part 2.1, it is not appropriate to use this study alone to make any determinations about the existence of off-site contamination at levels that would warrant a regulatory response.

General Response 3. NESHAPs

The National Emission Standards for Hazardous Air Pollutants (NESHAPs) program is a program under the Clean Air Act and in Utah is delegated to the Division of Air Quality (DAQ). The implementing federal regulations for regulation of radon at operating uranium mills is at 40 CFR 61, Subpart W (40 CFR §§61.250 through 61.256). State rules incorporate those federal regulations by reference at R307-214-1.

The DAQ and the DRC have agreed that, because the Mill's Cell 2 is in closure, NESHAPs requirements no longer apply to Cell 2. Cells in closure are regulated under 10 CFR Part 40, Appendix A, Criterion 6. The same standard of 20 pCi/m²s applies under these NRC regulations once the final radon barrier is placed. Until that time, there are no radon emission standards that apply directly, but radon is one of the factors that is considered in analyzing risks from the site as a whole. In the analysis that has been done by DRC in association with White Mesa Mill's license renewal, a maximum 20 pCi/m²s was modeled. That limitation will therefore be incorporated into the draft license amendment.

The fact of Cell 2's closure will be formalized during the License renewal process.

Although DRC does not have any authority with respect to NESHAPs requirements, the following information is provided for the reader's convenience.

3.1 Radon Emissions

Cell 2 is in closure. The DAQ and the DRC determined recently that the jurisdiction has been changed from the DAQ to the DRC because, based on regulatory definitions in 40 CFR, Subpart W, NESHAPs no longer applies to cells in closure.

Energy Fuels' air monitoring data for Tailings Cell 2 showed Radon-222 concentrations greater than the federal emissions standard applicable to operating cells of 20 pCi/m²s for operating cells beginning with the 2012 Annual Monitoring Report. Energy Fuels, in response, added additional soil (1-2 ft) to the cell. Since that time, Energy Fuels has

submitted radon sampling on a monthly basis. These reports show that the Mill has been back under 20 pCi/m²s beginning in September of 2013.

3.2 Tailings Cells in Operation

The NESHAPs regulation, Subpart W, limits a uranium mill to two tailings cells in operation at any given time. The White Mesa Mill has five cells licensed and permitted to receive tailings. However only two of those cells are in “operation.” This position is based on the definition of “operation” as found in 40 CFR 61.251(e):

“Operation means that an impoundment is being used for the continued placement of new tailings or is in standby status for such placement. An impoundment is in operation from the day that tailings are first placed in the impoundment until the day that final closure begins.”

Cell 1: This cell is currently used for liquid management and evaporation, and no tailings have been placed in the cell. It is therefore not considered operational under the definition of “operation.”¹⁰

Cell 2: Tailing placement has ceased and a temporary cover has been placed over it. Final closure activities (dewatering) have begun and the cell is no longer active. This cell is also not in operation under the definition of that word.

Cell 3: This cell is active. Temporary cover placement has begun and when the cell is full and temporary cover has been placed over the cell, dewatering of the cell will begin.

Cell 4A: This cell is active and receiving tailings.

Cell 4B: This cell is currently used for liquid management and evaporation, and no tailings have been placed in the cell. It is therefore not considered to be in operation under the definition of that term.

It is also noteworthy that on May 3, 2010, the DAQ approved the April 13, 2010 Application by Energy Fuels under 40 CFR 61.07 to construct Cell 4B. The application for that approval, included at Attachment J (along with the DAQ’s approval), provided a full explanation of the operating status of each cell at the Mill.

¹⁰ In a separate NESHAPs rulemaking action regulating uranium mill tailings, EPA described uranium mill tailings: “Uranium mill tailings are sand-like wastes that result from the processing of uranium ore. Tailings are stored in large surface impoundments, called piles” Preamble for EPA’s final rule action relating to 10 CFR Part 61, Subpart T, 59 FR 36280 (July 15, 1994). The use of the term “disposal” in 40 CFR 61.252 also suggests that the rule writers were not contemplating applying the rule to a surface impoundment.

3.3 Size Limitation for Tailings Cells

NESHAPs, Subpart W also includes a limitation that tailings cells constructed after December 15, 1989 may not be more than 40 acres in area. Both Tailings Cells 4A and 4B were constructed to and do meet this requirement. See Attachment J and Letter from the EPA confirming tailings cell size, included with this Public Participation Summary at Attachment K. The DAQ's approval was not challenged.

General Response 4. Surety

The currently approved surety amount for the White Mesa Mill is \$21,126,149. The process for determining a surety amount begins with a submittal by the licensee. The surety is based on the currently approved Reclamation Plan (Rec. Plan 3.2B). For the last approved surety (2013), DRC required Energy Fuels to begin from scratch, looking at each line item versus the current market, rather than applying a price deflator to the previous Rec. Plan 3.2B estimate as had been done in previous years. This resulted in a clean, new estimate more closely aligned with current conditions at the facility.

The DRC does not directly calculate the surety value. Rather, the DRC reviews the budget that Energy Fuels submits versus the market rate to determine whether the values Energy Fuels claims reflect market rates for the items identified. The DRC (through the Radiation Control Board) establishes standards for what must appear in the surety, and the DRC interprets the standards where the rules provide discretion. It is the Licensee who does the estimating, with the DRC checking the licensee's work for completeness and reasonableness.

The Surety submission consists of hundreds of different line items, each tagged to specific work that would have to be performed to close and decommission the facility. DRC's review checks both the completeness of the proposed line items and the appropriateness of the estimate. DRC has also required Energy Fuels to include a 25% contingency increase for unanticipated expenses.

As part of its comments for the License Renewal for the Mill, the Ute Mountain Ute Tribe provided Exhibit H which was a review of the Mill's unapproved Reclamation Plan 5.0. In their analysis, the Tribe makes the claim that the surety should be somewhere between \$50-100 million. DRC has requested information from the Ute Mountain Ute Tribe to show how they calculated the amount, but has not yet received it.

DRC staff examined the Ute Mountain Ute Tribe's comments in the course of the 2013 review and could find no basis to support the suggested cost numbers. The comments were also problematic because they evaluated a Reclamation Plan that has not been approved. The surety is required to be based on the approved Reclamation Plan.

General Response 5. Challenge to Processing of Alternate Feeds

The Glen Canyon Group of the Utah Chapter of the Sierra Club filed a Request for Agency Action in July, 2006 making essentially the same arguments that Uranium Watch has made in its comments on this matter in a challenge to the White Mesa Mill's License that allowed it to process alternate feeds known as "Fansteel materials." The Utah Radiation Control Board decided against the Sierra Club in a March, 2007 decision that was not appealed. For these reasons, the doctrine of issue preclusion applies.¹¹ Following is a summary of the history of this issue.

In 1998 and again in 2000, when the NRC was still the regulatory authority for the White Mesa Mill, the State of Utah challenged decisions made by the NRC to approve a proposed amendment to the Mill's license which would allow the Mill to take an alternate feed – feed that is not natural, unprocessed uranium ore. The arguments that the State made were similar to many of the comments now being made by Uranium Watch. The Commission finally decided against the State in one of those challenges, determining that alternate feed could be milled at the facility and that the resulting tailings would still be byproduct material. *See* In the Matter of International Uranium (USA) Corporation, CLI-00-01, Feb. 10, 2000 (commonly referred to as "Ashland-2"). The Commission followed that decision by issuing a guidance document incorporating the important elements of the decision, and establishing criteria for acceptance of applications for alternate feeds.¹²

Accepting its loss before the Commission, the State withdrew its second challenge. It began seeking Agreement State for 11.e(2) byproduct materials status shortly afterwards, in part so that it could have oversight over the Mill. The "Final Revised Application stated:

It is also the intent of the State to follow the guidance affirmed by the Commission for review and decision of receipt of alternate feed materials by uranium mills. Each alternate feed amendment will be considered a major amendment for the purposes of licensing and will follow procedures as described in this final application. The alternate feed guidance as described in the NRC Regulatory Issues Summary 2000-23 is included in Appendix L of the application.

As the Executive Secretary noted in his brief in the Fansteel case, the importance of this "intent" language "should be neither understated nor overstated. "It is not by itself an enforceable provision of law, but is instead a statement of intent to recognize as governing precedent reasonable interpretations of its own governing law made by NRC." The

¹¹ It is also notable that, although the groups involved are different, the individual commenter for Uranium Watch is Sarah Fields. Ms. Fields was also an active participant during the Sierra Club challenge. She was the author of the comments submitted on behalf of the Sierra Club and upon which the challenge was based, and of one of the three affidavits submitted by Sierra Club in support of its Petition to Intervene. See respectively the Executive Secretary's Public Participation Summary, at 1048, and July 13, 2006 Glen Canyon Group of the Utah Chapter of the Sierra Club Petition to Intervene, Exhibit 2.

¹² This result was based in part on a 1990 federal district court case that rejected as contrary to the Atomic Energy Act NRC's policy at that time of interpreting the definition of "ore" narrowly. *See Kerr-McGee v. NRC*, 901 F.2d 1 (D.C. Cir. 1990).

Executive Secretary's Pre-hearing Brief, January 16, 2007. The agency has authority to interpret its governing law. *See* Utah Code Ann. § 19-1-301.5(14)(c)(i).

The Radiation Control Board issued a final decision on March 5, 2007, included with this Public Participation Summary as Attachment L. That decision made, among others, the following conclusions of law:

2. The Fansteel material meets the definition of alternate feed material and the definition of "ore" under the NRC Regulatory Summary 2000-23 as "other matter." The Executive Secretary properly interpreted the NRC Summary 2000-23 by not considering economics and profit to be factors in determining whether a material is ore. The Executive Secretary correctly applied the Ashland-2 decision (In the Matter of International Uranium (USA) Corporation, CLI-00-1, February 10, 2000).
3. The Executive Secretary properly determined that the tailings resulting from the milling of the Fansteel materials constitute byproduct material and may be disposed of in the tailings impoundment because the alternate feed material constitutes "ore" that will be "processed primarily for its source content" under the criteria stated in the Ashland-2 decision and NRC Regulatory Issues Summary 2000-23

As Sierra Club did in the Fansteel case, Uranium Watch is apparently arguing that all processing of materials other than natural, unprocessed uranium ore is illegal based on the definition of "byproduct" in the Atomic Energy Act. As described above, this matter was resolved in a previous proceeding. For the benefit of the reader, however, Attachment M to this Public Participation Summary is the Executive Secretary's brief that explains the Director's position.

General Response 6. Nature of Amendment Request and Relationship to License

Energy Fuels is currently licensed to process natural unprocessed uranium ore, as well as several alternate feeds. The Director has preliminarily approved the Dawn Mine application because the material that is being proposed is nearly identical in nature to the material that the Mill is currently authorized to take except that it is less radiologically active. In addition, the resulting tailings would be approximately 4500 tons, less than 0.09% of the approximately 5 million tons (Cells 2, 3 and 4A) that are already disposed of. The Uranium Material does have higher concentrations of barium than Arizona Strip ores, but, as described in the SER, barium is less mobile than other constituents in the tailings.

This proposal, then, is for a routine License Amendment. Because the License Amendment and associated information demonstrate that all regulatory requirements for the amendment have been met, the Director has determined that the License Amendment shall be granted; there is no reasonable basis for allowing Energy Fuels to mill natural unprocessed uranium ore but prohibiting it from taking the Dawn Mine material, nor for using this amendment as an occasion to address previous approvals (see Living Rivers v. US Oil Sands, 2014 UT 25) and other aspects of the License or Permit.

C. SPECIFIC RESPONSES TO COMMENTS

1. Comments Received from Uranium Watch (Sarah Fields)

Comment #1

Below are Comments on the proposed Licensing Action by the Director of the Utah Division of Radiation Control (DRC) to amend the Energy Fuels Resources (USA) Inc., (EFRI) 11e.(2) Byproduct License (RML UT1900479). EFRI proposes to amend the License for the White Mesa Uranium Mill in San Juan County, Utah, to authorize the receipt, storage, and processing of uranium-bearing materials (Uranium Material) from the Dawn Mining Company's Midnite Mine Superfund facility in Wellpinit, Washington. EFRI application documents is dated April 27, 2011, and supplemented by submittals of December 5, 2012, June 14, 2013, and August 7, 2013 (Amendment Request). The DRC authorization would also include the disposal and perpetual storage of the waste from the processing of these materials. These comments are submitted on behalf of Uranium Watch, Living Rivers, Glen Canyon Group of the Sierra Club, and the Information for Responsible Mining (INFORM).

GENERAL COMMENTS

- 1.1. *The DRC documents associated with this license amendment should be in a PDF format that allows for the selecting and copying of any text in the document, in order to facilitate the inclusion of quotes from these documents in any comments provided to the DRC. For example, I am unable to select and copy the text from the DRC's Safety Evaluation Report. The selection tool on my computer selects large sections of text, rather than the text I want to copy.*
- 1.2. *The documents associated with EFRI applications should also be in a PDF format that all allows for the copying of any text in the document, in order to facilitate the inclusion of quotes from these documents in any comments provided to the DRC.*

Response #1

The DRC agrees with the commenter and future posting of documents will be in pdf format that allows for selecting and copying of text. Infrequent exceptions may have to be made for documents DRC does not have in a format that can readily be converted to pdf.

Comment #2

- 1.3. *The Amendment Request submitted by the EFRI contains numerous citations or references to documents that are not readily publicly available. These documents should all be readily available for public review.*

Response #2

The DRC cannot respond to this comment with specificity since the commenter has not identified which documents were not "readily publicly available," nor what rule, statute or law requires that the documents be made available. (More specific concerns are detailed in Comment # 5, however.) Also, it is unclear what expectations of ready availability the

commenter has. Although DRC is working to post more documents on the internet, that posting is not required and is allowed by law.

The DRC understands that many documents requested by a representative for Uranium Watch were made available to that representative on October 8 and 9, 2013, at the DRC office.¹³

Comment #3

AMENDMENT REQUEST

- 2.1. *In the April 27, 2011, Amendment Request (page 8), EFRI claims that the Uranium Material is exempt from the Recourse Conservation and Recovery Act (RCRA). EFRI claims that "any alternate materials that contain greater than 0.05% source material are considered source material under the definition of source material in 10 CFR 40.4 and hence exempt from the requirements of RCRA under 40 C.F.R. 261.4(a)(4)."*

According to the Nuclear Regulatory Commission's (NRC's) redefinition, the term "ore" means "ore" or "any other matter from which source material (i.e., uranium and/or thorium) is extracted in a licensed uranium or thorium mill."¹⁴ Therefore, for an alternate feed material like the Uranium Material to become "ore" it must be processed in a licensed uranium or thorium mill." Before the material is processed, e.g., when it is sitting in drums or on an "ore pad" at the Mill, it does not meet the Interim Guidance's redefinition of "ore," because it has not been processed at a licensed mill. It only becomes "ore" retroactively, after it has been processed in a licensed uranium or thorium mill. There is no claim in the Interim Guidance that alternate feed is "ore" before it is processed, or waiting to be processed. Based on the redefinition of "ore" there appears to be no specific point in time and space when the Uranium Material is actually "ore," due to this retroactive nature of the definition. The absurdity of this is apparent.

The Interim Guidance's redefinition of the term "ore" only applies to the issue of the whether the waste from the processing of that material can be defined as 11e.(2) byproduct material.¹⁵ The NRC Interim Guidance does not state or claim that the Guidance's definition of "ore" in any manner applies to or in any manner alters the statutory or regulatory definition of "source material" (42 U.S.C. §2014(z)).¹⁶

¹³ If an appellant demonstrates that documents that are relevant to a proceeding cannot reasonably be obtained from the DRC or elsewhere, lack of access to records could form the basis for supplementing the record under Utah Code Ann. § 19-1-301.5(8)(c)(iii).

¹⁴ *Commenter's footnote 1: U. S. Nuclear Regulatory Commission, Office of Nuclear Material and Safety and Safeguards, NRC Regulatory Issue Summary 2000-23, Recent Changes to Uranium Recovery Policy, Washington, D.C., November 30, 2000.*

¹⁵ *Commenter's footnote 2: 42 U.S.C. §2014 (e)(2): "The term "byproduct material" means-*

(2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content."

¹⁶ *Commenter's footnote 3: 42 U.S.C. §2014(z): "The term "source material" means (1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of section 2091 of this title to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission by regulation determine from time to time."*

The NRC is not legally authorized to amend the Atomic Energy Act (AEA) definitions via a policy guidance.

Therefore, alternate feed material that contains uranium and/or thorium (in any amount) contains "source material," and meets the first definition of "source material." The uranium and/or thorium content, not the alternate feed, is "source material." Material that contains "source material" above 0.05% uranium and/or thorium and a listed or characteristic hazardous waste is called "mixed-waste." There is no statutory or regulatory basis for determining that the Uranium Material ever meets the second definition of "source material" as an "ore."

Response #3

It appears that the commenter's point is that the Uranium Material may not be milled and must be considered hazardous waste because the Uranium Material is not "ore" and the resulting tailings would not be 11e.(2) byproduct material, which would be a violation of Energy Fuels' License. Please see General Response, Part 5 for a response.

If this is not the commenter's point, the commenter's point is unclear and DRC cannot respond.

The DRC does not agree with the commenter's concern that there is no specific time that the material is an ore by the definition of "ore" in the NRC's guidance. Although the definition might have been more clear, temporally, the meaning is abundantly clear and the paradox the commenter sees does not exist.

Comment #4

- 2.2. *The June 14, 2013, EFRI Response to June 22 and June 23, 2013, DRC Request for Information (page 2) states: "The storage and processing of the Uranium Material will not introduce new constituents or new constituent forms (dissolved, particulate or gaseous) or create significantly new human or environmental exposure risks that have not already been addressed by previous submittals and approvals by appropriate authorities (US Nuclear Regulatory Commission ("NRC") or DRC)."*

EFRI has not identified the environmental exposure risks that have been addressed by previous submittals and approvals by the NRC or the DRC. The 1979 NRC Final Environmental Statement (ES) Related to Operation of White Mesa Uranium Project only contemplated the environmental effects of the White Mesa mill receiving and processing uranium or uranium/vanadium "ores" from the Colorado Plateau region. New circumstances are associated with the White Mesa Mill receiving, stockpiling, and processing feed materials that are not ores and that are not from the Colorado Plateau, and disposing of those non-ore materials after processing.

The 1979 ES and Environmental Assessments (EAs) that supplemented the 1979 ES did not address the environmental effects from the processing of feed material containing source material thorium and the disposal of source material thorium in the tailings impoundments without the recovery of any source material thorium-232 and progeny.

Most of the requests for license amendments to authorize the processing of alternate feed at the White Mesa Mill were not the subject of an environmental analysis, pursuant the

National Environmental Policy Act (NEPA) and the NRC implementing regulations at 10 C.F.R. Part 51. Therefore, thousands of tons of materials (including toxic materials not found in Colorado Plateau ores and asphalt, concrete, and other rubble) were processed and disposed of at the mill without an EA and Finding of No Significant Impact (FONSI).

The NRC produced brief Technical Evaluation Reports (TERs), but in no way were these documents an assessment of the environmental impacts, including cumulative impacts, from the receipt, processing, and disposal of alternate feed. Further, the DRC has not reviewed all of the TERs and Amendment Requests associated with the License Conditions authorizing the receipt and processing of the various alternate feeds. The Amendment Requests are part of the White Mesa Mill License, yet, they have not been made readily available to the public and some of them are not even readily available to the DRC staff.

Response #4

The DRC, using its contractor URS, performed an environmental analysis as required by Utah Admin. Code R313-24-3. DRC's resulting Safety Evaluation Report presented comparisons of the Uranium Material with Arizona Strip natural ore and with alternate feeds that White Mesa was previously licensed to mill. The DRC reviewed the comparisons of various alternate feed materials (See Table 5. *Comparison of Radionuclide Activity Concentrations in Proposed Uranium Material and Previous Alternate Feeds*, Safety Evaluation Report p.11). The Director concluded that the Uranium Material presented no new environmental risks, because the constituents are the same and, except for barium, are present at lower levels than alternate feeds previously licensed. The DRC may rely on similarities between the Uranium Material and previously approved materials in making its determination. Additionally, for over eight years, the DRC has been reviewing the semi-annual environmental reports and other monitoring reports which allows the DRC to assess the environmental impacts from the receipt, processing and disposal of alternate feed as well as conventional ores. Although there have been exceedences of some ground water standards, those exceedences have been addressed. See General Response, Part 1.

It is appropriate for the agency to assume that previous licensing actions, now final agency actions, were based on adequate information and analyses; it would be an unreasonably inefficient use of agency resources to revisit, for each amendment, the bases behind each previous approval that builds the license the agency is relying on. Instead, the commenter bears the burden of providing information that demonstrates that the agency's reliance is misplaced.

The DRC does agree that its reliance on previous licensing actions makes those actions an appropriate subject of public comment. It is, however, the commenter's burden to show that there is something in those previous approvals that shows they cannot be relied upon. The commenter cannot meet that burden by pointing out alleged procedural irregularities for those earlier proceedings. The time for challenging any irregularities was at the time the decision was made. Instead, the commenter must identify specific substantive faults with prior analyses that the agency is relying on. Because the commenter has not done so here, the DRC has no information to respond to.

With respect to access to records, it is unclear what expectations of ready availability the commenter has. Although DRC is working to post more documents on the internet, that posting is not required. The DRC understands that all documents requested by a representative for Uranium Watch were made available to that representative on October 8 and 9, 2013, at the DRC office.¹⁷

Comment #5

SAFETY EVALUATION REPORT

3. General Comments

- 3.1. The Safety Evaluation Report (SER) for the Amendment Request fails to identify all of the documents included in the Amendment Request.*

- 3.2. The DRC has relied on documents related to the licensing and operation of the White Mesa Mill that are not readily publicly available in its review and evaluation of the Amendment Request. Some of these records are referenced in the Mill's Radioactive Materials License (RML) UT1900479, so they are part of the License. The Mill's License Conditions (LCs) include a number of LCs for the approval of the receipt of alternate feed from various sources. These LCs reference the specific licensee applications, yet none of these applications are posted on the DRC website. Further, when I requested some of the applications associated with feed material that was still being received at the White Mesa Mill (from the Cameco and Honeywell facilities), I was initially told that the DRC was unable to locate those records. The requested records were actually in storage. I have located some of the requested records when I reviewed documents at the DRC office on October 8, but I have yet to receive them.*

Additionally, during the public hearing of October 9, 2013, at the Department of Environmental Quality office in Salt Lake City, the DRC staff stated that they reviewed some, but not all of the records associated with the NRC's approval and technical review of previous alternate feed license amendment requests and drew conclusions from those records. Again, those documents were not identified in the SER, nor are they readily available on the DRC website.

In sum, the DRC based its review of the Amendment Request, the SER, and proposed licensing action on documents that the DRC failed to identify and failed to make readily available to the public.

Response #5

See Responses #2 and #4.

Comment #6

- 3.3. The DRC failed to characterize the radioactive content of the tailings, or wastes, from the processing of the Uranium Material.*

¹⁷ See footnote 13.

Response #6

The Safety Evaluation Report provided an analysis of the radiological conditions of the Uranium Material and a comparison of it with other alternate feed materials and conventional ores processed at the White Mesa Mill. The Safety Evaluation Report provides the analysis of the Uranium Material's radiological constituents, metals and hazardous constituents. This information starts on page 8 of the Safety Evaluation Report and continues to page 39. In addition, Table A-1 in Attachment A of the Safety Evaluation Report summarizes the projected percentages of the total constituent mass and concentrations in the tailings disposal cells contributed by constituents in residuals that would be placed in the tailings cells following processing of the Uranium Material. As stated in the Safety Evaluation Report, the constituents in the Uranium Material are expected to produce no incremental additional environmental, health, or safety impacts in the Mill's tailings system beyond those produced by the Mill's processing of natural ores or previously approved alternate feeds, as all constituents are lower than those for previously licensed ores and alternate feeds, except for barium. Because the ores are similar, the tailings will also be similar. Increased barium concentrations do not increase risk because barium is much less mobile than other constituents; see SER.

Comment #7

4. *Previous Alternate Feed Proposals and Alternate Feed Assessment Process*
 - 4.1. *In the discussion of Previous Alternate Feed Proposals and Alternate Feed Assessment Process (SER, pages 2 to 3) the SER only references one previous alternate feed proposal, the one approved by the DRC for the processing of waste from the cleanup of the Fansteel Metals Resources, Inc.'s facility in Oklahoma. The SER should have included a description and status of all of the previous alternate feed proposals that are listed in the License.*

Response #7

See Response #4. There is no requirement for DRC to include a description and status of all of the previous alternate feed proposals that are listed in the License.

Comment #8

- 4.2. *The SER (page 3) states: "The Uranium Material is classified as 11e.(2) byproduct material." This statement is incorrect, and any conclusions derived from that statement are also incorrect. The SER and the Amendment Request already stated that the material contains "source material," and, since that material has never been processed for its source material content in a licensed uranium mill, it is not 11e.(2) byproduct material.*

Response #8

The commenter is correct; the statement quoted above on page 3 of the Safety Evaluation Report was a drafting error, and should read, "The tailings and waste from proposed processing of the Uranium Material are classified as 11e.(2) by product material." This description is used a few lines later on page 3 of the Safety Evaluation Report. While the

line quoted is a typographical error, all conclusions made throughout the Safety Evaluation Report are based on the premise that the tailings and waste from the proposed processing of the Uranium Material are classified as 11e.(2) byproduct material, not that the Uranium Material itself is an 11e.(2) byproduct material. The material from the Dawn Mining alternate feed application will be processed through the White Mesa Uranium Mill for its uranium content (source material), and material from that processing is an 11e.(2) byproduct material, which also meets the definition of byproduct material in Utah Admin. Code R313-12-3. See General Response, Part 5.

Comment #9

- 4.3. *The discussion of the Alternate Feed Assessment Process is found the Section regarding the Alternate Fed Assessment Process, pages 6 to 23, below.*
- 5. *Radiological Impacts*
 - 5.1. *Table 1 (page 8) provides data on the minimum and maximum range of radionuclide concentrations in the Uranium Material. The data for the maximum amount of thorium-228 is incorrect. The amount of thorium-228 does not correlate with the ratio of thorium-228 to thorium-232 for the minimum concentrations. The maximum amount of thorium-228 should be much higher, so that the ratio of the maximum levels of thorium-228 to thorium-232 is similar to the ratio of the minimum levels.*

Response #9

The referenced Table 1 in the Safety Evaluation Report contains a typographical error. As per Attachment 2 to the April 27, 2011 License Amendment Application and Table 5 of Attachment 5 to that application, the maximum measured Thorium-232 activity concentration in the Uranium Material is 1.14 pCi/g, **NOT** 21.4 pCi/g as presented. The actual ratios for Thorium-228: Thorium-232 is 1.4 for the minimum values and 1.3 for the maximum values. These ratios are consistent given the inherent counting error (uncertainty) of the analyses and intrinsic heterogeneity in solid samples. A corrected version of Table 1 is presented below:

Table 6. Range of Radionuclide Concentrations in Midnite Mine Uranium Material (2010 Analytical Results) (URS, 2013)

Result (dry weight basis)	Total Uranium (mg/kg)	Thorium-228 (pCi/g)	Thorium-230 (pCi/g)	Thorium-232 (pCi/g)	Lead-210 (pCi/g)	Ra Total (pCi/g)	Radium-226 (pCi/g)
Min	15,000	0.93	20.4	0.66	32.0	36.6	22.8
Max	16,000	1.50	21.4	1.14	34.7	41.0	25.7

Comment #10

- 5.2. *Table 2 (page 9) should include the radium isotopes that are decay products of thorium-232 and list them separately, before combining radium as "Total Radium."*

Response #10

The referenced Table 2, reproduced below (URS, 2013), presents the direct analytical results of gas flow proportional counter (GFPC) and alpha spectrometry tests for radionuclides. As per Attachment 2 to the April 27, 2011 License Amendment Application and Table 5 of Attachment 5 to that application, the total radium analytical results are from direct measurement and not an arithmetic sum of individual analyses and have been presented accordingly.

Table 7. Analytical Results - Uranium Material for RCRA Listed Hazardous Waste (Radiochemistry Analysis [2010]) (URS, 2013)

Target Analyte ⁽¹⁾	Method	Units	Laboratory Results			Calculated Average
			WTPS-1	WTPS-2	WTPS-3	
Total Uranium	SW6020A					
Total Uranium		mg/kg	15,000	16,000	15,000	15,333
Gross Alpha/Beta	GFPC					
Gross Alpha		pCi/g	4,310±690	4,830±770	5,440±870	4,860
Gross Beta		pCi/g	4,870±780	4,780±760	4,860±780	4,867
Lead-210	Liquid Scintillation					
Lead-210		pCi/g	33.1±8.0	34.7±8.4	32.0±7.8	33.3
Radium-226	GFPC					
Radium-226		pCi/g	22.8±5.8	25.7±6.6	23.8±6.1	24.1
Total Alpha Emitting Radium	GFPC					
Total Radium		pCi/g	39.7±10	41±11	36.6±9.4	39.1
Total Radium (duplicate sample)		pCi/g	35.8±9.2			
Isotopic Thorium	Alpha Spectroscopy					
Thorium-228		pCi/g	1.24±0.99	1.50±0.74	0.93±0.67	1.22
Thorium-230		pCi/g	20.4±3.8	21.4±3.9	20.4±3.7	20.7
Thorium-232		pCi/g	1.14±0.48	0.66±0.34	0.71±0.32	0.84

⁽¹⁾All values as reported by ALS Laboratory as dry weight values.
GFPC = Gas Flow Proportional Counting

Comment #11

- 5.3. According to the Amendment Request, the uranium content of the Uranium Material is estimated to be 1.4%, and the thorium content is 0.005 %.¹⁸ Therefore, the ratio of uranium to thorium-232 is approximately 1:280. However, when considering only the radium content from uranium and total thorium the ratio of radium 224 and 228 (thorium progeny) to radium 226 (uranium progeny) is 1:1.6. So, the radium from the thorium is at much greater levels than would be expected from comparing the uranium and thorium-232 content.

None of the tables in the SER reveal how much greater the radium content from thorium is, in relationship to the amount of thorium compared to uranium. Nor is there any discussion of the implications of this relationship.

Rather, the DRC has minimized the impacts from the thorium content of the Uranium Material, relying only on the thorium content, rather than the much larger radium content derived from thorium-232. The statement that the "Concentrations of Thorium-232 and its decay products are negligible and can be ignored" (page 14) have no basis in fact when it comes to the radium content.

<i>U-MATERIAL CONTENT</i>	<i>PERCENT</i>	<i>AVERAGE</i>	<i>RATIO</i>
Thorium	0.005%		1:
Uranium	1.4%		280
Radium 224 & Radium 228		15.0 pCi/g	1:
Radium - 226		24.1 pCi/g	1.6
Total Radium		39.1 pCi/g	

The SER must acknowledge and consider that fact that the radium content of the thorium is about 2/3 that from the uranium and, therefore, the radon emissions from the thorium will be almost as much as from the uranium and cannot be ignored.

Response #11(a)

Statement 1: "...the radium from the Thorium is at much greater levels than would be expected from comparing the uranium and Thorium-232 content."

Comment #11 appears to be based on the typographical error made in the SER regarding Thorium 232 (see Response 9, above). However, Responses 11(a) through 11(b) attempt to answer the commenter's questions by addressing that Thorium in the Uranium Material is in disequilibrium with its parent radionuclide. Thorium is less mobile than Uranium, and therefore concentrations of Thorium in the Uranium Material (which is from treated mine waters) is not equal to that expected from naturally occurring uranium ore in rocks and soil.

¹⁸ Commenter footnote 4: It is not known if the percent thorium content stated in the Amendment Request is total thorium (thorium-232 and thorium-228) or just thorium-232. Additionally, the SER estimates that the thorium-232 content is 0.00076 % making the ratio of uranium to thorium-232 1:1,974. Neither the Amendment nor the SER are always clear whether they are considering total thorium (thorium-232 plus thorium-228) or why only thorium-232 is being measured and not thorium-228.

The Uranium Material is a precipitate from treatment of mine waters that have leached from a natural uranium ore body. The mine water has elevated uranium concentrations with low concentrations of radium and thorium, due to the differences in solubility of those isotopes in water. Therefore, radiological composition of the Uranium Material would not be expected to reflect the equilibrium activity concentration ratios typical of in-situ native mineralization. Rather, activity concentration ratios of the Uranium Material reflect the cumulative effect of unequal leaching (due to differences in solubility, as Thorium is less mobile than Uranium) from the natural ore body and the isotope's individual susceptibility to precipitation by the water treatment process. The Uranium Material isotopic ratios have no natural decay relationship to each other.

As a result, the Ra-226 and Th-230 activity concentrations in the Uranium Material are significantly lower than the activity concentrations of those isotopes in naturally occurring uranium ores. The Ra-226 and Th-230 activity concentrations in typical Colorado Plateau ores, having a uranium concentration of 0.25% U_3O_8 are each approximately 700 pCi/g and from an Arizona Strip ore of 0.75% U_3O_8 are each approximately three times that amount, or 2,100 pCi/g. These activity concentrations are contemplated by the Mill License. The activity concentration of Ra-226 in the Uranium Material of 24.1 pCi/g (average) is approximately 3.4% of the Ra-226 activity concentration in typical Colorado Plateau ores and approximately 1.1% of the Ra-226 activity concentration in 0.75% U_3O_8 Arizona Strip ores, which in either case is insignificant. The activity concentration of Th-230 in the Uranium Material of 20.1 pCi/g represents an even lower percentage of the Th-230 activity concentration in conventional ores.

The combined Ra-224 and Ra-228 activity concentration from the Th-232 decay chain is even lower at 15.0 pCi/g. The very low activity concentration of Th-232, approximately 0.84 pCi/g, is within the natural activity concentration associated with conventional ores of approximately 1.0 to 2.0 pCi/g Th-232 (see Section 6.1 of the Final Environmental Impact Statement for Standards for the Control of Byproduct Materials from Uranium Ore Processing (40 CFR 192), Volume 1, September 1983, Office of Radiation Programs, U.S. Environmental Protection Agency (the "FEIS"), and Myrick, T.E., B.A. Berven and F.F. Haywood 1982. Determination of Concentrations of Selected Radionuclides in Surface Soil in the U.S. Health Physics 45(3):631-642. See <http://babel.hathitrust.org/cgi/pt?id=mdp.39015053324631#view=1up;seq=24>.

Response #11(b)

Statement 2: "None of the tables in the SER reveal how much greater the radium content from Thorium is, in relationship to the amount of Thorium compared to uranium. Nor is there any discussion of the implications of this relationship."

See Response #9, above, regarding the corrected Thorium-232 activity concentration. Since the activities of individual radioisotopes and their relative ratios do not reflect equilibrium conditions with the parent isotopes, the proportion of radium to thorium does not reflect a specific ratio or relationship. The characterization of the Uranium Material presented in the Safety Evaluation Report reflects the range of measured isotope activity

concentrations. Further, as discussed above, the total radium content from both natural thorium and uranium in the Uranium Material is a small fraction of the total radium content of typical uranium ores regardless of the relationship between the two radioisotopes.

Response #11(c)

Statement 3: "...the DRC has minimized the impacts from the Thorium content of the Uranium Material, relying only on the Thorium content, rather than the much larger radium content derived from Thorium-232."

See Response #9, above, regarding the corrected Thorium-232 activity concentration. The ranges of individual radioisotopes, including total thorium and radium, have been characterized and their relative significance or impact to occupational and public health has been assessed. The total radium activity concentration in the Uranium Material (Attachment 2 and Table 5 to Attachment 5 of the Amendment Application) ranges from 36.6 pCi/g to 41 pCi/g, which is well below typical uranium ores. Because of the solubility difference explained above, the radium and thorium are not in equilibrium with the uranium. Therefore, the impact from the all of the daughter products will be less. The range of total radium activity concentration in the Uranium Material is less than that for conventional ores and is not significantly different from other alternate feed materials already licensed to be processed at the Mill.

Response #11(d)

Statement 4: "The statement that the "Concentrations of Thorium-232 and its decay products are negligible and can be ignored" (page 14) have no basis in fact when it comes to the radium content."

See Response #9, above, regarding the corrected Thorium-232 activity concentration. The Th-232 activity concentration in the Uranium Material (Attachment 2 and Table 5 to Attachment 5 of the Amendment Application) ranges from 0.66 pCi/g to 1.14 pCi/g, which is between 3 percent and 5 percent of the Th-230 activity concentration (20.4 pCi/g to 21.4 pCi/g) and within the range of counting error for the Th-230 analyses (3.7 pCi/g to 3.9 pCi/g), and much lower than the typical range of Th-230 activity concentration for conventional ores (700-2,100 pCi/g) discussed above. The Th-232 activity concentration in the Uranium Material is also lower than the typical Th-232 activity concentration in conventional uranium ores, approximately 1.0 to 2.0 pCi/g, as discussed above. As discussed above, the combined Ra-224 and Ra-228 activity concentration in the Uranium Material, of approximately 15 pCi/g, is small compared to the total radium activity concentration in conventional uranium ores, which is approximately 700 pCi/g for Colorado Plateau ores and higher for Arizona Strip ores. Therefore, the statement quoted from the SER is reasonable for assessing occupational exposures and radiation protection measures.

The decay rate for Th-232 (half life = 1.4×10^{10} years) is so slow that radium in-growth from Th-232 decay during the relatively brief handling period when the occupational or

public exposure could occur is negligible and would not significantly change the range of presented total radium activity concentrations in the Uranium Material.

Response #11(e)

Statement 5: "The SER must acknowledge and consider that fact that the radium content of the Thorium is about 2/3 that from the uranium and, therefore, the radon emissions from the Thorium will be almost as much as from the uranium and cannot be ignored."

See Response #9, above, regarding the corrected Thorium-232 activity concentration. See also Responses #11(a) through (d), above.

As discussed above, the total radium activity concentration in the Uranium Material (Attachment 2 and Table 5 to Attachment 5 of the Amendment Application) ranges from 36.6 pCi/g to 41 pCi/g, which is insignificant compared to typical uranium ores. The decay rate of Thorium (half life = 1.4×10^{10} years) is so slow that the radium in-growth derived from the Uranium Material Th-232 will have no impact on occupational or public health during the relatively brief handling period.

Further, the tailings derived from processing the Uranium Material will be covered, reclaimed, and addressed in the final reclamation radon barrier design before significant changes in radium activity concentrations and subsequent radon production will occur. In fact, the half lives of Ra-228 and Ra-224 are 5.75 years and 3.64 days, respectively. As a result, since the head of the decay series (Th-232) is at approximately 1 pCi/g, in about a few tens of years, the Ra-228 (and Ra-224 more quickly) activity concentrations will decrease to the same level as the Th-232 activity concentration (approximately 1 pCi/g). That is, there will be no long-term above-background radioactivity in the tailings from the Th-232 series in the Uranium Material.

Comment #12

5.4. *Table 5 (page 11) compares the radionuclide activity concentrations in the proposed Uranium Material with other feed materials. Most of the previous alternated feed material identified in the table is from the W.R. Grace Application of April 2000, over 13 years ago. Since the W.R. Grace material was never shipped to the White Mesa Mill and it is unlikely that it ever will be shipped to the Mill, the W.R. Grace material and any other alternative feed that has never been processed at the Mill should not be used as a comparison with the DMC Uranium Material. Only feed materials actually received and processed at the Mill should be used for comparison.*

Response #12

There is no authority for the commenter's claim that DRC may not rely on analyses that were done for previous license amendments because the materials allowed by the amendment were not milled at White Mesa. The technical safety and environmental analysis were still done by the NRC.

Nonetheless, a revision to Table 5, providing comparison to conventional ores and alternate feed materials that have been received and processed at the Mill, is presented below. As indicated by the table, the activity concentration of every radioisotope in the Uranium Material is substantially lower than conventional ores and other alternate feed materials regardless of which feeds are selected for comparison. The Uranium Material is overall a very low activity material.

Table 8 - Comparison of Radionuclide Activity Concentrations in Proposed Uranium Material and Previous Alternate Feed Materials

Radionuclide	Range of Uranium Material Radionuclide Activity Concentration ¹ (pCi/g dry) ²	Colorado Plateau Ores and Alternate Feed Radionuclide Activity Concentrations ^{3,4} (pCi/g dry) ²	Source for Alternate Feed Information
Radium-226	22.8 to 25.7	2,830. ⁵	Based on 1% U ₃ O ₈ , conventional ores
Total Radium	36.6 to 41.0	2,832 ⁶	Based on 1% U ₃ O ₈ , conventional ores
Thorium-228	0.93 to 1.50	680 max.	Molycorp Application, 2000
Thorium-230	20.4 to 21.4	2,830. ⁷	Based on 1% U ₃ O ₈ , conventional ores
Thorium-232	0.66 to 1.14	1,190 avg.	Heritage Application July 2000
Lead-210	32.0 to 41.0	2,830 ⁸	Based on 1% U ₃ O ₈ , conventional ores
U-nat	15,000 mg/kg to 16,000 mg/kg	686,000 mg/kg U-nat max. ⁹	Mill lab monthly assays Cameco UF ₄
Gross Alpha	4310±6790 to 5440±870	7,600 avg.; 22,400 max.	Linde Application March 2005 conventional ores
Gross Beta	4780±87 to 4870±780	3,800 avg.; 17,000 max.	Linde Application March 2005 conventional ores

¹ Attachment 2 of the April 2011 Amendment Request (Radioactive Material Profile Record, p. 2 of 11 and associated tables).

² pCi/g unless otherwise noted.

³ Selected concentrations for constituents found in characterization data for other alternate feed materials licensed for processing at the Mill, for comparison purposes only.

⁴ Mined ores range from 0.1% to higher than 1%. Some Arizona strip ores have ranged as high as 2% U₃O₈ (1.7% U-nat). Abundance of uranium daughters can be estimated from the assumption that conventional ores are in secular equilibrium.

⁵ Estimated based on assumption of 1% U₃O₈ (0.85% U) at 2830 pCi/g and eight alphas in Uranium-238 series, and neglecting the contribution from Uranium-235, plus natural thorium with an activity concentration of 2.0 pCi/g in equilibrium with its daughters, based on Section 6.1 of the FEIS.

⁶ Estimated based on assumption of 1% U₃O₈ (0.85% U) at 2830 pCi/g and eight alphas in Uranium-238 series and neglecting the contribution from Uranium-235.

⁷ Estimated based on assumption of 1% U₃O₈ (0.85% U) at 2830 pCi/g and eight alphas in Uranium-238 series and neglecting the contribution from Uranium-235.

⁸ Estimated based on assumption of 1% U₃O₈ (0.85% U) at 2830 pCi/g and eight alphas in Uranium-238 series and neglecting the contribution from Uranium-235.

⁹ Monthly average grade assays of Cameco UF₄ have periodically been as high as 80.7% U₃O₈ (68.6% U).

Comment #13

- 5.5. *During the October 9, 2013, hearing in Salt Lake City, DRC staff stated that the 1979 NRC NEPA environmental analysis for the White Mesa Mill¹⁹ evaluated the processing of ores containing thorium-232 and thorium-228. I would assume that those ores came from the Colorado Plateau. The DRC should state exactly where in the 1979 ES the NRC states the thorium-232 and thorium-228 content of ores that would be processed at the Mill and where, exactly, the processing of ores containing thorium was evaluated.*

Response #13

See Response # 4. Nevertheless, the DRC also provides this additional information.

All natural uranium ores contain thorium, including Th-232 and Th-228; therefore, any environmental evaluation of uranium ores necessarily is an evaluation of ores containing natural thorium.

Section 6.2.8.2.2 of the Final Generic Environmental Impact Statement on uranium milling, NUREG-0706, September 1980 states that "[u]ranium ores may also contain small amounts of long-lived thorium-232 and its daughter products. The radiological parameters associated with the Th-232 series are such that the impact of these isotopes is relatively inconsequential, even when they are present in amounts comparable to the natural uranium concentration in ore. The ore processed in the model mill is assumed to contain a negligible concentration of Th-232 (as in most actual mills), so this radionuclide is not included in the analysis of the radiological impacts."

Section 6.1 of the FEIS states that "[t]he dominant hazard from tailings is due to the radioactive decay products of uranium-238, particularly radium-226 and its short half-life decay products. Each gram of natural uranium ore contains about 490 pCi each of uranium-238 and uranium-234 and additionally about 23 pCi of uranium-235 and 2 pCi of thorium-232. Because they occur in relatively small proportions and/or pose much less risk to health, uranium-235 and thorium-232 and their radioactive decay products may usually be ignored in evaluating the hazard of uranium tailings."

Oak Ridge National Laboratory directly measured background concentrations of U-238, Ra-226 and Th-232 in soil samples in 33 states (Myrick et al. 1982). The nationwide average and range of values for Th-232 in 356 locations is reported as 0.98 (0.10 to 3.4) pCi/g. The mean Th-232 concentrations for Utah, Arizona, Colorado and New Mexico are reported as 1.1, 0.63, 1.3 and 0.95, respectively.

The expected Th-232 activity concentration of 1.0 to 2.0 pCi/g in conventional ores and background soils is representative of typical ores at the White Mesa Mill. Based on an activity concentration of 1.0 to 2.0 pCi/g Th-232, the activity concentrations of Ra-228 and Ra-224 would also be expected to be approximately 1.0 to 2.0 pCi/g in conventional ores.

¹⁹ *Commenter footnote 5: Final Environmental Statement (ES) Related to Operation of White Mesa Uranium Project, 1979.*

The total activity concentration from Ra-228 and Ra-224 in the Uranium Material is currently in disequilibrium with the parent Th-232 and is slightly higher at approximately 15 pCi/g. However, as discussed above, the total activity concentration from Ra-228 and Ra-224 in the Uranium Material is insignificant compared to the total activity concentration from Ra-226 in conventional ores, which is approximately 700 pCi/g in Colorado Plateau ores and higher in Arizona Strip Ores. Further, the half lives of Ra-228 and Ra-224 are 5.75 years and 3.64 days, respectively. As a result, since the head of the decay series (Th-232) is at approximately 1 pCi/g in the Uranium Material, in about a few tens of years, the Ra-228 (and Ra-224 more quickly) activity concentrations will decrease to the same level as the Th-232 activity concentration (approximately 1 pCi/g). That is, there will be no long-term above-background radioactivity in the tailings from the Th-232 series in the Uranium Material.

Comment #14

- 5.6. *The 1979 ES did not assess any of the environmental impacts from the processing of any feed materials other than "ore" at the White Mesa Mill.*

Response #14

At the time of the 1979 ES, alternate feed processing was not considered to be a significant activity at uranium mills, and was not expressly addressed in the 1979 ES. For that reason, along with the fact that each alternate feed material is different and requires its own evaluation, each alternate feed material requires its own license amendment application and a separate environmental evaluation. Therefore, the NRC's and DRC's subsequent environmental evaluations did specifically address the environmental impacts from processing alternate feed materials, by considering each one individually and compared to previously approved alternate feed material (see Response #12).

It is also misleading to consider analysis of "alternate feeds" as a class since each application for an alternate feed is treated independently; the character of the requested alternate feed must be considered both for the agency's analysis and for any challenge to that analysis. In this instance the Uranium Material from the Dawn Mine is more similar to Arizona Strip natural uranium ore than it is to many other alternate feeds.

Comment #15

6. *Transportation and Storage of the Uranium Material*
- 6.1. *The discussion of the transportation of the Uranium Material fails to provide information about how well prepared the local, state, and federal agencies are to respond to a spill of the Uranium Material. The SER must evaluate the possible impacts from a spill of the Uranium Material and the ability of the appropriate agencies to respond.*

Response #15

There is no statutory or regulatory requirement that the licensee conduct a transportation analysis for a license amendment. Even though it is not a requirement that DRC analyze emergency response capabilities, the following is provided regarding transportation, spills and responses.

In Appendix N of the 2007 License Renewal Application, the Licensee documented the Mill's Transportation Accident Response Plan for Uranium Concentrate Spill (yellowcake). The Mill has established this procedure to assist in a transportation accident involving radioactive materials. This procedure identifies four phases: Initial, confinement, cleanup, and cost recovery. For potential spills of yellowcake, ores or alternate feed materials within the local area, the local fire department participates in response training with Mill personnel. Mill personnel retain responsibility for spill control, cleanup and monitoring. The Fire department provides first response only. Both organizations drill simultaneously on response scenarios.

For spills outside the local area, the U.S. Department of Energy ("DOE") response team has authority for response control. Energy Fuels Mill personnel act as first response and transition authority to the DOE upon their arrival, at which point Mill personnel remain as advisors regarding the specific material.

Note also that the 1979 EIS evaluated the impacts of potential spills of yellowcake, which has significantly higher levels of radionuclides than conventional ores and the Uranium Material, and is a finely divided solid which, if it reaches the environment, has a higher likelihood of producing dispersible dust than conventional ores or Uranium Material.

In addition, an analysis was done during the CERCLA process, found in the Residuals Management Plan for the Midnite Mine Water Treatment Plant, Revision 10, provided to the EPA, including a Residuals Transportation Plan included as Attachment 2. See Residuals Management Plan, Revision 10, included as Attachment N.

Comment #16

- 6.2. *The SER (page 17) states that EFRI employees will take actions within 30- minutes to stop the generation of visible dust. First of all, if the material has degraded to dust particles, a lot of dust could be dispersed within a 30-minute period. Additionally, winds also blow at night when it would be difficult to observe the dispersal of dust. Additional measures must be taken to assure that the Uranium Material would not be dispersed from the ore storage pads under any wind or lighting conditions. Additionally, if any materials are dispersed, whether on-site or off-site, the material must be promptly cleaned up.*

Response #16

The Uranium Material will be at least 65% bound water when it leaves the Midnite Mine site. The product produced by the filter press process is not a fine solid or even a wet solid with free water that can evaporate or drain during shipment to the Mill. The filter press

product is a cement-like material. Specifically, the Uranium Material to be shipped consists of solid chunks of lime/barium cement. Common cements, from sidewalk concrete to nuclear reactor insulation bricks, are lime/barium cements hardened by reaction with bound water. The water in the cement is bound to the barium salts and lime as a set concrete, such that changes in ambient temperature, wind-speed, or humidity will not evaporate the bound moisture, any more than they would evaporate bound moisture from sidewalk concrete.

Figure 1



Photograph of Uranium Material, from http://www.radiationcontrol.utah.gov/Uranium_Mills/IUC/Denison_IUC/docs/2013/july/midnitemine.pdf

Energy Fuels provides daily monitoring and weekly documentation of dust conditions on the ore pad. Ongoing monitoring data shows that emission limits are being met. See General Response Parts 1.7, 1.8 and 2. DRC will inspect the ore pad to ensure that the Uranium Material is intact during the 14 day period before it is required to be covered. Appropriate corrective action will be required if on-site or off-site levels exceed regulatory levels, but ordinarily on-site contamination will be managed during the decontamination process.

See also Response # 37 with respect to the 30 minute requirement.

Comment #17

ALTERNATE FEED ASSESSMENT PROCESS

7. *Determination of whether the feed material is an ore.*
- 7.1. *The SER (page 2) states: "For the tailings and wastes from the proposed processing to qualify as 11e.(2) byproduct material, the feed material must qualify as 'ore.'"*

The DRC errs in stating that the feed material must "qualify" as "ore." Based on the statute, the feed material must be "ore." Also, it must be "ore," as contemplated by the AEA (42 U.S.C. §2014 (e)(2)) and the regulations promulgated by the NRC (10 C.F.R. § 40.4) and the Environmental Policy Act (EPA) (40 C.F.R. Part 192) responsive to the 1978 Uranium Mill Tailing Radiation Control Act (UMTRA) (Public Law 95-604, 92 Stat. 3033 et seq.), which amended the AEA of 1954 (Public Law 83-703, 68 Stat. 919 et. seq.). The AEA of 1954 was an amendment of the AEA of 1946 (Public Law 79-385, 60 Stat. 755 et seq.)

- 7.2. *The material must be "ore," because the AEA defines 11e.(2) byproduct material as "the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." According to the White Mesa License Condition 10.1A: "The licensee may not dispose of any material on site that is not "byproduct material," as that term is defined in 42 U.S.C. Section 2014(e)(2) (Atomic Energy Act of 1953, Section 11(e)(2)). Therefore, the wastes from the processing of materials other than "ore" do not meet the statutory definition of 11e.(2) byproduct material and should not be disposed of at the White Mesa Mill.*
- 7.3. *The SER also states that in order to determine whether the feed material is "ore" the DRC can rely on a definition of "ore" that has been established by the NRC. The SER references SECY 95-211, SECY 99-012, and regulatory issue summary 2000-23.²⁰ The DRC also relied on the NRC "Interim Guidance on the Use of Uranium Mill Feed Material Other Than Natural Ores" (Interim Guidance), dated November 30, 2000. The DRC did not make those documents available on the DRC website. The DRC should have made any documents relied on for the review of the subject license amendment available, and included the links in the SER and the DRC website Public Notice of the proposed licensing action.*

Response #17

Please see General Response, Part 5 for a response to the commenter's claims about "ore."

With respect to the claim that the DRC should have made documents available on its website, the DRC does not agree that there is a requirement that any document be placed on its web site, although the DRC is striving to make as many documents as possible available there. With respect to claims about documents that may be found nearly instantaneously with an internet search, the DRC's obligation is to cite the document with sufficient particularity to allow that search.

Comment #18

- 7.4. *The NRC documents relied on by the DRC are from a policy guidance. A policy guidance is neither statute or regulation. The policy guidance has no legal force and effect. Nor, can a federal policy guidance be used to substantively amend a federal statute or regulation. Additionally, the State of Utah is not authorized to amend a federal statute or regulation.*
- 7.5. *The SER quotes the from the NRC Interim Guidance's new definition of the term ore: "Ore is a natural or native matter that may be mined and treated for the extraction of any of its*

²⁰ Commenter footnote 6: U. S. Nuclear Regulatory Commission, Office of Nuclear Material and Safety and Safeguards, NRC Regulatory Issue Summary 2000-23, Recent Changes to Uranium Recovery Policy, Washington, D.C., November 30, 2000. "Interim Guidance on the Use of Uranium Mill Feed Material Other Than Natural Ores" (Interim Guidance), November 30, 2000.

constituents or any other matter from which source material is extracted in a licensed uranium or thorium mill." Emphasis added. In other words, the DRC is adopting a substantive change to a federal and statutory definition in order to facilitate the processing of radioactive waste in the guise of "ore." The State of Utah has no legal authority to make such change to federal statute and NRC and EPA regulations.

Response #18

See General Response, Part 5 regarding the nature of DRC's use of the NRC guidance.

Comment #19

8. *Definition of "ore."*

8.1. *The applicability of various environmental regulations to a great degree depends upon definitions. Congress, in their legislative function, often specifically defines words or phrases related to the application of a statute to a particular material or circumstances-when there is a need for explanation. However, when using words or terms with a common and accepted meaning, such as groundwater, mill, tailings, or "ore," no explanation or definition is necessary. The word "ore" like the word "water," is a word of common and extensive usage with a clear meaning. It is not a new regulatory term, such as "source material" or "11e. (2) byproduct material," which have been established under the AEA. "Ore" is not simply a material definition, such as "waste" or "tailings." The term "ore" has an widely accepted plain meaning. Further, there has been a well understood and unchanged meaning of the word "ore" throughout the history of the Atomic Energy Act. That is why "ore" was not defined in the AEA or NRC or EPA regulation.*

The word, or term, "ore," as defined in several sources:

- *Ore-a naturally occurring solid material from which metal or other valuable minerals may be extracted. [Illustrated Oxford Dictionary, DK Pub. 1998.]*
- *Ore-A native mineral containing a precious or useful metal in such quantity and in such chemical combination as to make its extraction profitable. Also applied to minerals mined for their content of nonmetals. [The Compact Oxford English Dictionary, Second Edition, Oxford University Press, 2000, p. 1224:915-916.]*
- *Ore-a. A natural mineral compound of the elements of which one at least is a metal. Applied more loosely to all metaliferous rock, though it contains the metal in a free state, and occasionally to the compounds of nonmetallic substances, as sulfur ore Fay b. A mineral of sufficient value as to quality and quantity that may be mined for profit. Fay. [A Dictionary of Mining, Mineral, and Related Terms, compiled and edited by Paul W. Thrush and Staff of the Bureau of Mines, U.S. Dept. of Interior, 1968.]*

The Oxford English Dictionary points out that the current usage of the word "ore" goes back several hundred years. A Dictionary of Mining, Mineral, and Related Terms lists over 65 compound words using the word "ore," such as ore bin, ore body, ore deposit, ore district, ore geology, ore grader, ore mineral, ore reserve, ore zone. All of these terms incorporate the word "ore" as it relates to the mining of a native mineral. The term "ore," without explanation, has for many years been used in thousands, if not millions, of instances in thousands of mining, milling, geological, mineralogical, radiochemical, engineering, environmental, and regulatory publications.

9. *Regulatory history of the use of the term "ore."*

- 9.1. *Feed materials other than natural "ore" are not "ore," nor can they be redefined as "ore" under existing State of Utah regulations or NRC statutes or regulations. There is no evidence that Congress in passing the AEA, as amended by UMTRCA, contemplated the use of the word "ore" to mean anything other than a natural material that is mined for its mineral content.*
- 9.2. *The regulatory history of UMTRCA, found in the two Congressional reports, provide information with respect to "uranium mill tailings" and "ore." The Congressional Reports clearly state what was contemplated by Congress (i.e., the intent of Congress) when Congress established a program for the control of "uranium mill tailings" from the processing of "uranium ore" at inactive (Title I of UMTRCA) and active (Title II of UMTRCA) uranium and thorium processing facilities. House Report (Interior and Insular Affairs Committee) No. 95-1480 (I), August 11, 1978, and House Report (Interstate and Foreign Commerce Committee) No. 95-1480 (II), September 30, 1978.*

Under "Background and Need," HR No. 95-1480 (I) states:

Uranium mill tailings are the sandy waste produced by the uranium ore milling process. Because only 1 to 5 pounds of useable uranium is extracted from each 2,000 pounds of ore, tremendous quantities of waste are produced as a result of milling operations. These tailings contain many naturally-occurring hazardous substances, both radioactive and nonradioactive As a result of being for all practical purposes, a perpetual hazard, uranium mill tailings present the major threat of the nuclear fuel cycle.

In its early years, the uranium milling industry was under the dominant control of the Federal Government. At that time, uranium was being produced under Federal Contracts for the Government's Manhattan Engineering District and Atomic Energy Commission program

The Atomic Energy Commission and its successor, the Nuclear Regulatory Commission, have retained authority for licensing uranium mills under the Atomic Energy Act since 1954. [HR No. 95-1480 (1) at 11.]

The second House Report, under "Need for a Remedial Action Program" states: Uranium mills are a part of the nuclear fuel cycle. They extract uranium from ore for eventual use in nuclear weapons and power-plants, leaving radioactive sand-like waste-commonly called uranium mill tailings-in generally unattended piles. [HR No. 95-1480 (2) at 25.

- 9.3. *Atomic Energy Commission and the AEA of 1946. As indicated above, the domestic uranium mining and milling industry was established at the behest of the Manhattan Engineer District and the Atomic Energy Commission ("AEC"). The AEC regulated uranium mines and uranium processing facilities, established ore buying stations, and bought ore. Under the AEA of 1946 there was no commercial uranium mining and milling industry. The mining and milling of uranium was done under contract to the AEC. After the AEA of 1954 there was both a government and commercial uranium mining and milling industry. AEC purchased uranium ore under the Domestic Uranium Program. Regulations related to that uranium procurement program were set forth in 10 C.F.R. Part 60. Part 60 was deleted from 10 C.F.R. on March 3, 1975, after the establishment of the NRC.*

The AEC published a number of circulars related to their Domestic Uranium Program. The Domestic Uranium Program-Circular No. 3-Guaranteed Three Year Minimum Price-Uranium-Bearing Carnotite-Type or Roscoelite-Type Ores of the Colorado Plateau Area" (April 9, 1948), an amendment to 10 C.F.R. Part 60, states:

§ 60.3 Guaranteed three years minimum price for uranium bearing carnotite-type or roscoelite-type ores of the Colorado Plateau- (a) Guarantee. To stimulate domestic production of uranium-bearing ores of the Colorado Plateau area, commonly known as carnotite-type or roscoelite-type ores, and in the interest of the common defense and security the United States Atomic Energy Commission hereby establishes the guaranteed minimum prices specified in Schedule 1 of this section, for the delivery of such ores to the Commission, at Monticello, Utah, and Durango, Colorado, in accordance with the terms of this section during the three calendar years following its effective date.

Note: In §§ 60.1 and 60.2 (Domestic Uranium Program, Circulars No. 1 and 2), the Commission has established guaranteed prices for other domestic uranium-bearing ores, and mechanical concentrates, and refined uranium products.

Note: The term "domestic" in this section, referring to uranium, uranium-bearing ores and mechanical concentrates, means such uranium, ores, and concentrates produced from deposits within the United States, its territories, possessions and the Canal Zone.

10 C.F.R. Part 60-Domestic Uranium Program at § 60.5(c) states "Definitions. As used in this section and in § 60.5(a), the term "buyer" refers to the U.S. Atomic Energy Commission, or its authorized purchasing agent. The term "ore" does not include mill tailings or other mill products . . . [Emphasis added.] [Circular 5, 14 Fed. Reg.731 (February 18, 1949).]

The AEC was the primary mover in the domestic uranium mining and milling program. Under the AEA of 1946 and 1954, the AEC regulated uranium mining and milling and had an established a uranium ore-buying program. From the 1940's to 1975, the regulations in 10 C.F.R. Part 60 clearly indicated that "ore" does not include mill tailings or other mill products.

10. *Statutory definition of source material.*

- 10.1. *The AEA of 1946, under "Control of Materials," Sec. 5 (b), "Source Materials," (1), "Definition," provides the definition of "source material." Section 5(b)(1) states: Definition. -As used in this Act, the term "source material" means uranium, thorium, or any other material which is determined by the Commission, with the approval of the President, to be peculiarly essential to the production of fissionable materials; but includes ores only if they contain one or more of the foregoing materials in such concentration as the Commission may by regulation determine from time to time.*

The AEA of 1954, Chapter 2, Section 11, "Definitions," sets forth the current statutory definition of "source material " at Section 11(s): The term "source material" means (1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of section 61 to be source material; or (2) ores containing one or more of the foregoing materials, in such concentrations as the Commission may by regulation determine from time to time. [42 U.S.C. Sec. 2014(z).] Responsive to this statutory definition, in 1961 the AEC established the following regulatory definition at 10 C.F.R. § 40.4: Source Material means: (1) Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of: (i) Uranium, (ii) thorium or (iii) any combination thereof. Source material does not include special nuclear material. [26 Fed. Reg. 284 (Jan. 14, 1961).]

Therefore, the AEC made a determination, in accordance with the mandate of the AEA of 1954, that ores containing 0.05% thorium and/or uranium would meet the statutory definition of source material. At the same time that they made that determination, the AEC

had a regulation that clearly stated that "ore" does not include mill tailings or other mill products. Surely, the AEC, as the administrator of a uranium ore procurement program and the developer of the uranium mining and milling industry knew what they were talking about when they used the term "ore."

- 10.2. *Additionally, the AEC set forth certain exemptions to the regulations in 10 C.F.R. Part 40. The proposed rule that was later finalized in January 1961 states, in pertinent part: The following proposed amendment to Part 40 constitutes an overall revision of 10 CFR Part 40, "Control of Source Material."*

With certain specified exceptions, the proposed amendment requires a license for the receipt of title to, and the receipt, possession, use, transfer, import, or export of source material. . . . Under the proposed amendment, the definition of the term "source material": is revised to bring it into closer conformance with that contained in the Atomic Energy Act of 1954. "Source Material" is defined as (1) uranium or thorium, or any combination thereof, in any physical or chemical form, but does not include special nuclear material, or (2) ores which contain by weight one-twentieth of one percent (0.05 percent) or more of (a) uranium, (b) thorium or (c) any combination thereof. The amendment would exempt from the licensing requirements chemical mixtures, compounds, solutions or alloys containing less than 0.05 percent source material by weight. As a result of this exemption, the change in the definition of source material is not expected to have any effect on the licensing program

Section 62 of the Act prohibits the conduct of certain activities relating to source material "after removal from its place of deposit in nature" unless such activities are authorized by license issued by the Atomic Energy Commission. The Act does not, however, require a license for the mining of source material, and the proposed regulations, as in the case of the current regulations, do not require a license for the conduct of mining activities. Under the present regulation, miners are required to have a license to transfer the source material after it is mined. Under the proposed regulation below, the possession and transfer of unrefined and unprocessed ores containing source material would be exempted. [47 Fed. Reg. 8619 (September 7, 1960).]

Therefore, the AEC established, via a rulemaking, exemptions for source material as defined in Sec. 2014(z)(1) related to mixtures, compounds, solutions, or alloys containing uranium and/or thorium:

(a) Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the Act to the extent that such person receives, possesses, uses, transfers or delivers source material in any chemical mixture, compound, solution, or alloy in which the source material is by weight less than one-twentieth of 1 percent (0.05 percent) of the mixture, compound, solution or alloy. The exemption contained in this paragraph does not include byproduct material as defined in this part. [10 C.F.R. § 40.13(a), 26 Fed. Reg. 284 (Jan. 14, 1961).]

The AEC also established, via a rulemaking, exemptions for source material as defined in Sec. 2014(z)(2) related to "ore":

(b) Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the act to the extent that such person receives, possesses, uses, or transfers unrefined and unprocessed ore containing source material; provided, that, except as authorized in a specific license, such person shall not refine or process such ore. [10 C.F.R. 40.13(b), 26 Fed. Reg. 284 (Jan. 14, 1961).]

The definition of "source material" and the exemptions that are related to those definitions stand today, over fifty years later. These regulatory definitions and exemptions did not change when the NRC was established in 1975 and took on the regulatory responsibility for "source material." These regulatory definitions and exemptions did not change when the AEA was amended by UMTRCA in 1978. These regulations and definitions did not change when the NRC developed their policy guidance's related to the processing of wastes from various mineral processing operations (including the commingled soils and wastes from other sources) at licensed uranium recovery operations.

11. *Definition of 11e.(2) byproduct material.*

- 11.1. *UMTRCA, among other things, amended the AEA of 1954 by adding a new definition, the definition of 11e.(2) byproduct material:
Sec. 201. Section 11e. of the Atomic Energy Act of 1954, is amended to read as follows:
"e. The term 'byproduct material' means (1) any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material, and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." [42 U.S.C. Sec. 2014 (e).] There is no evidence in the regulatory history of UMTRCA that Congress, in defining "11e.(2) byproduct material" intended to also amend the statutory definition of "source material." There is no evidence in the regulatory history of UMTRCA that the term "any ore" does not mean "any type of uranium ore" (e.g., ore containing less than 0.05% uranium and/or thorium and the numerous types of natural uranium-bearing minerals that were mined at uranium mines and purchased by the AEC under their domestic uranium ore procurement program or under the commercial "uranium milling" program). There is no evidence in the regulatory history of UMTRCA that Congress intended the term "any ore" to mean anything that the NRC, DRC, or EFRI wants it to mean (e.g., the wastes from mineral processing operations, including wastes mixed with soils and commingled with the wastes from other sources, even if those wastes are processed for their source material content at a uranium or thorium mill).*

12. *Regulatory Background*

- 12.1. *Although both the EPA and the NRC established a regulatory program for uranium milling and the processing of ores, neither the EPA nor the NRC contemplated the processing of materials that were not "ore." Neither the EPA nor the NRC considered wastes from other mineral processing operations (including contaminated soils and wastes from other sources) in their concept of "ore," and they did not address in any manner the processing of such wastes when promulgating their regulatory regimes for active uranium processing facilities. Further, during the various rulemaking proceedings, the public was never informed that wastes from other mineral processing operations (including commingled contaminated soils and wastes from other sources), no matter how they were defined, would be processed at licensed uranium or thorium mills. Therefore the public was given no reasonable opportunity to comment on such processing activities at uranium mills.*
- 12.2. *Responsive to UMTRCA, the NRC incorporated the UMTRCA definition of 11e.(2) byproduct material (with clarification) into their regulations at 10 C.F.R. § 40.4:
"Byproduct Material" means the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by such solution extraction operations do not constitute "byproduct material" within this definition. [44 Fed. Reg. 50012-50014(August 24, 1979).]*

The NRC also explained the need for the new definition: Section 40.4 of 10 CFR Part 40 is amended to include a new definition of "byproduct material." This amendment, which included uranium and thorium mill tailings as byproduct material licensable by the Commission, is required by the recently enacted Uranium Mill Tailings Radiation Control Act. [44 Fed. Reg. 50012-50014 (August 24, 1979).] The NRC promulgated further regulations amending Part 40, in 1980, 45 Fed. Reg. 65521-65538 (October 3, 1980). In the summary, the NRC states:

The U.S. Nuclear Regulatory Commission is amending its regulations to specify licensing requirements for uranium and thorium milling activities, including tailings and wastes generated from these activities. The amendments to parts 40 and 150 take into account the conclusions reached in a final generic environmental impact statement on uranium milling and the requirements mandated in the Uranium Mill Tailings Radiation Control Act of 1978, as amended, public comments received on a draft generic environmental impact statement on uranium milling, and public comments received on proposed rules published in the Federal Register. [Footnotes omitted.]

There is no statement in any of the NRC regulations in 10 C.F.R. Part 40 or in any of rulemaking proceedings promulgating those regulations that wastes from other mineral processing operations (including wastes from other sources) was "ore," under any circumstances, or that, under any circumstances, such wastes would be processed at licensed uranium or thorium mills and the tailings or wastes would be disposed of as 11e. (2) byproduct material in the mill tailings impoundments. The regulations promulgated by the NRC did not contemplate this kind of activity. The NEPA document in support of the promulgation of the NRC regulatory program for uranium mills did not contemplate this kind of activity. Also, in the rulemaking proceedings and NEPA proceeding, the public did not have an opportunity to contemplate and comment on this kind of activity.

- 12.3. *The NRC Final Generic Environmental Impact Statement on Uranium Milling (GEIS) NUREG-0706, September 1980, includes a clear statement regarding the scope of the GEIS and its understanding of what uranium milling entails: As stated in the NRC Federal Register Notice (42 FR 13874) on the proposed scope and outline for this study, conventional uranium milling operations in both Agreement and Non-Agreement States, are evaluated up to the year 2000. Conventional uranium milling as used herein refers to the milling of ore mined primarily for the recovery of uranium. It involves the processes of crushing, grinding, and leaching of the ore, followed by chemical separation and concentration of uranium. Nonconventional recovery processes include in situ extraction or ore bodies, leaching of uranium-rich tailings piles, and extraction of uranium from mine water and wet-process phosphoric acid. These processes are described to a limited extent, for completeness. [GEIS, Volume I, at 3.]*
- 12.4. *Section 3.3 of the GEIS is entitled "Prospects for Unconventional Methods of Uranium Production." GEIS at 3-8. In the discussion of unconventional methods of uranium production, there is no discussion of the processing of the types of materials that have been processed at the White Mesa Mill as "alternate feed materials" as one of the types of "unconventional methods of uranium production."*
- 12.5. *The GEIS is very clear about what it considers "ore" to be and gives no indication whatsoever that materials other than ore, such as the tailings or waste from mineral processing operations (including commingled contaminated soils and waste materials from other sources) are considered to be "ore."*
- 12.6. *The GEIS includes a discussion of "Past Production Methods." That discussion makes reference to "ore," "ore exploration," "pitchblende ore," "crude ore milling processes,"*

"lower-grade ores," "uranium-bearing gold ores," "high-grade ores," "ore-buying stations," and "ore reserves." GEIS, Volume I, Chapter 2, at 2-1 to 2-2.

There is a lengthy discussion of "Uranium Mining and Milling Operations" that provides a description of the commonly and less-commonly "used methods of mining uranium ores." GEIS, Volume II, at B-1 to B-2. Appendix 1.

- 12.7. In Chapter 6, "Environmental Impacts," there is a discussion of "Exposure to Uranium Ore Dust," which states, in part:

Uranium ore dust in crushing and grinding areas of mills contains natural uranium (U-238, U-235, thorium-230, radium-226, lead-210, and polonium-210) as the important radionuclides. [GEIS, Volume I, at 6-41.]

There is also a table giving the "Average Occupational Internal Dose due to Inhalation of Ore Dust." GEIS at 6-41, Table 6.16. Further, the GEIS discusses "Shipment of Ore to the Mill" (GEIS at 7-11), "Sprinkling or Wetting of Ore Stockpile" (GEIS at 8-2), "Ore Storage" and "Ore Crushing and Grinding" (GEIS at 8-6), "Ore Pad and Grinding" (GEIS, Vol. 3, at G-2), "Ore Warehouse (GEIS, Vol. 3, at K-3) and "Alternatives to Control Dust from Ore Handling, Crushing, and Grinding Operations (GEIS, Vol. III, at K-3 to K-3). In the NRC responses to comments there are discussions of "Average Ore Grade, Uranium Recovery" (GEIS, Vol. II, at A-12 to A-13). None of these references to "ore" contemplated wastes from mineral processing operations. The GEIS gives no indication whatsoever that such wastes are "ore," even if they were processed at a uranium or thorium recovery facility for their "source material content." Clearly, the GEIS did not consider that the wastes from the processing of such wastes would meet the definition of 11e.(2) byproduct material.

- 12.8. In sum, the GEIS, which was developed for the rulemakings associated with the regulation of 11e.(2) byproduct material, did not evaluate, and the public did not have an opportunity to comment upon, any of the possible health, safety, and environmental impacts of the processing of other mineral processing wastes at uranium or thorium processing facilities. They did not evaluate transportation issues related to the transportation of such wastes, nor were reasonable alternatives to the transportation, receipt, processing, and disposal of such wastes at uranium or thorium mills ever evaluated.

13. EPA standards.

- 13.1. UMTRCA directed the EPA to establish standards for uranium mill tailings and directed the NRC to implement those standards. That statute, as codified in 42 U.S.C. 2022, states in pertinent part:

Sec. 2022. Health and environmental standards for uranium mill tailings

(b) Promulgation and revision of rules for protection from hazards at processing or disposal site.

(1) As soon as practicable, but not later than October 31, 1982, the Administrator shall, by rule, propose, and within 11 months thereafter promulgate in final form, standards of general application for the protection of the public health, safety, and the environment from radiological and nonradiological hazards associated with the processing and with the possession, transfer, and disposal of byproduct material, as defined in section 2014(e)(2) of this title, at sites at which ores are processed primarily for their source material content or which are used for the disposal of such byproduct material. If the Administrator fails to promulgate standards in final form under this subsection by October 1, 1983, the authority of the Administrator to promulgate such standards shall terminate, and the Commission

may take actions under this chapter without regard to any provision of this chapter requiring such actions to comply with, or be taken in accordance with, standards promulgated by the Administrator. In any such case, the Commission shall promulgate, and from time to time revise, any such standards of general application, which the Commission deems necessary to carry out its responsibilities in the conduct of its licensing activities under this chapter. [Emphasis added.]

Requirements established by the Commission under this chapter with respect to byproduct material as defined in section 2014(e)(2) of this title shall conform to such standards. Any requirements adopted by the Commission respecting such byproduct material before promulgation by the Commission of such standards shall be amended as the Commission deems necessary to conform to such standards in the same manner as provided in subsection (f)(3) of this section. Nothing in this subsection shall be construed to prohibit or suspend the implementation or enforcement by the Commission of any requirement of the Commission respecting byproduct material as defined in section 2014(e)(2) of this title pending promulgation by the Commission of any such standard of general application. In establishing such standards, the Administrator shall consider the risk to the public health, safety, and the environment, the environmental and economic costs of applying such standards, and such other factors as the Administrator determines to be appropriate.

** * **

(d) Federal and State implementation and enforcement of the standards promulgated pursuant to subsection (b) of this section shall be the responsibility of the Commission in the conduct of its licensing activities under this chapter. States exercising authority pursuant to section 2021(b) (2) of this title shall implement and enforce such standards in accordance with subsection (o) of such section. [42 U.S.C. 2022(b) and (d).]

Congress directed the EPA only to establish standards for "sites at which ores are processed primarily for their source material."

- 13.2. *The EPA, as mandated by UMTRCA, finalized the "Environmental Standards for Uranium and Thorium Mill Tailings at Licensed Commercial Processing Sites" in 1983. 48 Fed. Reg. 45925-45947, October 7, 1983. In the "Summary of Background Information" the EPA provides a discussion of "The Uranium Industry" (i.e., the industry and the type of sites that the regulations apply to):*

The major deposits of high-grade uranium ores in the United States are located in the Colorado Plateau, the Wyoming Basins, and the Gulf Coast Plain of Texas. Most ore is mined by either underground or open pit methods. At the mill the ore is first crushed, blended, and ground to proper size for the leaching process which extracts uranium After uranium is leached from the ore it is concentrated The depleted ore, in the form of tailings, is pumped to a tailings pile as a slurry mixed with water. Since the uranium content of ore averages only about 0.15 percent, essentially all the bulk ore mined and processed is contained in the tailings. [48 Fed. Reg. 45925, 45927, October 7, 1983.]

- 13.3. *Clearly, when the EPA developed its standards for uranium and thorium mills, they stated, with specificity and particularity, what uranium ore was, what uranium milling consisted of, and what uranium mill tailings consisted of. The EPA clearly stated that the standards applied to the processing of uranium and thorium ores at uranium and thorium mills. There is no reasonable evidence that would indicate that the standards promulgated by the EPA applied to the processing of wastes from other mineral processing operations at uranium and thorium mills.*

- 13.4. *Additionally, the EPA incorporated the 42 U.S.C. 2014(z) definition of 11e.(2) byproduct material, as clarified by the NRC in 10 C.F.R. 40.4, into their standards at 40 C.F.R. Subpart*

D, § 192.31(b). Since that time, the EPA has not amended their definition of 11e.(2) byproduct material in a rulemaking proceeding, nor have they amended their definition via policy guidance. The EPA has not, in any manner, widened the use of the words "any ore" to include mineral processing wastes or other materials called "alternate feed."

- 13.5. *The EPA did not sanction the NRC's policy guidance with respect new definitions of "ore" and 11e.(2) byproduct material, nor has the EPA adopted the NRC Interim Guidance. Therefore, the EPA standards in 40 C.F.R. Part 192 do not in any manner apply to the processing of alternate feed or the wastes from the processing of alternate feed. The State of Utah has no legal authority to enforce EPA standards in the receipt, storage, processing, and disposal of alternate feed materials. There is no legal basis for applying those standards to the processing of feed materials other than "natural ore." (Note that, by definition "ore" is a natural or native material.)*
- 13.6. *Clearly, the EPA, as directed by Congress, has not in any manner contemplated the processing of wastes from other mineral extraction operations at uranium or thorium mills when establishing the "Environmental Standards for Uranium and Thorium Mill Tailings at Licensed Commercial Processing Sites."*
- 13.7. *When compiling that list of potential hazardous constituents that could be found in uranium mill tailings and incorporating that list into 40 C.F.R. Part 192, the EPA did not in any manner contemplate the processing of wastes (such as the Midnite Mine material) from other mineral extraction operations at the mills for which they were establishing standards. The EPA did not address in any manner effluents that might result from the processing of alternate feed materials.*
- 13.8. *In the various rulemaking proceedings that have taken place in the establishment of the EPA standards, the public was given no opportunity to consider or comment on the possibility that the EPA standards would also apply to the processing of wastes from other mineral processing operations (including commingled soils and waste materials from other sources) at uranium and thorium mills.*

It is true that the EPA and the NRC, in establishing their regulatory program, contemplated the processing of ores at uranium and thorium mills. However, as shown above, processing of wastes from other mineral processing operations (alternate feed) at uranium and thorium mills is beyond the scope of the regulatory program established by the NRC and the EPA in response to UMTRCA.

- 13.9 *Furthermore, 10 C.F.R. Part 40, Appendix A, Criterion 8, states in part:*

Uranium and thorium byproduct materials must be managed so as to conform to the applicable provisions of Title 40 of the Code of Federal Regulations, Part 440, "Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores Subcategory," as codified on January 1, 1983.

There is no indication that this NRC regulation and the regulation in 40 C.F.R. Part 440 (and the enabling statute) have in any manner been amended or altered by subsequent NRC Interim Guidance. Therefore, any shift in the usage of the word "ore" would conflict with these statutory and regulatory authority with respect this regulation.

14. *Regulatory History of NRC's Alternate Feed Guidance*

- 14.1. *In the late 1980's the NRC was faced with a few requests to process material other than ore at licensed uranium mills. At that time and today, there are two statutes or regulations (implementing those statutes) that are pertinent. First is the statutory definition of "source material" established in 1954 by the AEA, found at 42 U.S.C. Sec. 2014(z), and in the NRC regulatory definition of "source material" (established in 1961 pursuant Sec. 2014(z)), found at 10 C.F.R. 40.4: Source Material means: (1) Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of: (i) Uranium, (ii) thorium or (iii) any combination thereof. Source material does not include special nuclear material.*

The second is the definition of "byproduct material" in Section 11(e)(2) of the Atomic Energy Act of 1954, as amended, (42 U.S.C Sec. 2014(e)(2)) and the regulatory definition of "byproduct material" found in 10 C.F.R. 40.4: Byproduct Material means the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by such solution extraction operations do not constitute "byproduct material" within this definition.

The NRC had several options, one of which would have been to go to Congress and request that Congress change the definition of 11e.(2) byproduct material to read "the tailings or wastes produced by the extraction or concentration of any ore material processed primarily for its source material content."

NRC Staff made a determination that they would not go to Congress to seek an amendment to the AEA of 1954. Instead, what the NRC did was to manipulate the use of the word "ore" as it is used in the definition of 11e.(2) byproduct material. The NRC proposed for notice and comment that a policy guidance be established for the purpose of interpreting the term "ore," as it is used in the definition of 11e.(2) byproduct material. 57 Fed. Reg. 20525 (May 13, 1992). Further, the NRC did not institute a rulemaking proceeding to amend 10 C.F.R. Part 40.

Based on the new use of the term "ore" as put forth in the proposed guidance, not only would the definition of 11e.(2) byproduct material apply to "any ore processed primarily for its source material content" in a licensed uranium or thorium mill, but the definition of 11e.(2) byproduct material would also apply to any material (particularly wastes from various mineral extraction operations and various commingled wastes and materials) processed primarily for its source material content in a licensed uranium or thorium mill. In other words, the NRC altered the accepted meaning of the word "ore" as that word ore was used in a statutory definition.

- 14.2. *On May 14, 1992, NRC Staff, sent a letter to the Environmental Protection Agency, enclosing a copy of the May 13 proposed rules and requested EPA comment on two proposed guidance documents and their associated staff analyses. Letter from Robert M. Bernero, Director, Office of Nuclear Material Safety and Safeguards, NRC, to Sylvia K. Lowrance, Director, Office of Solid Waste, EPA, May 14, 1992. The EPA did not submit comments on the proposed policy guidances. The only documentation of EPA's response to that request for comment is quoted below and is found in the Commission Paper that forwarded the finalized guidances to the Commission for their approval: There was an issue that delayed finalization of the guidance documents. In an October 1992, mixed waste meeting between the NRC, the EPA, and DOE staff, the EPA identified potential inconsistencies in the NRC's interpretation of the definition of source material in conjunction with the exclusion of source material from the definition of solid waste in the Resource Conservation and Recovery Act (RCRA). In making its point, the EPA cited the*

May 13, 1992, Federal Register notice on the disposal of non-11e.(2) byproduct material. The staff had delayed finalization of the uranium recovery policy guidance documents, pending resolution of the source material definition issue. However, the staff has now decided that these two policy guidance documents can be finalized, independent of the source material issue, because the guidance is not dependent on the interpretation of the definition of source material. ["Final 'Revised Guidance on Disposal of Non-Atomic Energy Act of 1954, Section 11e.(2) Byproduct Material in Tailings Impoundments' and Final 'Position and Guidance on the Use of Uranium Mill Feed Materials Other Than Natural Ores,'" SECY-95-221, August 15, 1995.]

The Revised Position and Guidance and the Final Position and Guidance gave no indication that the NRC was amending, interpreting, or in any manner adjusting the accepted meaning of the term "ore" as that word is used in the statutory and regulatory definition of "source material." Nor was there any discussion in the various guidances related to the processing of material other than natural ore (i.e. material that is not ore at all) of how the exemptions set forth in 10 C.F.R. §40.13(a) and (b) would be impacted by guidance's new definition of "ore".

There is no indication that the "source material definition issue" has ever been appropriately addressed or resolved. It is an issue that has lain in some pretty murky regulatory waters for quite some time.

- 14.3. Again, It is plain from the AEA of 1946, the legislative history of the AEA of 1954 and UMTRCA, the regulatory history of the AEC, EPA, and NRC rules promulgated responsive to those laws, that the Interim Guidance's new use of the term "ore" goes far beyond the accepted meaning of that term and the clear intent of Congress. Therefore, the DRC, which is authorized to administer and enforce the NRC and EPA regulations applicable to uranium mills cannot make use of a definition of "ore" to claim that the wastes produced from the processing of that material meets the statutory definition of "11e.(2) byproduct material. That new definition was not derived from statute or regulation, was not the subject of a federal rulemaking, was not the subject of NEPA associated with the applicable EPA or NRC rulemakings.

The NRC and DRC are not authorized to shift these accepted definitions at will as an expression of their "regulatory flexibility." This is especially so when such shifts result in direct conflicts with the NRC's own enabling statutes and regulations, as is the case with the use of the newly defined term "ore." Additionally, the NRC and DRC are not authorized to shift definitions at will when such shifts directly conflict with the statutory authority of another federal agency, in this case, the EPA.

15. Interim Guidance

- 15.1. The DRC staff reviewed the Amendment Request using "Interim Guidance on the Use of Uranium Mill Feed Material Other Than Natural Ores." Prior to the use of the Interim Guidance, the NRC Staff relied upon the 1995 "Final Position and Guidance on the Use of Uranium Mill Feed Materials Other Than Natural Ores."

The Interim Guidance amended the 1995 Final Guidance in several important respects. For example, it removed previous prohibitions regarding the receipt and processing of materials subject to regulation under the Toxic Substance Control Act (TSCA) and the Resource Conservation and Recovery Act (RCRA). Yet the public has never had an opportunity to comment on the Interim Guidance. The proposed "Position and Guidance on the Use of Uranium Mill Feed Materials Other Than Natural Ores" was published in the

Federal Register for public comment on May 13, 1992. A notice of the Final Position and Guidance was published in the Federal Register on September 22, 1995.

The NRC never published the Interim Guidance in the Federal Register as a proposed policy guidance for public comment, nor did the NRC publish a notice in the Federal Register announcing Interim Guidance as a final policy guidance.

- 15.2. *The law is well settled that a federal agency such as the NRC cannot rely upon policy statements and guidance to accomplish rulemaking under the Administrative Procedure Act.*
- 15.3. *Since neither the Interim Guidance nor the accompanying definition of "ore" has been finalized as an NRC regulation, the DRC's use of the Interim Guidance is without regulatory foundation. The DRC is not authorized to make use of any policy guidance, no matter where it comes from, to make substantive changes to federal regulations that the DRC administers and enforces.*

Response #19

See General Response, Part 5. The commenter's primary argument in Comment # 19 is that DRC does not have authority to use NRC's interpretation of the term "ore" to conclude that the resulting tailing would be byproduct materials. That was also the heart of the argument made in the Fansteel case described in General Response, Part 5. The agency, through the Radiation Control Board, determined that it did have authority to use NRC's interpretation and that it would do so. That is obviously not a determination the commenter agrees with, but at this point, with the question settled in a previous proceeding and with no information presented in these comments that was not available at the time of the Fansteel proceeding, the commenter's policy concerns should be addressed in another form, such as in a rulemaking proceeding addressed to the NRC or, with respect to related EPA regulations, to the EPA.

Comment #20

16. *EPA Radionuclide NESHAPS*
- 16.1. *The EPA has established standards applicable to the emission of radon from licensed uranium and thorium mills at 40 C.F.R. Part 61 Subpart W, National Emission Standards for Radon Emissions From Operating Mill Tailings. The provisions Subpart W "apply to owners or operators of facilities licensed to manage uranium byproduct materials during and following the processing of uranium ores, commonly referred to as uranium mills and their associated tailings." 40 C.F.R. § 61.250. Subpart W also incorporates the AEA definition of byproduct material: "Uranium byproduct material or tailings means the waste produced by the extraction or concentration of uranium from any ore processed primarily for its source material content." As discussed above, the EPA has never adopted the Interim Guidance new definition of the term ore, as a policy or a regulation. Therefore, there is no legal basis for the EPA or the Utah Division of Air Quality (which administers and enforces Subpart W) to regulate the radon emissions from wastes from the processing of feed materials other than natural "ore."*

Response #20

The relationship of this comment to the current licensing proceeding is unclear. As discussed in General Response, Part 5 and in Response # 19, the material disposed of after processing qualified alternate feed materials is byproduct material, as both the NRC and the D.C. Circuit court have determined. This interpretation has stood for some time, and the EPA has not changed its regulation in response. If the commenter has concerns about this result with respect to EPA's regulations, the remedy is through a rulemaking request to the EPA.

Comment #21

CONCLUSION

17. *The DRC must deny the Amendment Request for the following reasons:*
 - 17.1 *The processing of feed material other than natural ore at licensed uranium mills was not contemplated by the Atomic Energy Act, NRC and EPA regulations implementing the UMTRCA, the generic EIS's associated with the promulgation of the NRC and EPA regulations applicable to uranium mills, the White Mesa ES, and other federal regulations associated with uranium mills (40 C.F.R Subpart W and Subpart T).*
 - 17.2 *The DRC does not have the authority to enforce EPA standards to mill tailings that result from the processing of feed material other than natural ore, because, under EPA regulations, those wastes are not 11e.(2) byproduct material.*
 - 17.3 *The Utah Division of Air Quality does not have the authority to enforce 40 C.F.R. Part 61 Subpart W with respect radon form to mill tailings that result from the processing of feed material other than natural ore, because, under EPA Part 61 regulations, those wastes are not 11e.(2) byproduct material.*
 - 17.4 *There is no statutory or regulatory basis for the DRC relying on a policy that substantively alters the statutory and regulatory intent of the federal laws and regulations that the DRC currently administers and enforces.*
 - 17.5 *The processing of alternate feed material is a regulatory program that was established outside the statutory authority of the Atomic Energy Act and EPA and NRC regulation. The DRC does not have the statutory and regulatory authority to administer and enforce such a program.*
 - 17.6 *The DRC based its review of the Amendment Request, the SER, and proposed licensing action on documents that the DRC failed to identify and failed to make readily available to the public.*
 - 17.7 *The wastes from the processing of the Uranium Mill would not meet the statutory and regulatory definition of 11e.(2) byproduct material at contemplated by the AEA and NRC and EPA implementing regulations and the NEPA and other background documents in support of those rulemakings. The White Mesa Mill License does not authorize the disposal of materials that are not 11e.(2) byproduct material. Therefore the disposal of wastes from the processing of the Uranium Material would be a violation of the License Condition 10.1A.*

Response #21

This is a summary of previous comments, therefore please see previous responses.

The exhibit that accompanied the commenter's comments can be found in Attachment B to this Public Participation Summary.

2. Comments Received from Ute Mountain Ute Tribe (Celene Hawkins)

Comment #22

The Ute Mountain Ute Tribe ("Tribe") submits the following comments regarding the above-noted license amendment ("License Amendment") and the Division of Radiation Control's ("DRC") environmental analysis conducted pursuant to Utah Admin Code R313-24-3 ("Environmental Analysis")²¹ to allow the White Mesa Mill ("WMM") to process as alternate feed contaminated wastewater treatment sludge hauled from a uranium mining Superfund site located in the State of Washington. The Tribe notes that it is in the process of engaging the State of Utah (including the Utah Department of Environmental Quality ("DEQ") and its Divisions) in government-to-government consultation regarding the WMM. The Tribe submits these comments as public comments pursuant to Utah Admin. Code R313-17-2, R313-24-3, and R305-7-202. The Tribe has organized its comments into five major sections. Section I provides DRC a quick overview of the Tribe's background and connection with the WMM facility. Section II provides the Tribe's overarching concern that DRC is proposing to amend a license issued in 2002 to allow a new source of alternate feed material, even though DRC has acknowledged that the 2002-era license is insufficient to address known environmental contamination and risks to Ute Mountain Ute Tribal member ("UMU Tribal Member") and public health. Section III addresses four broad Environmental Analysis deficiencies under Utah Admin. Code R313-24-3, including: (A) DRC's failure to adequately analyze impacts on UMU Tribal Member and public health; (B) DRC's failure to adequately analyze impacts on surface and groundwater resources; (C) DRC's complete failure to conduct an analysis of alternative sites; and (D) DRC's failure to adequately analyze long-term impacts of the License Amendment. Section IV provides the Tribe's concern that deficiencies in DRC's regulation of the WMM facility and in DRC's analysis of the addition of the alternate feed material from the Midnite Mine site ("Midnite Mine Material") will eventually result in the relocation of uranium contamination from the Spokane Indian Reservation to the Ute Mountain Ute Tribe's White Mesa Community. Section V provides a brief conclusion to the Tribe's comments.

I. OVERVIEW OF TRIBAL BACKGROUND AND CONNECTION WITH THE WMM FACILITY

The Ute Mountain Ute Tribe is a federally-recognized Indian tribe with lands located in southwestern Colorado, northwestern New Mexico, and southeast Utah. There are two

²¹ Commenter footnote 1: Because the DRC tiers its License Amendment to the Request to Amend Radioactive Materials License, Energy Fuels Resources (USA) Inc., White Mesa Uranium Mill, San Juan County, Utah, and Environmental Report (May 2013) ("EFR Environmental Report") and later EFR submissions dated December 5, 2012, June 14, 2013, and August 7, 2013, the Tribe includes those documents with the DRC's Safety Evaluation Report for the Amendment Request to Process an Alternate Feed Material (the "Uranium Material") at the White Mesa Mill (the "Mill") from Dawn Mining Corporation ("DMC") Midnite Mine, Washington State (the "Midnite Mine SER") in its analysis of the DRC's compliance with Utah Admin. Code R313-24-3, and collectively refers to the environmental analysis contained in these documents as the "Environmental Analysis."

Tribal communities on the Ute Mountain Ute Reservation: Towaoc, in southwestern Colorado, and White Mesa, which is located in Utah within three miles of the WMM facility. The lands comprising the White Mesa community are held in trust for the Tribe and for other individual UMU Tribal Member owners. The Tribe has jurisdiction (as a federally-recognized tribal government) over Tribally owned lands, UMU Tribal Member-owned lands, and members of the Ute Mountain Ute Tribe who live in the White Mesa community. Under the Tribe's Constitution, the Tribal Council is responsible for, among other things, the management and protection of Tribal lands and for the protection of public peace, safety, and welfare.

UMU Tribal Members have lived on and around White Mesa for centuries and intend to do so forever. The community of White Mesa depends on groundwater resources buried deep in the Navajo aquifer for its municipal (domestic) needs. UMU Tribal Members continue traditional practices, which include hunting and gathering and using the land, plants, wildlife and water in ways that are integral to their culture. It is reasonable to expect that those resources are not contaminated with hazardous materials that have blown in the wind or traveled through the groundwater from facilities regulated by the divisions of DEQ.

The Tribe has serious concerns about the manner in which the WMM is currently operated and regulated. The Tribe has long expressed concern that the WMM operations (in particular, management practices that have allowed continued contamination of surface resources, groundwater resources, and surface water resources) pose serious threats to the health of the land and the natural and cultural resources within and around the Tribe's White Mesa community and to the health and welfare of its Tribal members and their future generations. The Tribe has also expressed concern that the poor quality of EFR's reclamation planning and surety estimations for the WMM facility will ultimately result in a legacy of environmental contamination and blight both in the White Mesa community and in surrounding communities.

Response #22

See General Responses, Parts 1 through 6. Although DRC has made public its plans to propose changes to the White Mesa Mill License, it is not correct to say that "DRC has acknowledged that the 2002-era license is insufficient to address known environmental contamination and risks to Ute Mountain Ute Tribal member ("UMU Tribal Member") and public health." Questions have been raised and will be answered in the course of the License renewal proceeding and, DRC expects, the result will be improved protection. That does not mean that DRC agrees that existing protection is inadequate. In fact, DRC does not agree that there is any evidence demonstrating threats to human health or the environment as a result of off-site contamination.

No additional response is required for this introductory information.

Comment #23

Since 2010, the Tribe has spent a significant amount of resources documenting its concerns to Divisions of DEQ during licensing and regulatory actions for the WMM facility. These efforts include, but are not limited to, the following dockets:

- *Challenge to the Utah Division of Air Quality's approval of the WMM facility's Air Approval Order (public comments, October 29, 2010/November 11, 2010, Request*

for Agency Action/Petition to Intervene, March 31, 2011 ("Air Approval Order RAA");

- *Public comments addressing the DRC's revision and renewal of the WMM facility's radioactive materials license (public comment, December 16, 2011 ("2011 RML Renewal Comments")); and*
- *Public comments and administrative challenge to the DRC's approval of the corrective action plan for USG12-04 (nitrate/chloride contamination plume) (public comment, August 17, 2012 ("Nitrate CAP Comments")), Request for Agency Action, January 11, 2013; Petition to Intervene, January 11, 2013 ("Nitrate CAP RAA").*

The Tribe's submissions to the DEQ include extensive documentation of the Tribe's concerns that the DEQ's enforcement practices with the current set of licenses and permits at the WMM facility are allowing EFR to contaminate air, land, surface water, vegetation, and groundwater in violation of Utah State and federal law.²²

Response #23

Please see General Response, Parts 1 through 6. See also R305-7-202 for requirements associated with incorporation by reference, and particularly R305-7-202(3), which requires that:

The relevance of and the relevant portions of any supporting materials included with or incorporated by reference in comments shall be described with reasonable specificity.

This is a reasonable provision that ensures that the burden will not be on the Director and his staff to search through attachments and discern what parts of incorporated materials the commenter believes is important. Because the relevance of the materials that the commenter seeks to incorporate are not described with reasonable specificity with this incorporation – although they may be elsewhere in the Ute Mountain Ute Tribe's comments -- no additional response is required.

Comment #24

The Tribe now faces the DRC's current proposed License Amendment, which would allow the WMM facility to receive and process wastewater treatment sludge produced during a Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA" or "Superfund") cleanup of groundwater and surface water contaminated by a former uranium mining facility located on the Spokane Indian Reservation. The Tribe believes that, given the status of the tailings cells, operations, existing and uncontrolled environmental contamination, and lack of appropriate regulation of the WMM facility, the proposed License Amendment will simply move, the contamination from the Midnite Mine Superfund Site on the Spokane Indian Reservation to the lands, surface resources, surface water, and groundwater around the WMM facility and near or on Ute Mountain Ute Tribal lands in the White Mesa Community. Contaminated residues from the treatment of groundwater contamination at a uranium

²² Commenter footnote 2: To avoid repetitive comments to the DRC, the Tribe requests that the documents referenced in this paragraph (including all exhibits) be incorporated by reference and made a part of the administrative record on the approval of this License Amendment.

mining Superfund Site on one Indian Reservation should not be hauled hundreds of miles to a problematic uranium milling site with existing groundwater contamination that impacts another Tribal Community.

Response #24

Please see General Response, Parts 1 through 6. DRC does not agree that there is evidence of contamination, on-site or off-site, that is uncontrolled or that is not being adequately addressed. The site is being adequately regulated, as described in the General Response.

Comment #25

Accordingly, and for the reasons detailed below, the Tribe submits these comments to demand that the DRC deny the requested License Amendment at this time.

II. DRC SHOULD NOT AMEND THE WMM FACILITY'S 2002 RADIOACTIVE MATERIALS LICENSE TO ADD ANY NEW SOURCES OF ALTERNATE FEED MATERIAL

The overarching and most fundamental flaw with the License Amendment and the Environmental Analysis is that the DRC is proposing to amend a radioactive materials license that was issued to the WMM by the Nuclear Regulatory Commission in 2002. The DRC's decision to amend the 2002 version of EFR's radioactive materials license ("2002 RML") is problematic because the 2002 RML does not address known contamination events and significant operational and regulatory deficiencies at the WMM facility. In addition, the DRC's decision to base its entire Environmental Analysis for the License Amendment upon the faulty assumption that the 2002 RML and the existing regulatory regime are competently managing existing ore and alternate feed material leads to a deeply flawed analysis of whether the WMM facility is a proper facility under Utah State or federal law to handle CERCLA waste.

Response #25

Please see General Response, Parts 1 through 6. As described in those parts, DRC does not agree that there is evidence of contamination, on-site or off-site, that is uncontrolled or that is not being adequately addressed. The site is being adequately regulated, as described in those parts.

It is the EPA's role, not DRC's, to make a determination that the facility is an appropriate one to receive CERCLA wastes. The commenter's concerns should be directed to the EPA.

Comment #26

A. THE 2002 RML IS INSUFFICIENT TO ADDRESS ONGOING AND UNCONTROLLED CONTAMINATION AND SERIOUS OPERATIONAL DEFICIENCIES AT THE WMM FACILITY

Under Utah Admin. Code R313-70-5(4)(a), the DRC is responsible for reviewing and issuing renewals of radioactive materials licenses for facilities like the WMM every five years. The last renewal of the WMM radioactive materials license was

issued in 2002, and the DRC's review of the facility's 2007 renewal application has been ongoing for more than six years.

Response #26

The License was last renewed in March, 1997 by the NRC for a period of ten years. Energy Fuels submitted a timely application for renewal on February 28, 2007. Under R313-22-36(1), with a timely application the License continues in effect until the Director makes a final determination.

A draft license renewal was issued for public comment on August 24, 2012. After consideration of the comments submitted, the Director determined that the draft License renewal would go back out again for public comment. That decision was made for three principal reasons:

- In accordance with the requests of some of the commenters, DRC undertook additional environmental analysis. The preliminary result of that analysis – analysis that was done before giving Energy Fuels an opportunity to comment – show that the facility meets air emission dose limits and doses to the public.
- It was determined that new opportunities for public comment should be allowed so that interested commenters would be able to meet new statutory requirements for public comments associated with license challenges. See Utah Code Ann. § 19-1-301.5(4).
- Additional time was also required to respond to the many comments received during the public comment period. Although the DRC did not believe that most of the comments warranted a different action than the ones initially proposed, responding to the many comments has been very time consuming.

See also General Response, Part 6 and, with respect to the adequacy of environmental controls and oversight generally, Parts 1 through 5.

Comment #27

The renewal process for the WMM facility radioactive materials license has been difficult and time-consuming, in part because of serious ongoing violations of the WMM's groundwater permit and state and federal law. In the eleven years that have passed since the last renewal of the WMM facility's radioactive materials license, there have been several new groundwater enforcement actions taken to address contamination at the WMM facility. See, e.g., Docket UGW12-04 (docket initiated in January, 2009 addressing co-located nitrate/chloride plume in perched groundwater aquifer); Docket UGW 12-03 (docket initiated in July, 2012 addressing multiple violations of the groundwater permit, including a decreasing pH trend and exceedances of cadmium, manganese, selenium, thallium, uranium, TDS, sulfate, and fluoride, co-located with exceedances in nitrate, nitrite, chloride, chloroform, and dichloromethane). See also 2011 Renewal RML Comments § 111(A)(1)(a) and Exhibit C; April 23, 2012 Letter to Rusty Lundberg ("April 2012 Groundwater Letter") (both explaining the Tribe's concerns about elevated levels of indicator parameters in monitoring wells near the southern/Tribal border of the WMM facility). There has been scientific documentation and DRC

acknowledgement that the WMM facility has caused offsite contamination of land, surface water, and other surface resources. 2011 RML Renewal Comments § 111(B)(1), Exhibit L (explaining the findings in the USGS Study that uranium and vanadium have migrated east of the WMM facility and into off-site vegetation, lands, and surface water); USGS Report: White Mesa Mill, Utah Division of Radiation Control Public Presentation, Blanding Utah (July 9, 2012). The WMM facility has caused at least two violations of the National Emission Standards for Radon Emissions from Operating Mill Tailings (promulgated as a National Emission Standard for Hazardous Air Pollutants under the federal Clean Air Act and published in 40 C.F.R. Part 61, subpart W ("Subpart W NESHAP"). See 2011 RML Renewal Comments 111(B)(3) (explaining that the WMM is in violation of the Subpart W NESHAP work practice standard restriction to two tailings impoundments); Exhibit A (to these October 2013 Comments) (documenting the WMM's ongoing and uncontrolled violation of the radon emissions limit set forth in 40 C.F.R. § 61.252).

Response #27

See General Response, Parts 1 through 6 regarding environmental conditions at the White Mesa Mill. DRC does not have authority to implement NESHAPs; that authority belongs to the DAQ. However the White Mesa Mill is not in violation of NESHAPs 40 CFR Part 61, Subpart W, as described see General Response, Part 3. There are no "ongoing and uncontrolled" radon emissions in violation of the NESHAPs standards. Radon emissions did exceed 20 pCi/m²s in 2013, but there is no standard that applies to a cell that is not in operation unless a standard is imposed as a license condition. Such a standard will be proposed in association with the White Mesa Mill license renewal, but no such standard applies at this time.

It is also noteworthy that the facility increased the soil cover over radon hot spots from the cell and that monthly sampling events since September 2014 have showed that current readings are under 20 pCi/m²s.

The commenter has also not provided a nexus between alleged violations under the Clean Air Act and the requested denial of this License Amendment under unrelated authorities. The reasons for the license renewal timing are addressed in Response # 26; DRC does not agree that the License renewal has been delayed for the reasons specified in the first sentence of the comment.

See also Response # 22.

Comment #28

Some of the existing contamination issues have been complicated or exacerbated by the presence of other alternate feed sources at the facility. See, e.g., 2011 RML Renewal Comments § 111(C)(1) (citing a technical report detailing that certain alternate feed material is incompatible with the PVC liners in Tailings Cells 1, 2, and 3); Energy Fuels Resources (USA) Inc., Tailings Cell 2 Monthly Compliance Report for July 2013, 6 (August 20, 2013) (noting that EFR identified areas of elevated radon flux (leading to the Subpart W NESHAP violation) from "specific alternate feed tailings disposal with elevated radionuclide content").

Response #28

Each alternate feed proposal is analyzed separately, and compatibility with the Mill's process and existing tailings cells are among the questions analyzed. The commenter has cited to a general study without similarly evaluating how that study applies to the specific Uranium Material proposed to be processed.

The 2011 RRD International Corp. Report, the "technical report" referenced in the comment, refers to volatile and semi-volatile organic solvents such as benzene, carbon tetrachloride, chloroform, methylene chloride, and naphthalene, generally at concentrations much higher than are found in any of the alternate feed materials that have been received at the site. None of these materials are present in the Uranium Material (see SER, page 18 and pages 22-25), and the reference cited is therefore not applicable to the decision regarding the Uranium Material. Additionally, the tailings will be disposed of in cells 4A or 4B, so the compatibility concerns raised in the comment are not applicable to this particular amendment request.

The Uranium Material also has radionuclide content that is less than the average radionuclide concentration of ore the Mill processes, so no "elevated radon flux" is therefore expected. See Safety Evaluation Report Section 4.1.1.

Comment #29

During the renewal review process, the DRC issued several rounds of interrogatories that indicate that there are serious deficiencies in the current reclamation plan and the surety estimate for the facility and that DRC has some concerns about how the WMM handles, processes, and disposes of alternate feed material. See, e.g., Safety Evaluation Report for the Denison Mines White Mesa Mill 2007 License Renewal Application, October 2011 ("2011 RML SER") §§ 3.2.3.1; 5.5.4; 5.5.5. In 2011, the DRC issued a draft radioactive materials license renewal for public comment. See Draft License Renewal, October 2011 ("2011 Draft RML Renewal"). That draft contained significant revisions to the 2002 RML, which include, but are not limited to:

- *A prohibition on "[n]ew construction of any mill process water, wastewater storage, and/or tailings disposal embankments" until DRC approval of several required reclamation plan items and a revised surety estimate. 2011 Draft RML Renewal § 9.1 (citing § 9.11).*
- *Requirements for a revised surety estimate to include the cost of groundwater remediation (from groundwater contamination events/dockets at the WMM facility). 2011 Draft RML Renewal §§ 9.5, 10.20.*
- *Heightened requirements for submission and DRC review of standard operating procedures (including, but not limited to, environmental monitoring programs); 2011 Draft RML Renewal § 9.6.*
- *Additional regulatory requirements on the release of ore trucks and intermodal containers from the restricted areas (additional requirements related to transport of material into the facility). 2011 Draft RML Renewal § 9.10.*

- *Additional restrictions on the receipt of new sources of alternate feed and removal of some currently licensed sources of alternate feed. 2011 RML SER § 3.2.3.1.*
- *New provisions on the groundwater monitoring program and the leak detection systems, 2011 Draft RML Renewal § 11.3.*
- *A new provision required the WMM owner to conduct an annual survey of land use and to identify any potential routes of exposure of contaminates and dose to the general public. 2011 Draft RML Renewal § 12.3; 2011 Draft RML SER § 2.1.2.1.*

Response #29

The interrogatories were for Reclamation Plan 5.0, a new Plan that Energy Fuels has proposed to replace its existing Plan, Reclamation Plan 3.2(B). Plan 5.0 has not been approved, and will not be until questions are resolved. Until that time, Rec. Plan 3.2(B) is still approved and fully funded.

Following is a response to each of the six items specified.

- *Prohibition on construction of new tailings embankments until approval of Reclamation Plan and surety.* The Director has authority under License Condition 9.5 to implement this requirement; the proposed language would have simply clarified the matter. This issue is also inapplicable to the Dawn Mining amendment decision because this Uranium Material will not require the construction of any new cells.
- *A revised surety estimate to include the cost of groundwater remediation.* Costs of ground water remediation are in the currently-approved surety. See General Response Part 4 Surety.
- *Heightened requirements for DRC review of standard operating procedures.* The Mill's Standard Operating Procedures ("SOPs") are already available for review by DRC and are inspected regularly by DRC personnel while on site at the Mill. The requirement for submission of SOPs to DRC was added for the convenience of DRC, to allow timely review of the SOPs, based on changes in operations.
- *Additional regulatory requirements on release of ore trucks.* The Mill is currently required to comply with all State of Utah and US Department of Transportation ("DOT") regulations for packaging and transportation of materials from the Mill, and is subject to inspection by DRC to confirm compliance with both DRC and DOT requirements. The proposed changes to the License are clarifications, not new regulatory requirements. Energy Fuels is already meeting the requirements, and DRC inspectors do already have the authority to require that they be met. The clarification is being proposed to ensure that the inspectors and the licensee share expectations.
- *Proposed additional restrictions on the receipt of new sources of alternate feed.* Even if the proposed new license amendments addressing alternate feed were part of the License now, this License Amendment would be unaffected. One new condition would require a demonstration for any new alternate feed that the tailings system has sufficient capacity for the proposed alternate feed and all other materials on site

is not relevant to Dawn. While this is a good measure to ensure there is no error in this calculation, milling of the Uranium Material will not pose a volume problem. Tailings from the Uranium Material will result in approximately 4,500 tons of tailings out a total tailings volume of approximately 5 million tons (Cells 2, 3 and 4A) disposed, or 0.09%. The renewal draft license would also remove approval of some alternate feed materials from the License, as a routine update to remove conditions that are no longer relevant, e.g., because the off-site projects that generated the feeds are completed.

- *New provisions for groundwater monitoring and leak detection.* None of the proposed restrictions apply to Cell 4A or, eventually, to Cell 4B, where the tailings from processing the Uranium Material will be deposited.
- *Annual land survey.* Additional information resulting from an annual land survey will be helpful, but need not be done prior to approval of this license amendment, as described in General Response, Parts 1 through 6.

Finally, DRC expects to issue the draft license for notice and comment in the near future. Since delivery and processing of the Uranium Material is proposed to take place at regular intervals over an initial ten year period, the large majority of the Uranium Material would be received and processed after any new License conditions are in place.

Comment #30

In December of 2011, the Tribe submitted public comments supporting some of the more restrictive revisions to the Draft RML Renewal and demanding, among other things, that the DRC include additional provisions in the license to address surface/airborne contamination, require concurrent reclamation of the older tailings cells, and require additional surety to cover the facility. See 2011 RML Renewal Comments. Since 2011, the Tribe has urged the DRC to take immediate action on the new groundwater contamination plumes and on the two violations of the Subpart W NESHAP standards that pose significant risk to UMU Tribal Members and the health of the public near the facility. See, e.g., Nitrate CAP Comments; Nitrate CAP RAA.

Response #30

See General Response, Parts 1 through 5 regarding environmental conditions at the facility, and Response # 26 regarding the License renewal. As described in the General Response, Parts 1 through 5, ground water contamination is being appropriately addressed, and surface and airborne contamination does not pose a threat. DRC does not agree that there are significant risks to human health or the environment from the facility or that the surety for the facility is not adequate. The DRC does not have authority to enforce NESHAPs standards on operating tailings cells, but notes that the DAQ has determined that NESHAPs standards are not being violated.

Comment #31

As of October of 2013, the DRC has taken no action to respond to public comments or to issue a radioactive materials license renewal for the WMM facility. This

means that, while the DRC has identified the need to address existing contamination at or near the WMM facility, revise the facility's reclamation plan, raise the facility's surety estimate to include the cost of groundwater cleanup, and to address transportation and other operational issues at the facility, the 2002 RML still guides regulation and operation of the WMM facility and provides none of the protections provided in the 2011 Draft RML Renewal or requested by the Tribe in the 2011 RML Renewal Comments and related groundwater and air quality proceedings.

Response #31

See General Response, Part 1 through 5 and Responses # 26 (regarding comments), #29, and #30.

Comment #32

The Tribe asserts that both the License Amendment and the Environmental Analysis are fatally flawed because they fail to address numerous environmental, public health and safety, reclamation, surety, and operational issues identified during the DRC's license review process and through subsequent violations of state and federal environmental laws at the facility. The 2002 RML does not provide any heightened protections or restrictions to ensure the safe handling, processing, and disposal of any ore or alternate feed material-including the Midnite Mine Material-or to address existing and ongoing environmental contamination at the WMM facility.

- B. *THE DRC'S ENTIRE ENVIRONMENTAL ANALYSIS IS FLAWED BECAUSE IT IS PREMISED UPON AN ASSUMPTION THAT THE 2002 RML AND THE EXISTING REGULATORY SCHEME IS SUFFICIENT TO ENSURE THAT THE WMM FACILITY COMPETENTLY MANAGES EXISTING ORE AND ALTERNATE FEED MATERIAL AT THE WMM FACILITY*

In the Environmental Analysis for the requested License Amendment, the DRC accepts EFR's environmental review that focuses on whether the receipt and processing of Midnite Mine Material would result in any potential "significant incremental impacts over and above previously licensed activities." EFR Environmental Report § 4.1 (emphasis in original). The DRC broadly bases its "incremental" review of the addition of Midnite Mine Material to the WMM facility on the assumption that existing operations, monitoring programs, and regulation of the WMM facility are functioning to competently manage ore and alternate feed at the WMM facility. See, e.g., Midnite Mine SER at p. 27 ("The mill has previously managed chlorides, fluorides, and sulfates in the Mill circuit and tailings system with no adverse process, environmental, or safety issues"); id. at p. 33 ("there is no indication that the Mill is impacting surface waters"); EFR Environmental Report §§ 4.6-4.9; Letter from EFR to Rusty Lundberg (June 14, 2013), Responses to General Comments 1, 1e, 1i. This assumption allows the DRC to repeatedly determine that, because the Midnite Mine Material is similar to other alternate feeds and natural ores already processed at the WMM Facility and it does not introduce new chemical constituents into the tailings cells, there will be no significant incremental environmental impact on the WMM facility. See, e.g., Midnite Mine SER at p. 34 (finding that, because the Midnite Material is similar to other material at the WMM facility, the existing surface water and groundwater monitoring programs are sufficient to detect impacts to surface water); id. at p. 37

(noting that existing monitoring for chlorides, fluorides, and sulfate will identify any tailings cell leakage and any barium contamination)²³; id. at § 4.8 (Findings 1-4, containing broad statements about the sufficiency of the existing air, groundwater, and environmental monitoring systems to address environmental contamination from the Midnite Mine Material).

Response #32

See General Response, Part 1 through 6.

Comment #33

Because the 2002 RML (and/or existing monitoring programs and the current regulation of the WMM facility) has not ensured and cannot ensure that EFR competently manages the existing ore and alternate feed at the WMM facility, DRC cannot assume in the Environmental Analysis that the 2002 RML and the existing programs and regulation can ensure proper storage, processing, or disposal of the Midnite Mine Material. Therefore, both the baseline assumption and the broad conclusions drawn in the Environmental Analysis are fundamentally flawed. Section III, infra, will provide specific details on how this flawed baseline assumption repeatedly results in inadequate Environmental Analysis of specific environmental impacts as required under Utah Admin. Code R-313-24-3.

Response #33

See General Response, Part 1 through 5 and Responses #29-31. As described in the General Response, the commenter's assumption that ground water contamination is coming from cell leakage is contrary to the best evidence, which shows that the contamination is caused by historical activities. The evidence also shows that the corrective actions pursuant to previous orders issued by the DRC are proving to be effective. DRC will continue to monitor the results of the actions that are being ordered, and, if those results contradict previous assumptions about the sources, will take appropriate action. There is no such evidence before the DRC at this time. However, there is no evidence that any of the cells are leaking; the commenter's premise for its concern that disposal of tailings from the Uranium Material will exacerbate an existing problem is mistaken.

²³ Commenter's footnote 3: *The Tribe notes here that the DRC's emphasis on monitoring for chloride, fluoride, and sulfate as "early warning" indicators of barium or tailings cell leakage is disingenuous. The DRC has already detected chloride, fluoride, sulfates (along with nitrate, nitrite, a decreasing pH trend, and an increase in other monitored constituents) in the WMM facility's groundwater monitoring system, but has refused the Tribe's demands that the DRC require EFR to adequately investigate whether the tailings cells are the source of the overlapping contamination plumes. See Nitrate CAP RAA § III. Accordingly, it is very unlikely that future detection of chloride, fluoride, or sulfate in the groundwater monitoring system will offer any guarantee that releases of barium from the tailings cells will be promptly or properly remediated.*

Comment #34

III. THE ENVIRONMENTAL ANALYSIS FAILS TO MEET THE REQUIREMENTS OF UTAH ADMIN. CODE R-313-24-3

A. THE ENVIRONMENTAL ANALYSIS FAILS TO ADEQUATELY CONSIDER IMPACTS ON TRIBAL MEMBER AND PUBLIC HEALTH

The Environmental Analysis fails to meet Utah Admin. Code R313-24-3(l)(a)'s requirement that it contain "(a)n assessment of the radiological and nonradiological impacts to the public health from the activities to be conducted pursuant to the license or amendment." As described in Section 11(A), supra, the WMM facility has a history of unresolved environmental contamination events that include contamination of the perched (shallow) groundwater aquifer, contamination of surface water, land, and natural resources through airborne pathways, and violations of radon emissions standards set forth in Subpart W NESHAP. As described in Section 11(A), supra, some of the environmental contamination issues at the WMM have been exacerbated by the presence of alternate feed material at the facility.

The Environmental Analysis fails to acknowledge any of the existing contamination events, and the Environmental Analysis fails to acknowledge that existing operations, monitoring protocols, and regulatory actions taken by the DRC have already failed to adequately protect UMU Tribal member health and the public health. For that reason alone, the Environmental Analysis fails to adequately consider important public health impacts from the acceptance of the Midnite Mine Material. In addition, the Environmental Analysis fails to adequately analyze specific public health impacts from airborne releases of Midnite Mine Material and public health impacts from surface and groundwater contamination.

Response #34

See General Response, Part 1 through 5 and Responses #27-33.

Comment #35

1. *The Environmental Analysis Fails to Adequately Analyze and Address Public Health Impacts from Airborne Releases of Midnite Mine Material.*

The portions of the Environmental Analysis that assess the potential air quality impacts (and the resulting two conditions in Section 10.20 of the License Amendment) do not sufficiently analyze or address impacts to UMU Tribal Member or public health from airborne contamination. In the Environmental Analysis, the DRC relies upon the current air approval order, air monitoring protocols, stormwater management plan, and standard operating procedures at the WMM to provide adequate protection of UMU Tribal Member and the public health from airborne releases of Midnite Mine Material. Midnite Mine SER § 4.4 at p. 32-33 (discussing airborne contamination and stormwater management); id at § 4.8 (making findings regarding the existing dust suppression program, the existing air approval order, and the existing airborne effluent monitoring program).

As the Tribe has exhaustively documented to the DRC since 2010, the results of the USGS Study confirm that the current implementation of the 2002 RML, the facility air approval order, and the monitoring protocols and standard operating procedures has not stopped the facility from contaminating surface water, land, and vegetation outside of the WMM facility. See Air Approval Order RAA § III(B)(1)-(3); 2011 RML Renewal Comments § 111(B)(1). In addition, the WMM facility is currently in violation of both the Subpart W NESHAP work practice standard limitation on number of tailings impoundments and the Subpart W NESHAP Radon-222 air emissions standard, and EFR has failed to take action to undertake precautionary measures to protect public health of UMU Tribal Members and others living near the WMM facility. Section 11(A), supra; Exhibit A (to these October 2013 Comments) (explaining the severity and the duration of the 16- month Subpart W NESHAP violation and failure by the DEQ divisions to require EFR to take immediate action to permanently control the Radon-222 emissions). Therefore, DRC's unquestioned reliance on the current air approval order, monitoring protocols, stormwater management plan, and existing standard operation procedures does not sufficiently assess whether those regulatory mechanisms and operations will protect the public from fugitive dust and other hazards associated with the receipt and processing of the Midnite Mine Material.

Response #35

See General Response, Part 1.7, 1.8, 2, 2.5 (new license condition) and 3, and Responses #16 and #27.

Comment #36

The fine-grained nature of the Midnite Mine Material, with its heightened potential for airborne release and its high U₃O₈ content, requires that EFR take adequate protective measures to prevent the release of radioactive dust into the environment. In the Environmental Analysis, the DRC properly recognizes that, due to the arid conditions at the WMM facility and the Midnite Mine Material's susceptibility to degrade into a finer dust particle, there is a heightened concern about airborne releases of fugitive dust during wind events at the WMM facility. Midnite Mine SER at p. 34; see Proposed License Amendment Conditions 10.20(A)(1)-(2). However, the two methods for controlling these airborne releases fail to provide adequate protection for UMU Tribal Member and public health for at least two reasons. First, DRC proposes a limitation that requires a durable geomembrane to be placed on material that is stockpiled on the ore pad for more than 14 days. Proposed License Amendment Condition 10.20(A)(1). This limitation is less restrictive (and less protective of public health) than the practices identified by EFR in 2011 when DRC undertook a more comprehensive review of the facility's storage and handling of alternate feed materials. 2011 RML SER § 3.2.3.1 ("High grade alternate feed materials typically with 1.0% U₃O₈ or greater²⁴ are usually received at the Mill and stored in drums or other containers").

²⁴ Commenter footnote 4: The average U308 content of the Midnite Mine Material is 1.4%. Midnite Mine SER at p. 10.

This limitation also unnecessarily puts UMU Tribal Members and the public at risk of exposure during the first 14 days of storage or during catastrophic storm events that move the Midnite Mine Material from the ore storage area.

Response #36

See General Response, Parts 1.7, 1.8, 2.5, and 3, and Response # 16.

As is clear from the quoted language, the "drums or other containers" language from the 2011 License Renewal SER was descriptive, not proscriptive, and does not in any way suggest that future alternate feeds will or should be limited to being held in drums before processing. The dust-related requirements for each alternate feed must be reviewed on a case by case basis.

Comment #37

Second, the DRC proposes a limitation that requires a 30-minute response to stop generation of fugitive dust, "[i]f at any time, visible dust is observed to be originating from Uranium Material stored on site." Proposed License Amendment Condition 10.20(A)(2). To begin, unless this requirement is paired with a new requirement that EFR provide constant monitoring and documentation of dust events at the ore pad, the 30-minute response time provides no guarantee that EFR will observe fugitive dust events or properly respond to such events. See Air Approval Order RAA § 111(B)(2) (noting the historic lack of on-site presence by the Division of Air Quality and that limitations); id. at § 111(B)(3) (arguing that the current fugitive dust emissions control do not meet the Best Available Control Technology requirement). In addition, there is no guarantee that visual monitoring can detect the movement of very fine-grained particles or that EFR can monitor the movement of any particles at night or during other times when visual inspections cannot occur.

Given the existing, ongoing, and uncontrolled airborne releases from the WMM facility documented in the USGS Study and the Subpart W NESHAP violations, the Tribe asserts that both these license conditions are grossly insufficient to protect UMU Tribal Member and public health from releases of fine-grained particles contained in the Midnite Mine Material.

Response #37

See General Response, Parts 1(f) and 1(g), and Response # 16. There is no evidence of significant uncontrolled releases (cloud) resulting in off-site contamination at levels of immediate concern. Instead, air monitoring data demonstrates that off-site migration of dust is well within regulatory levels.

Given this history and the nature of the Uranium Material (see Response # 16), it would be within DRC's discretion to not impose an additional 30 minute response time requirement. DRC has elected to impose that requirement, however, in order to provide an additional margin of safety. There are obviously limitations on the effectiveness of that requirement,

but those are acceptable limitations given the role that the requirement plays as an additional margin of safety.

Comment #38

2. *The SER Fails to Adequately Analyze and Address Public Health Impacts from Surface and Groundwater Contamination*

In Section III(B), infra, the Tribe will comprehensively address deficiencies in DRC's evaluation of the potential impacts on surface and groundwater resources. In previous public comments, correspondence, and administrative actions, the Tribe has exhaustively documented its concerns that leakage from Tailings Cells 1, 2, and 3 and/or other activities at the WMM facility have already contaminated the perched (shallow) aquifer and will contaminate the deep aquifer that provides drinking water to the White Mesa Community. 2011 RML Renewal Comments § III(A); Nitrate CAP Comments. See also April 2012 Groundwater Letter (reiterating concerns that Deep Water Supply Well WW-2 will serve as a contamination pathway between the contaminated perched aquifer into the deep aquifer that supplies the Tribe's drinking water and reiterating the concern that the monitoring wells closest to the Tribal community are showing increasingly elevated concentrations of multiple indicator parameters of tailings cell leakage (including concentration of beryllium and cadmium exceeding Utah's ground water quality standards)).²⁵ The Tribe has also documented its concern that contamination of surface water will impact UMU Tribal Member health through indirect exposure to radioactive material and other constituents contained in alternate feed materials. 2011 RML Renewal Comments § 111(B)(1)(a). Accordingly, the DRC's failure to adequately analyze impacts to groundwater and surface water is also a failure to adequately analyze important public health impacts raised by the License Amendment.

Response #38

See General Response, Parts 1 through 6.

²⁵ Commenter footnote 5: Groundwater south of the tailings system at MW-22 bears a strong signature of pollutants originating from the WMM facility tailings impoundments. Specifically, analytical results for the groundwater samples at monitoring well MW-22 show elevated and increasing (decreasing for pH) levels of cobalt, nickel, zinc, manganese, beryllium, selenium, cadmium, copper, fluoride and gross alpha. Each of these constituents is present at high concentrations in the tailings system. The Midnite Mine Material analytical results show high concentrations of nickel, cobalt, manganese, zinc and beryllium; each of these constituents is currently present at abnormal and increasing concentrations in the groundwater south of the tailings system at MW-22, indicating that these particular inorganic constituents are currently being introduced to the environment and are mobile in groundwater at the WMM facility.

Comment #39

B. THE ENVIRONMENTAL ANALYSIS FAILS TO ADEQUATELY ANALYZE IMPACTS TO SURFACE AND GROUNDWATER

Utah Admin. Code R313-24-3(l)(b) requires that the environmental report contain an analysis of the impacts to surface and groundwater. The Environmental Analysis fails to adequately analyze impacts to both surface and groundwater, and also fails to meet standards for approval of alternate feed license amendments proposed by the DRC in the 2011 RML Renewal.

1. *The Environmental Analysis Fails to Adequately Analyze Impacts to Surface Water*

The Environmental Analysis' failure to adequately analyze and address anticipated impacts from the release of airborne particles from the Midnite Mine Material is explained in Section 11(A), supra. Even though the USGS Study documented off-site releases of uranium and vanadium from the WMM facility through stormwater discharge pathways, the Environmental Analysis does not assess or address the possibility that the existing air monitoring and regulatory mechanisms and the existing stormwater management plan are insufficient to contain air deposition from the WMM facility from entering surface waters and polluting nearby land and natural resources. See 2011 RML Renewal Comments § 111(B)(1)(a) (citing Exhibit L to the 2011 RML Renewal Comments). By failing to properly analyze deficiencies in the existing regulation of airborne releases, and by failing to require adequate control of the fine dust particles contained in the Midnite Mine Material, DRC has failed to adequately analyze or control impacts to stormwater and surface water.

Response #39

See General Response, Parts 1 through 6; see especially Part 1.5 regarding ground water and Parts 1.7, 1.8 and 3, and Response # 16 regarding off-site dust contamination. All of the constituents mentioned are analyzed for all wells and springs sampled. Results of those analyses are described in General Response Part 1.5. There is no surface water on site.

The DRC has reviewed and approved several revisions to the Mill's Stormwater Best Management Practices Plan ("SWBMPP"), and inspects the Mill site, at least annually, for compliance with that Plan. DRC's analysis of the Dawn Mining amendment application has concluded that the provisions of the SWBMPP are adequate for protecting stormwater and surface water from all potential sources of contamination from the Mill.

Comment #40

2. *The Environmental Analysis Fails to Adequately Analyze Impacts to Groundwater*

The Environmental Analysis fails to adequately analyze impacts to groundwater for two reasons. First, the Environmental Analysis completely and erroneously fails to address the multiple, spatially overlapping groundwater contamination plumes that currently exist at the site. See Section 11(A), supra. Instead the Midnite Mine SER falsely states: "The mill has previously managed chlorides, fluorides, and sulfates in the Mill circuit and tailings system with no adverse

process, environmental, or safety issues," and then bases its entire analysis of the impacts of the new Midnite Mine Material to groundwater on a flawed baseline assumption that current practices and monitoring programs are not resulting in groundwater contamination at the WMM facility. Midnite Mine SER at p. 27. Accordingly, the entire analysis of potential incremental impacts to groundwater resources is fatally flawed, and the DRC has completely failed to identify real risks to both the perched and deep groundwater aquifers under the WMM facility from leakage from Tailings Cells and releases from other areas of the WMM facility.

Response #40

See General Response, Part 1.5. DRC does not agree that there is any evidence that tailings cells are leaking.

Comment #41

A second and perhaps more critical deficiency in the Environmental Analysis is that it limits its tailings cell liner integrity analysis to potential impacts on Tailings Cells 4A and 4B. See Tetra Tech Technical Memorandum, Review of Chemical Contaminants in Dawn Mining Company Midnite Mine (DMC) Uranium Material § 3.0, 4.2.3 (June 14, 2013) (clarifying that the analysis of tailings cell liner material incompatibility was only conducted for Tailings Cells 4A and 4B). Tailings Cells 4A and 4B are not the only active tailings cells at the WMM facility. See 2002 RML § 9.1 (authorizing mill process and waste water storage and tailings disposal into Tailings Cells 1, 2, 3, 4A, and 4B); see also 2011 RML Renewal Comments § 111(C)(1)(b) (demanding that DRC amend the 2011 RML Renewal to add a new License condition prohibiting disposal or storage of alternate feed material in Tailings Cells 1, 2, and 3). The 2002 RML allows for mill liquid wastes to be discharged into Tailings Cell 1. See Midnite Mine SER § 4.4 (noting that mill process effluent, laundry, analytical laboratory liquid wastes and runoff from the Mill and facilities go into the Mill's tailings impoundments); 2002 RML § 9.1; Ground Water Discharge Permit UGW370004, 6 (August 24, 2012). The current stormwater management plan also directs runoff from the Mill yard and facilities into Tailings Cell 1. Storm Water Best Management Practices Plan, Denison Mines (USA) Corp., Fig. 2; Appendix 1 § 1.4.5 at p.3 (October 2011); Environmental Protection Agency, NPDES Stormwater Industrial Inspection, at p. 2 (March 14, 2013). Because the single, 34-year old, 30-mil PVC liner on Tailings Cell 1 already poses a grave risk to the groundwater resources underneath the WMM facility, failure to analyze any additional impacts posed by the Midnite Mine Material (including, but not limited to, the analysis related to barium and beryllium) is a critical flaw in the Environmental Analysis.

Response #41

Solutions from processing the Uranium Material, which will be essentially the same as solutions from processing conventional ores, will be evaporated in either Cell 1 or Cell 4B, or reused in the milling circuit. The evidence (see General Comments, Part 1.5) shows that both cells are holding liquids currently, without incident. See Response # 39. The impacts from processing the Uranium Material both from a radiological and non-radiological standpoint have been addressed in the SER, including an analysis of the elevated Barium

and Beryllium constituents (see SER pages 29-32). The DRC does not agree with the commenter that impacts from the Midnite Mine material was not analyzed.

Comment #42

3. *The Process for Evaluating Impacts on Groundwater Fails to Meet Requirements Proposed by DRC in 2011*

The Tribe notes here that the DRC's decision to revise the 2002 RML (instead of issuing a revised RML first) negatively impacts the process for analyzing the impact of the Midnite Mine Material on the tailings cells (and the groundwater). In the 2011 RML SER, DRC proposed an amendment of License Condition 10.1 that, in addition to meeting the criteria of the NRC Alternate Feed Policy, would have required EFR to demonstrate: (1) sufficient disposal capacity "such that the proposed alternate feed material and any liquid by-products, will be permanently disposed in tailings cells designed and constructed to meet the Best Available Technology requirements [of Tailings Cells 4a and 4b]; and (2) that the disposal of alternate feed material "will not lead to or cause a violation of the disposal cell performance standards [set forth in the requirements for Tailings Cells 4a and 4b]." 2011 RML SER § 3.2.3.1. Until Tailings Cell 1 is either relined or capped for final closure with major modifications to stormwater management from the Mill yard, EFR cannot demonstrate that the alternate feed materials will be disposed of in a tailings cell designed to meet the BAT requirements for Cells 4A and 4B. See generally 2011 RML Renewal Comments. Accordingly, the process that the DRC used to revise the 2002 RML does not even meet standards that the DRC set forth as necessary in 2011, and the DRC's failure to even identify that some Midnite Mine Material will enter a tailings cell that does not meet Best Available Technology requirements raises serious questions about the adequacy of DRC's review of whether this facility should be allowed to take any new sources of alternate feed material.

Response #42

See General Responses, Part 1.5 regarding ground water issues, and the adequacy of Cell 1 specifically. See Responses # 29, #39 and #41.

Comment #43

- C. *THE ENVIRONMENTAL ANALYSIS COMPLETELY FAILS TO ANALYZE ALTERNATIVES*

The Environmental Analysis completely fails to analyze alternative sites and engineering methods as required by Utah law. Utah Admin. Code R313-24-(3)(1)(c) requires DRC to consider alternatives, "including alternative sites and engineering methods" during the environmental analysis of the proposed license request. In the Midnite Mine SER, DRC acknowledges its responsibility to consider alternate sites and engineering methods during its analysis of EFR's request for the License Amendment, but then fails or refuses to undertake that analysis, stating, "[t]he UDRC has concluded that there are no significant environmental impacts associated with the proposed action. Other alternatives need not be evaluated." Midnite Mine SER § 4.6.

Response #43

The requirement to evaluate alternatives is a mandate to review only those alternatives the Director has the authority to impose, e.g., siting a new proposed cell in an area of the facility that overlays groundwater further from the facility boundary. It would not make sense to read the rule to require the facility to evaluate and the agency to review options that the agency cannot influence.

In comments on alternatives analysis, this and other commenters have identified some alternatives that the DRC has no authority to require, and therefore that need not be considered in an alternatives analysis. For example, there is no regulatory authority that would allow DRC to deny a license amendment application for an alternate feed because the feed would be better managed at another site, and there is no regulatory authority that would allow DRC to deny a license amendment application for an alternate feed as a result of comparative impact on two communities. Because the DRC lacks authority to impose these alternatives, they need not be analyzed.

For this amendment, there were technical alternatives that the DRC considered and imposed as part of the draft license. It imposed a 14 day cover mandate and it imposed a 30 minute response time for blowing conditions. See proposed License Condition 10.20.

See also the Residuals Management Plan for the Midnite Mine Water Treatment Plant, Revision 10, provided to the EPA in 2013, in which various alternatives for managing residuals from the Midnite Mine were considered, and the primary alternative of processing the residuals at White Mesa was selected. See Residuals Management Plan, Revision 10, included as Attachment N.

Comment #44

DRC's explanation for its failure to analyze alternate sites and engineering methods is erroneous for two reasons. First, because DRC is required to consider alternatives during the environmental analysis of the proposed license request, it cannot make any final determinations on environmental impacts of the proposed action without first undertaking the alternatives analysis. Utah Admin. Code R313-24-(3)(l) (including subsection (c) as a component of the requirements of the environmental report). Second, nothing in R313-24-3(l)(c) allows an exemption from considering alternatives if DRC (preliminarily) concludes that the proposed action poses no significant environmental impacts. Accordingly, DRC's refusal to consider alternatives is a significant deficiency in the Environmental Analysis.

DRC's failure to consider alternate sites for the Midnite Mine Material compounds other deficiencies in the Environmental Analysis. As discussed in more detail in Section IV, *infra*, the United States Environmental Protection Agency's ("EPA") plans for managing the Midnite Mine Superfund cleanup on the Spokane Indian Reservation specifically mandate that that the Midnite Mine Material "must be disposed of in a facility that is designed to limit human exposure and migration of contaminants in surface water and groundwater to acceptable levels." See Midnite Mine Superfund Site Record of Decision at p. 2-75 (September 2006); Midnite Mine Superfund Site Proposed Cleanup Plan (September 2005). See also 2011 RML Renewal Comments § 111(C)(3)(a) (explaining

limitations on transporting CERCLA waste to facilities that are operating in compliance with applicable federal and state law pursuant to Section 121(d)(3) of CERCLA and 40 C.F.R. §300.440 ("CERCLA Off-Site Rule"). As discussed in Sections II-III, supra, the WMM facility has several serious and ongoing violations of its Utah state groundwater permit and two current violations of the federal Subpart W NESHAP radon emissions limitations. By failing to compare the risk of receiving Midnite Mine Material at the WMM facility to other facilities that could process or dispose of the Midnite Mine Material, the DRC has missed a critical step in evaluating the risks of moving the Midnite Mine Material to the WMM facility.

Response #44

Please see Response #43, above. Comments regarding the appropriateness of EPA's decision under CERCLA should be directed to the EPA.

Comment #45

D. THE ENVIRONMENTAL ANALYSIS FAILS TO ADEQUATELY ANALYZE LONG TERM IMPACTS TO THE WMM FACILITY

Utah Admin. Code R313-24-3(l)(d) requires that DRC consider the long term impacts, including decommissioning, decontamination, and reclamation impacts, associated with the activities conducted pursuant to the License Amendment. The Environmental Analysis on long term impacts to the WMM is deficient for two reasons.

First, the deficiencies described in Sections II-III, supra, bleed into the conclusions drawn in the Environmental Analysis' assessment of long-term impacts to decommissioning, decontamination, and reclamation at the facility. In its analysis of the long-term impacts, the DRC relies on the faulty assumptions that: (1) existing operations, monitoring systems, and regulatory enforcement are sufficient to contain both existing ore and alternate feed material at the WMM facility; and (2) the Midnite Mine Material will only enter Tailings Cells 4A and 4B. See Sections 11(B), III(A)-(B) supra\ Midnite Mine SER § 4.8 at p. 42-43. These assumptions lead the DRC to the general faulty conclusion that, because the Midnite Mine Material is not expected to be significantly different from conventional ores at the WMM facility, DRC does not anticipate to have incremental long-term impacts from adding the Midnite Mine Material. Midnite Mine SER § 4.7 at p. 40. As explained above, because the current operations are not sufficiently controlling air, surface, surface water, or groundwater contamination at the facility, and because the Midnite Mine Material will enter Tailings Cell 1, DRC cannot assume that EFR can store, process, or dispose of the Midnite Mine Material without creating additional contamination at the WMM facility. Section 11(B), supra. By failing to evaluate how that contamination might affect the decommissioning, decontamination, and reclamation at the WMM facility, the current long-term impacts analysis is deficient.

Response #45

It is appropriate to limit the analysis to whether the long-term impacts would be different from the impacts for processing Arizona Strip ores that the facility is already authorized to take. Process waters from processing the Uranium Material will, like process waters from processing Arizona Strip ores, be evaporated in either Cell 1 or Cell 4B. The evidence (see

General Comments, Part 1.5) shows that both cells are holding liquids currently, without incident.

The DRC does not agree that "current operations are not sufficiently controlling air, surface, surface water, or groundwater contamination at the facility". Please see General Response, Parts 1 through 6. Solutions from processing the Uranium Material, which will be essentially the same as solutions from processing conventional ores, will be evaporated in either Cell 1 or Cell 4B, or reused in the milling circuit. The evidence (see General Comments, Part 1.5) shows that both cells are holding liquids currently, without incident. See Response # 39.

Comment #46

Second, the Environmental Analysis' assessment of the potential long-term impacts also relies on a faulty baseline assumption that there is an adequate reclamation plan and sufficient surety in place that can address long-term environmental remediation at the site. Midnite Mine SER § 4.7. Because Section 9.11 of the 2002 RML is so outdated, is unclear which version of the Reclamation Plan applies at the facility. However, as the Tribe documented to DRC in the 2011 RML Renewal Comments, even more recent versions of the facility's Reclamation Plan²⁶ contain deficiencies in the plans for disposal of demolition materials into Tailings Cell 1 and in the tailings cell cap design. See 2011 RML Renewal Comments § IV(A). The Tribe has also exhaustively documented to DRC that the DRC's minimum surety estimates for the facility have been grossly insufficient to ensure adequate decontamination and decommissioning of the WMM facility.²⁷ See 2011 RML Renewal Comments § IV(B) (citing Exhibit H to the 2011 RML Renewal Comments). Accordingly, the DRC's reliance on the existing reclamation plan and the existing surety at the WMM facility to address any contamination or direct disposal of the Midnite Mine Material makes the long-term impacts analysis deficient.

Response #46

See Response # 29 regarding the Reclamation Plan. See also General Response, Part 4.

Comment #47

IV. *BY ISSUING THE LICENSE AMENDMENT, DRC IS SUPPORTING THE RELOCATION OF THE LEGACY OF URANIUM CONTAMINATION FROM THE SPOKANE INDIAN RESERVATION TO THE UTE MOUNTAIN UTE RESERVATION*

During the 2011 RML Renewal review process, the Tribe submitted public comments articulating a concern that groundwater, surface water, and soil contamination (and uncontrolled continuing releases of such contamination) at the WMM facility rendered the facility ineligible or at least

²⁶ Commenter footnote 6: Section 9.11 of the 2002 RML still contains references to Revisions 3.1 and 3.2 of the Reclamation Plan for the facility. The DRC website indicates that the DRC and the EFR are still working to finalize Revision 5.0 to the Reclamation Plan.

²⁷ Commenter footnote 7: In the 2011 RML Renewal Comments, the Tribe's expert, using built-up, benchmarking, and per-ton calculation methods, estimated between \$51 million and \$407 million to pay for a government cleanup of the WMM facility. See Exhibit H to the 2011 RML Renewal Comments for the full details of the Tribe's analysis.

inappropriate for the receipt of alternate feed material at the facility. 2011 RML Renewal Comments § 111(C)(3)(a). The Tribe explained that the CERCLA Off-Site Rule limits the transfer of CERCLA material to facilities operating in compliance with state and federal law and that the Tribe was concerned that DRC's failure to find EFR in violation of state and delegated federal laws was making it difficult for the EPA to determine whether the WMM facility was eligible to continue receiving alternate feed material. Id Since 2011, the contamination problems noted by the Tribe have continued with little or no regulatory controls by DRC, and the DRC has identified additional violations of state and federal environmental laws at the WMM facility. See Section 11(A), supra (describing ongoing violations of state and federal law caused by groundwater contamination and the Subpart W NESHAP violations). Accordingly, in October of 2013, the Tribe still believes that the existing uncontrolled and continuing releases of contamination at the WMM facility render the facility ineligible or at least inappropriate for the receipt of the Midnite Mine Material.

Response #47

With respect to the current condition of the facility, please see General Response Parts 1 through 5. With respect to the application of the CERCLA off-site rule, the comments should be addressed to the EPA. DRC has no authority to deny a license amendment for an alternate feed that meets all regulatory standards based on its place of origin or alleged unfairness to a nearby community.

Comment #48

The history of contamination at the Midnite Mine site and the similarities between the Midnite Mine facility and the WMM facility provide a compelling and troubling illustration of why the CERCLA Off-Site Rule and the DRC should prohibit the transportation of the Midnite Mine Material to the WMM facility. The Midnite Mine site is a CERCLA cleanup site located on the Spokane Indian Reservation. EFR Environmental Report § 2.1. The uranium mining activities at the Midnite Mine facility resulted in contamination of important tribal water resources, and the EPA required the facility owner, Dawn Mining Company, to install a water treatment plant to pump and decontaminate water under and around the Midnite Mine facility. Id. The water treatment at the Midnite Mine site will likely continue for years or decades after the EPA finishes construction of containment measures at the Midnite Mine site, and it is unclear whether the Spokane Indian Tribe will be able to safely use Tribal groundwater around the Midnite Mine site for human consumption in the future. Id.; see also Midnite Mine Superfund Site Proposed Cleanup Plan at p. 11 (September 2005).

At the WMM facility, spatially-overlapping plumes of chloroform, nitrate, nitrite, and chloride contamination in the perched (aquifer) have already led the DRC to require EFR to begin pumping contaminated groundwater and placing it in the facility's tailings cells. See Final Stipulation and Consent Order, Docket No. UGW 12-04 § B (requiring near-term active remediation of groundwater nitrate contamination during Phase II). These plumes, along with new data showing an increase in heavy metals and a decreasing pH trend in the same monitoring wells, suggest that the perched groundwater aquifer is being contaminated from a source similar to the facility's older tailings cells. See Nitrate CAP RAA § III; Nitrate CAP Comments, Letter to Rusty Lundberg § B (October 4, 2012). Because the DRC refuses to require the WMM to identify the source of the several, overlapping plumes of contamination, and because a likely source of these overlapping contamination plumes is the older Tailings Cells 1, 2, and 3, the Tribe can anticipate that groundwater pumping will occur for as long as the WMM facility is in operation. In addition, the Tribe can anticipate that, during and after decontamination and reclamation of the WMM facility, there will be ongoing groundwater remediation efforts at the WMM facility that may look very similar to the existing water treatment plant operations at the Midnite Mine facility. If the Navajo

aquifer is contaminated by the WMM operations, there will be no municipal water supply for the White Mesa Community.

Response #48

The DRC does not agree there is evidence that ground water is being contaminated by leaking from tailings cells. See General Response, Parts 1 through 6, and Response # 47.

Comment #49

The documents associated with the Midnite Mine cleanup clearly state that the Midnite Mine Material "must be disposed of in a facility that protects human health and the environment." Midnite Mine Superfund Site Proposed Cleanup Plan (September 2005). This reiteration of the CERCLA Off-Site Rule is particularly poignant and relevant to the DRC's Environmental Analysis of the WMM facility because both sites involve legacy contamination from the uranium industry on Tribal lands, water supplies, and other resources. It is a gross violation of the intent of the CERCLA Off-Site Rule to allow EFR to transport and process the Midnite Mine Material in a facility that will likely allow that material to harm another Tribe's members, lands, and water resources. Accordingly, DRC's continued failure to require EFR to remove the sources of the ongoing and uncontrolled contamination at the WMM facility and DRC's failure to properly analyze the environmental and public health impacts of bringing the Midnite Mine Material to the WMM facility will likely result in the License Amendment relocating the environmental contamination from the Spokane Indian Reservation to the White Mesa Community.

V. CONCLUSION

For the reasons stated above, the Tribe urges DRC to reject EFR's application to amend the RML license at this time and to instead re-initiate the process for renewing the 2002 RML for the facility (along with other related permits) and addressing the concerns outlined in the Tribe's Air Approval RAA, 2011 RML Comments, Nitrate CAP Comments, Nitrate CAP RAA, and other correspondence.

The Tribe appreciates your time and attention to these comments. If you have any questions, please contact Special Counsel H. Michael Keller at (801) 237-0287, Associate General Counsel Celene Hawkins at (970) 564-5642, or Scott Clow, Environmental Programs Director, at (970) 564-5432.

Response #49

This is a summary statement; please see appropriate responses above.

3. Comments Received from Grand Canyon Trust (Anne Mariah Tapp)

Comment #50

The Grand Canyon Trust ("Trust") submits the following comments regarding Utah Division of Radiation Control's ("Utah DRC") proposed licensing action to amend State of Utah Radioactive Material License No. UT 1900479 to authorize Energy Fuels Inc. ("Energy Fuels") to receive and process alternate feed material from Dawn Mining Corporation's Midnite Mine. The Trust incorporates the technical comments of Jim Kuipers submitted on behalf of the Trust into this document. As the following discussion indicates, the Trust is concerned that the proposed license conditions do not adequately protect public and environmental health from the hazards of fugitive dust from the Midnite Mine alternate feed material. The Trust looks forward to working with Utah

DRC to ensure that the conditions ultimately placed in License No. UT 1900479 protect public and environmental health to the maximum extent possible, and fully meet the standards set forth in the Utah Radiation Control Rules.

I. *Identity of Commenting Party*

The Grand Canyon Trust is a non-profit corporation with offices in Flagstaff, Arizona, and Moab and Salt Lake City, Utah. The mission of the Trust is to protect and restore the Colorado Plateau - its spectacular landscapes, flowing rivers, clean air, diversity of plants and animals, and areas of beauty and solitude. The Colorado Plateau includes the town of Blanding, Utah, the White Mesa Mill site, and the larger area surrounding the site that is impacted by the Mill's operation. One of the Trust's goals is to ensure that the Colorado Plateau is a region characterized by vast open spaces with restored, healthy ecosystems, and habitat for all native fish, animals, and plants. To accomplish this, the Trust advocates for adequate regulation of existing industry across the Colorado Plateau. The Trust's board, staff, and members use the area that is impacted by the White Mesa Mill for quiet recreation (including hiking, biking, fishing, rafting and camping), scientific research, aesthetic pursuits, and spiritual renewal. Many of the Trust board, staff, and members live in Utah, and thus pollution in Utah adversely affects their health, quality of life, recreational pursuits, and aesthetic sense. The Trust and its members have a protectable legal interest in ensuring that Utah DRC regulates the White Mesa Mill to the maximum extent required by law.

II. *The Existing Fugitive Dust Controls at the Mill Are Insufficient*

A. *The Fugitive Dust Controls Do Not Satisfy the Best Available Control Technology Standard*

In violation of the Utah Air Quality Rules, the Approval Order does not contain best available control technology to control fugitive dust from the Mill. Utah Admin. Code R307-401-8(1) states that the Director will issue an approval order if "the degree of pollution control for emissions to include fugitive dust emissions and fugitive dust, is at least best available control technology (BACT)". The Utah Supreme Court has found that if a control technology is operating or permitted for similar operations, the permitting authority should consider the technology available and consider it in its BACT analysis. Utah Chapter of the Sierra Club v. Air Quality Board, 2009 UT 76 46.

Response #50

This comment addresses only authorities under the Utah Air Conservation Act, Utah Code Ann. Title 19, Chapter 2. The DRC has no authority to implement that Act.

The DRC does have authority to regulate air-borne radionuclides. Please see General Response, Parts 1.7, 1.8 and 2.

Comment #51

In 2011, Utah DAQ was presented with evidence of industry standards for controlling fugitive dust that far exceeds the controls currently in place at the Mill. In its comments on Utah DAQ's Approval Order to Add a Baghouse, to Allow Alternate Fuel Usage, and to Incorporate Work Practice Standards, DAQE-ANO

112050018-11, the Ute Mountain Ute Tribe submitted the fugitive dust control plans for both the Moab Project and the Crescent Junction Project as evidence of technology that should be considered as BACT in Utah DAQ's fugitive dust control technology for the Mill.

Utah DAQ's subsequent unjustified decision to not adopt controls as stringent as those in place at the Moab Project and the Crescent Junction project - both of which were demonstrated as "available" by the Ute Mountain Ute Tribe - violates the BACT requirements, is basis for the vacature of the Approval Order, and indicates the inadequacy - both legal and practical - of the current fugitive dust controls in place at the Mill. The inadequacies of Utah DAQ's approval order does not satisfy Utah's duty to implement the authority derived from the its Agreement State authority. Technology properly identified as BACT must be required in order for License No. UT 1900479 to be amended to allow receipt, storage, processing, placement, and permanent disposal of the alternate feed materials from Midnite Mine.

Response #51

The comments relied upon were provided to the DAQ, and were not provided to the DRC. See R305-7-202(2). The relevance of decisions made pursuant to DAQ authorities to DRC's Agreement State authority and this License Amendment is also unclear. See Response #23. The DRC does not have authority over the DAQ's approval order; requests to vacate that order are misplaced.

With respect to air emissions generally, please see General Response, Parts 1.7, 1.8, 2, and Response #16.

Comment #52

B. The Fugitive Dust Controls Do Not Satisfy the Low As Reasonably Achievable Standard

The fugitive dust emitted from the Mill contains radioactive elements and thus risks exposing the public to doses of radiation. Pursuant to Utah Admin. Code, each licensee "shall use, to the extent practical, procedure and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as reasonably achievable ("ALARA"). Utah Admin. Code R313-15-101(2). ALARA is defined as:

"making every reasonable effort to maintain exposures to radiation as far below the dose limits as is practical, consistent with the purposes for which the licensed or registered activity is undertaken, taking into account the state of technology, the economics of relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to the utilization of nuclear energy and licensed or registered sources of radiation in the public interest." Utah Admin. Code R313-12-3.

The ALARA standard is similar to the BACT standard in that both require regulators to ensure available technologies are implemented. See Utah Chapter of the Sierra Club v. Air Quality Board, 2009 UT 76 % 46. Where available

technologies are actually being used at the Moab and Crescent Junction Project sites that could reduce fugitive emissions, the current fugitive dust controls in place at the Mill do not meet the ALARA standard. The use of more stringent fugitive dust control plans at both the Moab Project Site (Attached as Exhibit 1) and the Crescent Junction Project Site (Attached as Exhibit 2) indicate that emissions reductions based on these technologies are "reasonably achievable" at the Mill. Utah Admin. Code R313-12-3. Thus, it is incumbent upon DRC to perform a meaningful analysis of the benefit that requiring similar technology would have on public and environmental health, and of the economics of requiring such technologies to be instituted at the Mill. DRC's failure to do so thus far is a violation of the Utah Rules designed to protect against radiation exposure.

Response #52

Utah Admin. Code R313-12-3 defines dose as:

[A] generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent. For purposes of these rules, "radiation dose" is an equivalent term; and

"Total effective dose equivalent" (TEDE) means the sum of the effective dose equivalent for external exposures and the committed effective dose equivalent for internal exposures.

When the DRC evaluates compliance with R313-15-101 and the radiation protection philosophy of ALARA, we first look at TEDE for both occupational and public exposure for fugitive dust and all other exposures. For occupational exposure we look at the licensee's dosimetry program which includes bioassays and measured radiation exposure from monitoring devices. DRC inspectors do this once a year. Findings from those inspections indicate that the Mill is well below any regulatory requirement for occupational exposure. The regulatory limit is 5 REM. Below is the average and highest occupational TEDE's measured at the Mill over last 6 reported years.

2013 - TEDE Average - 0.13 REM TEDE Highest - 0.31 REM Packaging Operator
2012 - TEDE Average - 0.11 REM TEDE Highest - 0.44 REM Packaging Operator
2011 - TEDE Average - 0.18 REM TEDE Highest - 0.44 REM Scale house worker
2010 - TEDE Average - 0.08 REM TEDE Highest - 0.49 REM Scale house worker
2009 - TEDE Average - 0.09 REM TEDE Highest - 0.20 REM Packaging Operator
2008 - TEDE Average - 0.10 REM TEDE Highest - 0.30 REM Scale house worker

For public exposure the DRC looks at the environmental monitoring data that the Mill is required to submit to the DRC semiannually. DRC inspectors review the data to evaluate or determine potential dose (TEDE) to the public. In addition to that, the Mill is required to do dose modeling using the MILDOS modeling program to demonstrate compliance with public exposure limits. Both the review of the semiannual environmental data and the MILDOS modeling results demonstrate that the Mill is within regulatory requirements.

The commenter is correct that ALARA goes beyond just meeting regulatory limits. If a practice can be improved to lower exposure to radioactive materials then it should be considered.

The standard governing uranium milling operations and reducing airborne effluent releases to levels as low as is reasonably achievable is found in Criterion 8, 10 CFR Part 40, Appendix A (adopted by reference in Utah Admin. Code R313-24-4(1)(b), which states, “To control dusting from diffuse sources, such as tailings and ore pads where automatic controls do not apply, operators shall develop written operating procedures specifying the methods of control which will be utilized.” This requires a site specific analysis with a cost/benefit component. The analysis is performed by the Licensee’s SERP committee. The analysis would include factors such as the nature of the Uranium Material (see Response #16), and the Licensee’s large site boundaries. An important factor is that the Licensee’s administrative ALARA goals of < 25% of the Effluent Concentration Limits are being met. See General Response, Parts 1.7, Table 3.

The DRC reviews the SERP Committee’s annual reports for compliance with applicable standards.

Reliance on Sierra Club is misplaced; that case was only about Best Available Control Technology, with no mention of ALARA.

See also General Response, part 2.5, regarding the new License Condition 11.9 requiring additional air monitoring stations, as well as soil sampling and consideration of additional vegetation sampling.

See Response #66, below, regarding the inapplicability of the Moab Project and Crescent Junction Sites to the White Mesa Uranium Mill.

Comment #53

III. Fugitive Dust From the Mill Threatens Public and Environmental Health

The U.S. Geological Survey (USGS) Scientific Investigations Report 2011-5231 (“USGS Report”) documents off site, downwind deposition of fugitive uranium dust emissions originating from uncovered stockpiles at the White Mesa Mill. Exposure to those emissions and that deposition by people, plants, wildlife and livestock threatens public health, safety and the environment. By documenting deposition of fugitive dust from the mill, the USGS report demonstrates that existing, ongoing operations of the White Mesa Mill lack requirements necessary to protect public health, safety, and the environment from exposure to fugitive uranium dust emissions and deposition originating from uncovered stockpiles at White Mesa Mill.

Response #53

See General Response, Part 2. For the reasons described in Part 2, DRC does not agree that there is evidence of a threat to public health, safety, or the environment. Also see General

Response, Part 2.5 for the new license condition requiring additional air monitoring stations, as well as soil sampling and consideration of additional vegetation sampling.

See also Response # 16 regarding the nature of the Uranium Material.

Comment #54

The USGS Report documents elevated uranium in soil sediment and vegetation near the mill. It reports "... U concentration(s) from the stream-sediment samples ranged from 1.5 to 16.2 parts per million (ppm). The highest U concentration measured in the local background samples (fig. 31), which ranged from 1.8 to 3.6 ppm, was equaled or exceeded in 8 of the 28 stream sediment samples." USGS Report at 51. It reports elevated uranium in big sagebrush located near the White Mesa Mill; "U concentration in the plant-tissue samples from sagebrush ranged from 1.3 to 171 ppm (dry weight)." USGS Report at 58. It reports elevated vanadium concentration in plant tissue; vanadium (V) would be expected to be present in Colorado Plateau uranium ore delivered to the mill. USGS Report at 63. It reports "concentration in the plant tissue samples ranged from 9 to 582 ppm (dry weight), and its spatial distribution in the plant tissue samples was similar to the U distribution." USGS Report at 63.

The USGS Report establishes that elevated uranium in soil and elevated uranium and vanadium in vegetation is highest downwind of the White Mesa Mill, indicating that windblown uranium ore is being transported and emitted off site from uncovered stockpiles onto downwind land and vegetation. For big sagebrush samples, "[T]he highest concentrations of U were found in plant tissue samples collected from regions north, south, and east of the mill site, and the lowest U concentrations were found west, northwest, and southwest of the mill site" and "[P]lant samples with elevated V concentrations consistently were found north-northeast east, and south of the mill site, indicating offsite transport in the predominant wind directions." USGS 5231 at 58 and 63. The report continues:

Wind data collected from 2000 to 2008 at the Blanding airport (National Oceanic and Atmospheric Administration, 2010), located about 6 km north of the mill, offers insight into the likely U source for the observed spatial distribution of U in the plant tissue samples (fig. 40). The predominant wind direction during the nine-year monitoring period was from the south-southwest (SSW) at an azimuth of about 200 degrees (fig. 41). This could explain the anomalous U concentrations detected in plant tissue samples collected to the north and northeast of the mill site. Furthermore, some of the highest wind speeds, exceeding 4 meters per second (m/s) were from westerly directions (azimuth 200 to 340 degrees), providing an explanation for the anomalous U concentrations east of the mill site with the predominant direction from the SSW (205 degrees). USGS Report at 58, 63.

Uranium fugitive dust emissions and deposition from White Mesa Mill to areas downwind threatens public health, safety, and the environment. Potential human exposure pathways to uranium and other contaminants emitted as fugitive dust include (1) inhalation of uranium dust emitted from the mill, or deposited from the mill and re-mobilized through soil disturbance or wind; (2) ingestion of water contaminated by uranium dust deposited in ephemeral washes adjacent to the mill; (3) ingestion of meat from wildlife or livestock that ingest uranium contaminated vegetation and soil near the mill. Uranium fugitive dust emissions from White Mesa Mill also present exposure pathways to wildlife. In its Scientific Investigations Report 2010-5024, USGS details biological pathways of exposure and ecotoxicity values for uranium and associated radionuclides for the Colorado Plateau near Grand Canyon, an area whose ecology and biological diversity is similar to lands near White Mesa Mill. The report states that

"[T]he utilization of subterranean habitats (burrows in uranium-rich areas, burrows in waste rock piles or reclaimed mining areas, mine tunnels) in the seasonally variable but consistently hot, arid environment is of particular concern in the segregation areas. Certain species of reptiles, amphibians, birds, and mammals spend significant amounts of time in burrows where they can inhale or ingest uranium and other radionuclides through digging, eating, preening, and hibernating. Herbivores may also be exposed through the ingestion of radionuclides that have been aerially deposited on vegetation." USGS 5024 at 287.

Even non-uranium bearing fugitive dust threatens physical injury to the public as a cause of chronic lung disease, asthma, and other lung related illnesses; a cause of hazardous conditions on public rights of way; and a detractor of property values in areas nearby the emissions source. Each of these problems associated with fugitive dust is magnified by the fact that the fugitive dust in this case contains uranium, and thus poses an even greater threat to human and environmental health - one that will endure on the Colorado Plateau for years to come.

The inhalation of U_3O_8 bearing fugitive dust has caused systemic toxicity that can result in long-term damage to organs. See, e.g., MH Henge-Napoli, E Ansoborlo, M Claraz, J-P Berry and M-C. Cheynet, Role of alveolar macrophages in the dissolution of two different industrial uranium oxides in Cellular and Molecular Biology 42(3), 413-420,1996; GN Stradling, JW Stather, SA Gray, JC Moody, M Ellender, A Hodgson, D Sedgwick, N Cooke Metabolism of uranium in the rat after inhalation of two industrial forms of ore concentrate: the implications for occupational exposure in Human Toxicology 6, 385-393,1987 (Measuring 12% U_3O_8 deposit in lungs after 360 days following inhalation); H.B. Wilson, G.E. Sylvester, S. Laskin, CW. LaBelle, J.K. Scott, H.E. Stokinger, Relation of particle size dust to toxicity following inhalation by animals. Archives of Industrial HealthW, 11-16,1955 (Documenting kidney and lung damages associated with inhalation of small particle sized U_3O_8 dust).

The ongoing problem of off-site deposition of radioactive materials, particularly in light of the adverse health effects of U_3O_8 exposure, confirms the need for DRC to address and mitigate the off-site fugitive dust deposition problem documented in the USGS report. Importantly, this problem will be exacerbated by Energy Fuels' proposal on how to handle the alternate feed materials from the Midnight Mine. Thus, the License Amendment at issue here represents an opportunity for Utah DRC to institute meaningful regulation and control of fugitive dust at the Mill as required by Utah law.

Response #54

With respect to the results of USGS's sediment sampling, the commenter does not distinguish between on site and off site sample results and does not distinguish between samples that USGS found to be the result of ore migration and those that were from natural weathering. There were three sample results exceeding background that were both from ore migration and that were off-site; all three were at levels that would require additional analysis rather than an immediate response. See General Response, Part 2. There is no air effluent standard that would apply that would provide for absolutely no off-site migration of contaminants; the levels of any contamination off-site would have to be evaluated. The commenter does not provide any evidence that the levels of off-site contamination seen would pose a threat to human health or the environment; the USGS Report does not provide that evidence. See General Response, Part 2.

The study referencing vanadium in plant tissues was performed to analyze for the potential for wind distribution. It does not provide any evidence of off-site contamination that would result in a threat to public health or the environment, for the reasons specified in General Response, Part 2.3.

The USGS Report did not address non-radiologic fugitive dust in any way. The only evidence with respect to non-radiologic fugitive dust demonstrates that the Licensee is meeting standards. See General Response, Part 1.7.

See also Response # 16 regarding amendment-specific considerations.

Although there are effluent limitations that control off-site contamination, on-site contamination is expected on an industrial site and is governed by occupational standards. See also General Responses, Part 2.5. The DRC is requiring Energy Fuels to revise its environmental monitoring program to provide for additional air monitoring stations, as well as to add soil sampling and consideration of additional vegetation sampling.

Regarding concerns about U₃O₈, due to the nature of the Uranium Material (see Response #16), fugitive dust from Uranium Material stored on the ore pad during the 13 days prior to required cover is unlikely. The 14-day cover License Condition 10.20 was added by DRC because of the higher uranium concentration in the Uranium Material than typical Colorado Plateau-derived uranium ores, and to address the potential for fine dust generation after a prolonged period of time. See SER, page. 9-10, noting that the uranium concentration in the Uranium Material is higher than the average uranium concentration in Arizona 1 uranium ores, but is lower than the highest concentrations in Arizona 1 uranium ores.

Comment #55

IV. Standards

A. Utah Radiation Control Rules

The general purpose of Utah's Radiation Control Rules is "to ensure maximum protection of the public health and safety to all persons at, or in the vicinity of, the place of use, storage, or disposal." Utah Admin. Code R313-12-2. Adhering to these principles, the Director shall approve an amendment to a radioactive material license if "the Director determines that . . . (b) the applicant's proposed equipment, facilities, and procedures are adequate to minimize danger to public health and safety or the environment. . . and (d) the issuance of the license will not be inimical to the health and safety of the public." Utah Admin. Code R313-22-33 (standards applied to license amendments by Utah Admin. Code R313-22-39). For this reason, the Utah Rules give the Director the discretion to "impose upon a licensee or registrant requirements in addition to those established in the rules that the Director deems appropriate or necessary to minimize any danger to public health and safety or the environment." Utah Admin. Code R 313-12-54. Moreover, each licensee "shall use, to the extent practical, procedure and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as reasonably achievable ("ALARA"). Utah Admin. Code R313-15-101(2). Each of

these standards governs Utah DRC's decision of whether to amend Utah Radioactive Material License No. UT 1900479, and what controls to require that the licensee institute, which includes the management of fugitive dust at the Mill.

Response #55

This is a description of DRC authorities; no response is required.

Comment #56

A. *Prior Fugitive Dust Standards Instituted at the Mill*

To meet its ALARA standard of 1250 mrem per year, Denison instituted specific controls to protect Mill workers, the general public, and the environment from unnecessary exposure from alternate feeds stocks placed on the ore pad. Specifically, as part of the license renewal process, Denison informed Utah DRC that it had instituted the following controls for fugitive dust from alternate feed material with U₃O₈ content that exceeds that of Colorado Plateau-derived ore: first, "[h]igh grade alternate feed materials typically with 1.0% U₃O₈ or greater are usually received at the Mill and stored in drums or other containers;" second, "(a)lternate feed materials that are received in bulk and that have higher risk of public or occupational exposure than Arizona Strip ores such as may result from high radioactivity and/or fine dry particles relative to Arizona Strip ores have been covered by less radioactive materials while stored on the Mill's ore pad." Utah Division of Radiation Control, Safety Evaluation Report for the Denison Mines White Mesa Mill 2007 License Renewal Application, October 2011 at 10. These two control measures - neither of which allows for alternate feed material to be left uncovered on the ore pad -are a component of fugitive dust control technology that should be considered ALARA for the Mill.

Response #56

See General Response, Parts 1.7, 1.8, and Response # 16. The statements from Denison quoted by the commenter regarding the manner in which higher uranium concentration alternate feeds have historically arrived at the mill (i.e. in drums) are explanatory in nature, and do not prohibit higher uranium concentration alternate feeds from arriving in bulk, as explained in the next paragraph quoted on page 10. That paragraph states that, historically, alternate feed materials received in bulk that have higher risk of public or occupational exposure have been covered by less radioactive materials while stored on the Mill's ore pad.

Each alternate feed is handled and stored differently based on its unique characteristics. The Uranium Material has a very low risk of wind-blown exposure because of its cement-like nature and high moisture content (see Response #16). Further, DRC has mandated that the Uranium Material stored on the ore pad for 14 days be covered by a "durable geomembrane cover resistant to damage by ultraviolet (UV) radiation and sufficient ballast shall be placed over the cover to prevent wind uplift of the cover during peak wind conditions at the site." The cover mandated by the DRC is more protective than a cover of less radioactive materials, as suggested in the above comment.

Comment #57

- V. *The Characteristics of the Alternate Feed and Climate Conditions at the Mill Combine to Necessitate Strict Fugitive Dust Control Measures*

As a primary matter, the high uranium content of the alternate feed material increases the threat to public and environmental health posed by off-site deposition of fugitive dust. The alternate feed material contains a higher percentage of U₃O₈ than is present in Colorado Plateau derived uranium ores. URS Professional Solutions, LLC, Safety Evaluation Report for the Amendment Request to Process an Alternate Feed Material at White Mesa Mill from Dawn Mining Corporation Midnite Mine, Washington State, August 2013 at 9 (hereinafter URS SER). In typical Colorado Plateau-derived uranium ores, the range of U₃O₈ contents varies from 0.015% to 0.30%. Id. at 10. The average U₃O₈ concentration of particularly high grade uranium mined at the Arizona 1 uranium mine in the Arizona Strip averaged between 0.56% and 0.66%. Id. The U₃O₈ of the alternate feed material is estimated to be 1.5%. Id. at 9.

Response #57

See General Response, Parts 1.7, 1.8 and 2, and Response # 56. Also, the DRC has addressed the concern about uranium concentration in the Uranium Material by imposing License Condition 10.20 A and B, which require the licensee to cover the material after 14 days and when visible dust originating from the Uranium Material is observed.

Comment #58

The alternate feed material is vulnerable to wind blown deposition due to climate conditions at the Mill Site. The climate in the vicinity of the Mill is semi-arid with annual precipitation of approximately 12 inches, and a low average humidity. Id. at 16. Wind speeds at the Mill average approximately 13 miles per hour with the prevailing wind blowing to the south of the Mill. USGS Report at 64. High wind events of gusts over 25 miles per hour occur at the Mill site. Denison Mines (USA), Environmental Report, February 28, 2007 at 16.

The affidavit of Robert Nelson - the Site Manager from the Dawn Mining Company - does not consider the difference in climate and wind condition between the Pacific Northwest and Southern Utah. Mr. Nelson's assertion that the alternate feed "is not prone to degrading to fine dust sized particles" is unsupported by evidence, and does not account for the marked difference in humidity, and wind speeds between the two sites. Indeed, even URS notes in its Safety Evaluation Report for the Amendment that "weather conditions at the Mill Site are dryer than at the Midnite Mine Site, and possibly higher wind speeds coupled with low humidity levels may lead to differences in behavior of uranium material with regard to its susceptibility to degrade to a finer dust sized particle than would be expected from ores or other alternate feeds." URS SER at 16.

Response #58

The DRC has addressed this issue by imposing license condition 10.20 A and B, which requires the licensee to cover the material after 14 days and when visible dust originating from the Uranium Material is observed. Due to the nature of the Uranium Material (see Response #16), the Uranium Material is not expected to dry out for significantly longer

than the 14-day uncovered period. Storage of the Uranium Material is subject to inspection.

Comment #59

For this very reason, Utah DRC proposes to impose two license conditions that are intended to control fugitive dust from the alternate feed. Radioactive Materials License Number UT 1900479 Amendment #06 at 10.20. The first condition requires that "Dawn Mining Uranium Material stored (stockpiled) at the Mill Site longer than 14 days shall be covered with a durable geomembrane cover resistant to damage by ultraviolet (UV) radiation and sufficient ballast shall be placed over the cover to prevent wind uplift of the cover during peak wind conditions at the site. Id. at 10.20 (A)(1). The second condition mandates that "[i]f at any time, visible dust is observed to be originating from Uranium Material stored on site, the EFRI RSO or his or her authorized representative shall take actions within 30 minutes to stop the generation of visible dust." Id. at 10.20 (A)(2). The Trust applauds DRC for imposing conditions to attempt to address the fugitive dust issue. Regrettably, neither of these license conditions meet the standards established in the Utah Rules, nor do they even comport with prior commitments made by Denison to Utah DRC to control fugitive dust from the processing of alternate feed at the Mill.

VI. *The Proposed License Conditions Do Not Protect Public and Environmental Health*

Utah DRC's proposed license conditions are inadequate to protect public and environmental health from the risks associated with fugitive dust. First, license condition one, which allows the alternate feed material to be left uncovered for up to fourteen days, does not protect public or environmental health from fugitive dust resulting from high wind events occurring on days zero to thirteen. As discussed below, the monitoring provision does not compensate for this inadequacy due to (1) the lack of 24-hour monitoring at the Mill and (2) the fact that fugitive dust is not always visible to the naked eye, particularly at night. Moreover, the fourteen-day condition in the license amendment proposal is inconsistent with the SER for the mill, which suggested that the alternate feed material would be covered if left on the ore pad for any duration of time. See URS SER at 42 ("with implementation of the proposed new license condition requiring that: (1) Uranium Material stored at the Mill Site be covered with a durable, UV-tolerant geomembrane and ballast shall be applied over the geomembrane to prevent wind uplift of the geomembrane . . . the UDRC has determined that no significant adverse effects on public health or the environment are expected to result from implementing the proposed action"). Thus, URS's conclusion that the geomembrane provision is adequate to protect public health and safety cannot apply to the license conditions that now - without explanation - include a fourteen day window in which the alternate feed material can be left uncovered.

Response #59

See General Response, Part 1.7, 1.8 and 2 and Responses #16, #56 and #58

Page 42 of the Safety Evaluation Report does inadvertently leave out the 14-day requirement, but page 44 quotes the license condition as follows:

"(1) Uranium Material stored (stockpiled) at the Mill Site longer than 14 days shall be covered with a durable geomembrane cover, resistant to damage by ultraviolet (UV) radiation and sufficient ballast shall be placed over the cover

to prevent wind uplift of the cover during projected peak wind conditions at the site; and (2) If at any time, visible dust is observed to be originating from Uranium Material stored on site, that the EFRI RSO or his or her authorized representative take actions within 30 minutes to stop the generation of visible dust."

The Safety Evaluation Report was written with a clear understanding of the license condition requiring the Mill to cover the Uranium Material after 14 days. The inadvertent omission on page 42 does not invalidate the entire Safety Evaluation Report, nor does it suggest that the license condition was anything different than as stated.

The DRC's requirement to cover the Uranium Material after 14 days was imposed to address the potential of fines generation after a prolonged period of time. Due to the nature of the Uranium Material, the chance of any fines being generated within the first 14 days is considered small. The Uranium Material will be inspected upon unloading and wetted as necessary at the time of unloading and at regular intervals thereafter.

See also General Responses, Part 2.5, with a new License Condition 11.9, which requires additional air monitoring stations.

Comment #60

Under the ALARA standard, the public benefit of continuous cover in conjunction with meaningful monitoring would outweigh the economic burden on Energy Fuels. As discussed above and as the Trust's technical expert, Jim Kuipers, attests in his comments, fugitive dust from uranium operations has numerous adverse health and environmental impacts. Energy Fuels has recognized that the processing of alternate feed necessitates the stockpiling of those materials over time in order to accumulate enough material to justify processing. Given this, it is likely that the alternate feed material will sit on the ore pads for more than fourteen days. Thus, it will not impose a significant additional burden on Energy Fuels to cover the material from the first moment it arrives on the mill site; indeed, Energy Fuels will have to cover the material eventually. In light of the public health and environmental benefits resulting from covering the material, an ALARA analysis will result in the conclusion that cover should be required immediately.

Response #60

See Response #52. See also General Response, Part 1.7, 1.8 and 2 and Responses #16, #58 and #59.

Comment #61

The second license condition is inadequate to protect public and environmental health and safety for three reasons. First, the Mill does not have a person capable of observing visible dust on staff twenty-four hours a day, seven days a week. In order to render this condition adequate to protect public and environmental health, the condition must be supplemented by a requirement that an air quality monitor be on the Mill site twenty-four hours a day. In the absence of such a condition, there is a possibility that visible dust could be present at the Mill for up to several days without any mitigation measures being instituted. Second,

the license condition does not protect public and environmental health against the impacts of PM2.5, which is not visible to the naked eye. As the Trust's technical expert, Jim Kuipers, attests, a percentage of the fugitive dust emanating from the alternate feed material will be fine grained, small diameter particles that are invisible to the human eye. This is precisely why air quality monitoring is an essential component of any fugitive dust control plan for the Mill. A standard based on visible emissions does not protect public and environmental health against the adverse effects of small diameter particle dust. Finally, even dust visible to the naked eye is not visible at night. Thus, the second license condition does not ensure protection from visible fugitive dust as soon as the sun sets.

The exhibits that accompanied the commenter's comments can be found in Appendix B of this document.

Response #61

This is a summary comment. Please see responses above.

Comment #62

The Trust suggests that Utah DRC utilize this opportunity to revisit its fugitive dust controls for the Mill. First, Utah DRC should mandate the fugitive dust controls suggested by Jim Kuipers in his technical comments. Second, Utah DRC should revisit the proposed license conditions in light of the Trust's concerns. Ultimately, the Trust looks forward to Utah DRC recrafting the two license conditions to be protective of public and environmental health, and to fully comport with the ALARA standard as required by law. Thank you for your consideration of these concerns.

Response #62

See responses above and below.

4. Comments from Grand Canyon Trust (Jim Kuipers P.E., Kuipers & Associates) Attachment to Grand Canyon Trust Comments

Comment #63

Re: Comments regarding Utah Division of Radiation Control's Proposed Licensing Action to Amend State of Utah Radioactive Material License No. UT 1900479 to Authorize the Receipt and Processing of Alternate Feed Material from Dawn Mining Corporation's Midnite Mine.

The following comments are submitted on behalf of the Grand Canyon Trust ("Trust") based on my review of the Utah Division of Radiation Control's ("Utah DRC") Proposed Licensing Action to Amend State of Utah Radioactive Material License No. UT 1900479 to Authorize the Receipt and Processing of Alternate Feed Material from Dawn Mining Corporation's Midnite Mine. The comments are focused on the issue of the control of fugitive dust resulting from the receipt, storage, and processing of the alternate feed material at the White Mesa Mill ("Mill"). I support the comments filed by Grand Canyon Trust, and submit additional comments as set out below. My qualifications to evaluate the proposed licensing action are documented in my resume submitted as Appendix A.

The following comments are based on over 30 years of professional experience in the mining and mineral processing industry as well as mining environmental practice. In particular I have been involved in the design, implementation, operation and maintenance of fugitive dust control measures at numerous mine/mill and water treatment sites throughout the western U.S. including in Utah. I have been involved in the development of best management practices related to dust control at Superfund sites such as the Anaconda Smelter Superfund Site in Montana and am currently involved on behalf of several governmental organizations in the development of dust control guidance for hardrock mining and mineral processing sites.

These comments take the following approach to analyzing the adequacy of the proposed license amendment: 1) Background on the proposed licensing action; 2) explanation of the public and environmental health threats posed by fugitive dust from the alternate feed material from the Midnite Mine site; 3) examples of best management practices for fugitive dust control; 4) an evaluation and recommendation is made to assist Utah DRC to craft license conditions that are adequately protective of public and environmental health.

I. Background

Based on the Affidavit of Robert Nelson dated 13 October, 2010, Dawn Mining Corporation is proposing to ship waste1 products from a Water Treatment Plant (WTP) located at their Wellpinit, Washington facility. The WTP treats uranium contaminated mine water using a pH adjustment process using hydrated lime which results in a precipitate or waste stream that contains radium-226. Dawn Mining proposes to ship the waste stream to the White Mesa Mill near Blanding, Utah for processing as alternate feed materials.

According to UTAH DIVISION OF RADIATION CONTROL, RADIOACTIVE MATERIALS LICENSE, SUPPLEMENTARY SHEET, License #UT1900479, Amendment # 056 (License) the White Mesa Mill is required to perform the following actions relative to fugitive dust which might be generated from receiving, storage and processing of the proposed waste materials: 10.20 . . . The Licensee is authorized to receive no more than 1,000 tons per year and a total limit of 4,500 tons (dry weight). . .

A.(1) Dawn Mining Uranium Material stored (stockpiled) at the Mill Site longer than 14 days shall be covered with a durable geomembrane cover resistant to damage by ultraviolet (UV) radiation and sufficient ballast shall be placed over the cover to prevent wind uplift of the cover during peak wind conditions at the site; and

A.(2) If at any time, visible dust is observed to be originating from Uranium Material stored on site, the EFRI RSO or his or her authorized representative shall take actions within 30 minutes to stop the generation of visible dust."

License Conditions 10.20 (A)(1) and (A)(2) do not adequately protect public and environmental health from the fugitive dust hazards posed by the alternate feed from the Midnite Mine site. Contrary to the Utah Radiation Control Rules, Utah DRC does not institute fugitive dust controls adequate to meet the "as low as reasonably achievable" occupational dose standard mandated in the Utah Admin. Code. Utah Admin. Code R313-15-101(2). These comments will demonstrate that there are recognized best management practices (BMPs) that Utah DRC should consider as "reasonably achievable" in use at other sites. Utah DRC could and should mandate the use of the technology referenced in these comments to control fugitive dust resulting from the Midnite Mine alternate feed material at the Mill as part of its duty to in order to adequately protect public and environmental health. See Utah Admin. Code R313-12-2. (The general purpose of the radiation rules is "to ensure maximum protection of the public health and safety to all persons at, or in the

vicinity of, the place of use, storage, or disposal."); Utah Admin. Code R313-22-33 (Director shall approve an amendment to a radioactive material license if "the Director determines that . . . (b) the applicant's proposed equipment, facilities, and procedures are adequate to minimize danger to public health and safety or the environment, (standards applied to license amendments by Utah Admin. Code R313-22-39)).

Response #63

See Response #52.

Comment #64

II. Hazards Posed by Fugitive Dust From the Midnite Mine Alternate Feed Material

As the Utah Division Radiation Control is well aware, fugitive dust represents a significant impact both to public health and to general public welfare in the following ways:

- Threatens physical injury to the public with chronic lung disease, asthma and other lung related illness;*
- Significant detriment, nuisance or annoyance to the public;*
- Cause injury or damage to business or property;*
- Create hazardous conditions on public right of ways; and,*
- Cause blight and impairment of property values and development opportunity.*

While it is not the focus of our area of expertise, we have a great deal of knowledge with respect to the undesirable nature of fugitive dust from a public health and socio-economic impact standpoint, as well as its mitigation from an engineering and regulatory standpoint.

Response #64

See General Responses, Parts 1 through 6, and Responses # 16, # 52 and #54.

Comment #65

III. Fugitive Dust Control Plans Currently Utilized at Other Sites

The primary area of concern relates to the nature of the waste stream and the implementation of best management practices (BMPs) related to the proper receiving, storage and disposal of the waste materials. Although no specific information is provided in the License, WTP waste streams from lime precipitation processes are typically highly amorphous (e.g. water containing) and consist of extremely fine grained precipitates and water in varying proportions. Unfiltered or settled WTP waste streams from similar processes typically contain <5% solids, while settled waste streams contain up to 20% solids, and filtered waste streams may contain up to 80% solids.

The licensee should be required to provide additional information as to the nature of the waste materials to be received. Although 1,000 tons per year of dry solids may not appear to be a significant amount of material, if the waste stream were unfiltered and shipped in 55 gallon drums at 5% solids approximately 14,545 barrels would be shipped and stored. With 50% solids more than 1,455 barrels would still require shipment and storage as well as proper disposal. The License, in requiring in 10.20 A. (1) that material stored or

stockpiled be covered with a durable geomembrane cover, gives the impression that the material may be received in trucks or containers and dumped at the site. The License should more specifically identify the types of materials to be received (e.g. unfiltered, settled or filtered waste materials), the percentage of dry contents, and the nature of the shipping containers or methods to be utilized or allowed.

The License should require the licensee to take every reasonable precaution not to cause or allow the emissions of fugitive dust from being airborne while in transit to the site. The Draft Utah Division of Air Quality Fugitive Dust Control Plans Instructions, available at:

<http://www.airquality.utah.gov/Permits/FORMS/2013/March/Draft%20FDCP%20Instructions%2012-12.pdf> contain the following requirements:

Response #65

The commenter has not identified what additional information he would like regarding the nature of the Uranium Material. The Safety Evaluation Report provided the following information regarding the physical characteristics of the Uranium Material. "The Uranium Material results from treatment of pumped groundwater and surface water at the Midnite Mine site's Waste Treatment Plant using either centrifuge or filter press technology. Pilot testing performed by the Dawn Mining Corporation indicates that this Uranium Material is expected to have an average moisture content of 55% to 75% (i.e., a dry solids content between 25% and 45%) for centrifuge-generated material, or approximately 60% to 65% (i.e., a dry solids content between 35% and 40%) for the filter-press generated material." (Safety Evaluation Report, 2013).

The DRC does not regulate transportation of the Uranium Material. The EPA has required that all trucks transporting the Uranium Material to the Mill Site shall be covered by tarpaulins or similar cover. See the Residuals Transportation Plan included as Attachment 2, to the Residuals Management Plan for the Midnite Mine Water Treatment Plant, Revision 10, provided to the EPA in 2013. See Residuals Management Plan, Revision 10, included as Attachment N.

Comment #66

The Fugitive Dust Rule (R307-309) requires a fugitive dust control plan (R307-309-6) from all sources whose activities or equipment have the potential to produce fugitive dust (airborne dust) in PM10 and PM2.5 non-attainment areas. Fugitive dust control plans include steps your company will take to minimize fugitive dust on-site from pits, yards, storage areas, and areas of operation and to prevent opacities caused by fugitive dust from exceeding 20% on site and 10% at the property boundary. The fugitive dust rule addresses storage and handling of aggregate materials, construction and demolition activities on sites greater than 1/4 acre, road ways and tailings piles and ponds. Sources shall develop their fugitive dust control plans and submit them to the Director prior to the start of clearing or construction. Fugitive dust control plans, tailored to specific operations and sites of operation, shall be required for:

1. *All operations with material storage, handling and/or hauling operations and areas of source operations, construction sites; and all sources or operations which*

have the potential to produce fugitive dust in nonattainment areas along the Wasatch Front;

2. *All temporary relocations under R307-401-17. Sources will be required to develop a site specific fugitive dust control plan for each temporary relocation of permitted equipment;*
3. *All sources and areas of source operations, pits and yards, statewide, which have been issued a Compliance Advisory for excess fugitive dust. Operations, areas of operation and sources that shall be addressed in fugitive dust control plans are:*
 - *material storage/handling - drilling, blasting, and pushing operations;*
 - *material handling/transfer - clearing/leveling/development construction;*
 - *material processing/transfer - earth moving and excavation;*
 - *road ways and yard areas - track out/spillage on paved roads; and,*
 - *loading/hauling/dumping materials - exposed surfaces.*

These requirements are also consistent with the fugitive dust controls that are commonly used by the mining industry as well as that part of the mining industry that deals with WTP waste materials. Those practices are also consistent with regulatory and permitting requirements in Nevada, Wyoming, Montana, Colorado, Idaho and North Dakota according to the National Mining Association (http://www.nma.org/pdf/pol_briefs/041906_naaqs_snapshot.pdf);

Moreover, these requirements have been implemented at sites near the Mill in Utah. See Moab Project Site Fugitive Dust Control Plan (March 2002) (Trust Comments Exhibit 1); Crescent Junction Project Site Fugitive Dust Control Plan (July 2006) (Trust Comments Exhibit 2).

Response #66

Utah Admin. Code R307-309-6 is a UDAQ rule. Any compliance issues with that Rule needs to be addressed to the UDAQ.

Also, comparisons cannot reasonably be made between the White Mesa Uranium Mill and the Moab Project or the Crescent Junction Project Site, as these latter two sites are much more active than the White Mesa Mill; approximately 60 train cars of uranium tailings were expected to be unloaded and placed each day at the time the requirement was established. Fugitive dust controls for different sites are different depending on the types, volume and processing of materials.

Comment #67

IV. Recommendations

The License should, at a minimum, require similar measures to those documented above to minimize fugitive dust emissions at the White Mesa Mill from the proposed Dawn Mining waste stream materials. These should specifically include the following:

- *Identification of the nature of the waste materials in terms of the physical properties of the materials transported to and received at the site.*
- *Measures to ensure fugitive dust control from material transport from Dawn Mining to the White Mesa Mill;*

- *Measures to ensure fugitive dust control during material receiving including during discharge of the material from trucks, containers or drums into the receiving area:*
- *Measures to immediately assure that materials are covered to prevent drying and increase susceptibility to blowing wind as well as to prevent flowing of dried materials:*
- *This should include a windbreak to prevent offsite migration of radionuclide laden dust around the storage pads.*
- *There is no reason why BMPs should not be implemented on an immediate basis at the site. The 14 day window is not consistent with modern practice of control measures to protect worker and public safety.*
- *Measures to assure that materials are handled for processing in a manner so as to minimize fugitive dust:*
- *Development as a part of the License of a site-specific fugitive dust control plan including identification of additional measures and assurance that those measures can be implemented in a safe and timely manner.*
- *The fugitive dust control plan should include fugitive dust standards, action levels, response actions, and real time meteorological and dust monitoring during periods of high winds, and work practice standards for mitigating wind dispersion of differing waste materials based on density estimates of those materials.*

These recommendations are standard practice where similar situations are encountered and are both practical and reasonable. They benefit public health without being overly burdensome as evidenced by their routine use in Utah as well as at many other locations in the United States. The lack of more specific measures in the present License is not consistent with current industry or regulatory practice.

Finally, in the larger context these same requirements and standards should be applied to the White Mesa Mill site as a whole. I have been involved in the mining industry, including working for Energy Fuels as a miner in 1979. The White Mesa Mill has a long and unfortunate history relative to fugitive dust emissions, which I need not elaborate on. However, as a professional engineer involved in similar manners, failure to utilize modern BMPs to control fugitive emissions is evident at the site. This is despite significant advances and acceptance by industry of BMPs that are both effective and economical. I strongly encourage the Utah Division of Radiation Control to similarly recognize this situation as well as the Licensee and take the necessary measures to responsibly rectify this situation.

The attachment that accompanied the commenter's comments can be found in Attachment B to this Public Participation Summary.

Response #67

See Response #52. As stated in License Condition 10.20, the Uranium Material must be covered when stored on the ore storage pad longer than 14 days. See also Response #66 regarding the difference in sites referenced by the commenter to the White Mesa Uranium Mill.