



UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY

Washington, DC 20460

March 3, 2022

OFFICE OF
AIR AND
RADIATION

Mr. Mark Chalmers
President and CEO
Energy Fuels Resources (USA), Inc.
225 Union Boulevard, Suite 600
Lakewood, Colorado 80228
mchalmers@energyfuels.com

RE: Clarification of March 11, 2019 “Regulatory Interpretation of the Term ‘Solid Material’ in ‘National Emission Standards for Radon Emissions from Operating Mill Tailings,’ 40 CFR Part 61, Subpart W (40 CFR 61.252(b))”

Dear Mr. Chalmers:

The purpose of this letter is to clarify the U.S. Environmental Protection Agency’s March 11, 2019, regulatory interpretation of the term “solid material,” as used in 40 CFR 61.252(b) (40 CFR part 61, subpart W (“Subpart W”)) and as applied to Cell 4B at the White Mesa Mill in Blanding, Utah, which is owned and operated by Energy Fuels Resources (USA) Inc. (“Energy Fuels”). It has recently come to our attention that Energy Fuels has construed our 2019 regulatory interpretation more broadly than was intended.

Background

Cell 4B is a 40-acre non-conventional impoundment as that term is defined in Subpart W. 40 CFR 61.251(i). As such, Cell 4B is used to manage byproduct material in the form of liquid effluents from the uranium recovery process. Solid substances or residues present in the impoundment that are derived from liquid byproduct material also constitute byproduct material and must be managed in accordance with Subpart W. Specifically, “the liquid levels in the impoundment shall be maintained so that solid materials in the impoundment are not visible above the liquid surface.” 40 CFR 61.252(b). This standard employs Generally Available Control Technology (GACT) to control radon emissions and was promulgated in January 2017. 82 FR 5142, January 17, 2017.

As required by Subpart W §61.252(b), Cell 4B is constructed in accordance with standards for surface impoundments managing hazardous waste. *See* 40 CFR 61.252(b), 40 CFR 192.32(a)(1), and 40 CFR 264.221. These standards include a requirement that surface impoundments “must be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall, run-on; malfunctions of level controllers, alarms, and other equipment; and human error.” 40 CFR 264.221(g).

To satisfy this requirement, Cell 4B is constructed with a large central area (“bottom”) having a slope of approximately 1% from the northwest to the southeast. The bottom is surrounded by an area extending roughly 75 feet laterally from the bottom with a much steeper slope of approximately 2:1 (“freeboard area”). See the enclosure illustrating these areas of the impoundment. The Cell 4B configuration has an approximate change in elevation of 30 feet between the top edge of the impoundment and the bottom. Energy Fuels relies upon the flexibility provided by this change in elevation to operate the impoundment in a “no discharge” manner, allowing the liquid level to rise and fall as determined by operational and seasonal fluctuations.

In May 2017, Energy Fuels requested that EPA interpret the term “solid material” in §61.252(b) to address unanticipated operational issues the company encountered at Cell 4B when implementing the GACT-based standard of Subpart W. Specifically, Energy Fuels expressed concerns to Agency staff regarding the formation of a solid material (referred to by Energy Fuels as “evaporative crystals”) around the edges of the impoundment on the more steeply sloped (“freeboard”) area. This material tends to form at the point where the lateral boundary of the liquid surface contacts the freeboard area of the impoundment; therefore, as the liquid level rises, fresh material always forms just above the interface of the liquid level with the freeboard and some amount of material becomes exposed at the point of formation on the freeboard area.

From our understanding of Energy Fuels’ 2017 concern, this situation made it impractical to implement the GACT-based standard as written. To do so, Energy Fuels would need to continually add liquid to the impoundment to cover the solid material that formed at the liquid-freeboard boundary; this would both disrupt the routine management of the impoundment and eventually threaten to overtop the impoundment (i.e., exceed the freeboard), contrary to the requirements of 40 CFR 264.221(g). Energy Fuels officials and Agency staff engaged in multiple discussions regarding possible methods to manage this solid material forming at the liquid-freeboard boundary (e.g., physical removal using brooms or other implements, or power-washing), which Energy Fuels deemed to be impractical or present the potential for adverse outcomes (e.g., damaging the liner). During these discussions, Energy Fuels informed EPA staff that evaporative crystals could also form in the bottom of the impoundment. While EPA staff considered such statements informative about the nature of the material, EPA did not view the formation of evaporative crystals on the bottom of the impoundment as presenting operational concerns or difficulties that would affect Energy Fuels’ ability to implement the GACT-based standard. EPA’s focus was on the solid material forming at the liquid level-freeboard interface, which did present such concerns or difficulties.

After thoroughly evaluating information provided by Energy Fuels, including limited sampling information, EPA issued a regulatory interpretation on March 11, 2019 (“2019 interpretation”). This interpretation was intended only to address the formation of the material on the steeply sloped sides of the impoundment, i.e., the freeboard area, where Energy Fuels found it impractical to implement the GACT-based standard as written. The 2019 interpretation concluded that such material—described by Energy Fuels as “evaporite crystals in Cell 4B” and likewise referred to in this way by the 2019 interpretation—was not considered to be “solid material” as that term is used in §61.252(b), i.e., solid material *that must be kept covered with liquid* (although it is still considered to be byproduct material). The 2019 interpretation referred

to other byproduct material present in the impoundment that would still be considered “solid material” that must be kept covered with liquid. In addition to controlling radon emissions, maintaining a liquid cover has the advantage of reducing the potential for wind erosion and dispersion of particulates from solid byproduct material that has dried out.

More recently, the Utah Division of Air Quality issued a compliance advisory on October 27, 2021, and EPA Region 8 issued a CERCLA Off-Site Rule Unacceptability Notice on December 2, 2021. Both actions referenced uncovered solid material visible across the bottom of Cell 4B. Energy Fuels responded to the compliance advisory and unacceptability notice by stating the company’s belief that it has operated in accordance with Subpart W, informed by EPA’s 2019 interpretation. Energy Fuels stated that there is no “solid material” subject to §61.252(b) in the entirety of the impoundment and that Cell 4B contains only “evaporative crystals” excluded from that definition by the 2019 interpretation, making it unnecessary to maintain a liquid cover. Energy Fuels officials reiterated this position during an informal conference with EPA to discuss the CERCLA Off-site Rule Unacceptability Notice on January 6, 2022, and during a subsequent inspection of the White Mesa facility by EPA and State of Utah staff on January 13, 2022.

EPA disagrees with Energy Fuels’ position that it is unnecessary to maintain a liquid cover in Cell 4B. The Agency’s 2019 interpretation was not intended to apply to all or most of the substances or materials present in the impoundment. To conclude as much would require the contention that all material present in a non-conventional impoundment can be exempted from the requirements of §61.252(b) through the 2019 interpretation, a contention that the 2019 interpretation does not support. Further, the 2019 interpretation was not intended to permit the unrestricted drawdown of the liquid in a non-conventional impoundment, nor should it be interpreted to mean that the maintenance of liquid levels as prescribed by the GACT-based standard of Subpart W is no longer required.

Clarification of 2019 Regulatory Interpretation

Since there appears to be a misunderstanding of the scope and application of the March 2019 regulatory interpretation, EPA provides the following clarification. As stated above:

- All liquid and solid material in Cell 4B constitutes byproduct material.
- Solid byproduct material is not “solid material” subject to §61.252(b) only to the extent that it forms along the steeply sloped sides of the impoundment, i.e., the freeboard area.
- Solid byproduct material that is present on the more extensive bottom of the impoundment is “solid material” subject to §61.252(b) that must be kept covered such that it is not visible above the liquid level.

EPA recognizes that the 2019 interpretation included imprecise language that may have introduced uncertainties regarding the Agency’s intent. For instance, the 2019 interpretation broadly used the generic term “evaporative crystals” based on familiarity with that term as used in Energy Fuels’ request, and broadly discussed these solid materials as existing “in” Cell 4B. EPA acknowledges that the conclusionary statements in the 2019 letter regarding “evaporative crystals” as a *type* of solid material in Cell 4B may have overshadowed the more fundamental issue of this particular material’s *location* in the impoundment. The 2019 interpretation should have provided more specific descriptions and location-based limitations, such as those presented

above. As noted above, the Agency's purpose in issuing the interpretation was to address a situation in which, as Energy Fuels described it, Energy Fuels found it impractical to implement the GACT-based standard as written on the steeply sloped edges of the impoundment, i.e., the freeboard area. No such impediment existed or exists to maintaining a liquid cover in the preponderance of the impoundment, i.e., on the bottom.

The Agency approached its 2019 interpretation with this limitation foremost in its mind. Indeed, after stating that the Agency was responding to Energy Fuels' "requested clarification of the regulatory term 'solid material' after [Energy Fuels] not[ed] the presence of evaporite crystals around the edges and at the bottom of Cell 4B at the White Mesa Mill...", the 2019 interpretation opens by noting that the "primary interest to [EPA] are crystals *that form on the sides of the impoundment at the liquid level*" and closes by noting that, given "the *limited area on the sides* where crystals may be exposed...EPA estimates that the area of exposed crystals could be on the order of 10% of the overall impoundment area" (emphases added). While the 2019 interpretation generally referred throughout to material "in" Cell 4B and did not explicitly state that the interpretation only applied to material found on the freeboard area that Energy Fuels found impractical to keep covered or otherwise physically control, EPA never intended the 2019 interpretation to be applied as broadly as Energy Fuels' recent communications suggest the company is doing.

To be clear, the Agency did not intend to convey an unlimited exclusion of the type of solid byproduct material at issue in the 2019 regulatory interpretation (i.e., "evaporative crystals") from the definition of "solid material" in Subpart W independent of the material's location. The Agency did not intend the 2019 interpretation to broadly apply to all solid byproduct material in Cell 4B; EPA still expected that the solid byproduct material on the bottom of the impoundment (see enclosure) would remain covered with liquid and not visible as required by §61.252(b). To assume the 2019 interpretation allows otherwise would render the Subpart W GACT-based standard at §61.252(b) wholly inapplicable to Cell 4B at the White Mesa Mill, which was not the Agency's intent when offering the requested regulatory interpretation to address the specific operational impracticability issues raised by Energy Fuels.

The information provided here serves to clarify the 2019 interpretation. I hope it resolves any ambiguity or additional misunderstanding related to the 2019 interpretation letter. If you have questions or need additional information, please contact Jonathan Walsh at walsh.jonathan@epa.gov or (202) 343-9238.

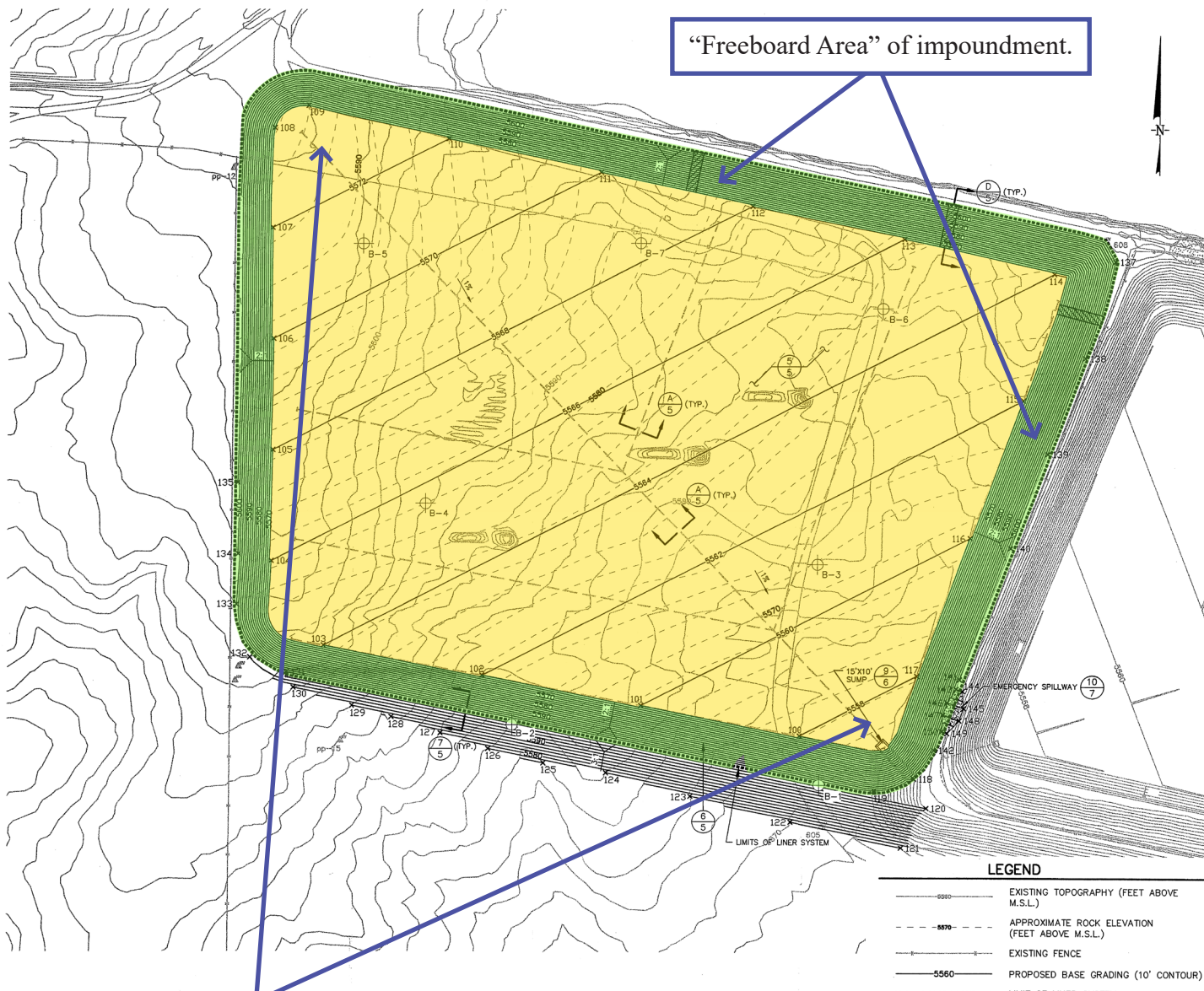
Sincerely,

Lee Ann B. Veal
Director
Radiation Protection Division

Enclosure (1)

cc: Dave Frydenlund, Energy Fuels Resources (USA) Inc.
Scott A. Bakken, Energy Fuels Resources (USA) Inc.
Jay Morris, Utah DAQ
Suzanne Bohan, Region 8
Carl Daly, Region 8
Scott Patefield, Region 8
Janice Pearson, Region 8
Robyn Hanson, Region 8
Tom Peake, EPA ORIA
Dan Schultheisz, EPA ORIA
Jonathan Walsh, EPA ORIA
Lea Anderson, EPA OGC

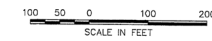
Enclosure
White Mesa Mill
Cell 4B Diagram Delineating the "Bottom" and "Freeboard" Areas of the Impoundment



"Freeboard Area" of impoundment.

"Bottom" of impoundment.

| POINT TABLE | | | |
|-------------|-------------|--------------|-----------|
| POINT # | NORTHING | EASTING | ELEVATION |
| 100 | 319447.2859 | 2577164.8929 | 5558 |
| 101 | 319507.2322 | 2576844.3805 | 5560 |
| 102 | 319567.1785 | 2576523.8681 | 5562 |
| 103 | 319627.1248 | 2576203.3557 | 5564 |
| 104 | 319797.6436 | 2576097.6307 | 5566 |
| 105 | 320023.8073 | 2576099.9958 | 5568 |
| 106 | 320249.0377 | 2576100.5478 | 5570 |
| 107 | 320472.5420 | 2576097.7471 | 5572 |
| 108 | 320675.6564 | 2576100.8126 | 5574 |
| 109 | 320719.8957 | 2576168.6204 | 5574 |
| 110 | 320654.7732 | 2576451.7313 | 5572 |
| 111 | 320588.0182 | 2576759.0177 | 5570 |
| 112 | 320520.2894 | 2577064.4125 | 5568 |
| 113 | 320453.5570 | 2577371.7429 | 5566 |
| 114 | 320384.0551 | 2577673.6935 | 5564 |
| 115 | 320127.7348 | 2577612.7493 | 5562 |
| 116 | 319848.5293 | 2577507.3503 | 5560 |
| 117 | 319569.1802 | 2577401.6727 | 5558 |
| 118 | 319381.7901 | 2577396.4633 | 5558 |
| 119 | 319337.6725 | 2577316.9812 | 5558 |
| 120 | 319302.0250 | 2577421.5901 | 5558 |
| 121 | 319220.3604 | 2577371.2400 | 5558 |
| 122 | 319271.8283 | 2577146.1490 | 5570 |
| 123 | 319324.7464 | 2576944.2404 | 5574 |
| 124 | 319371.2425 | 2576774.2086 | 5578 |
| 125 | 319390.5815 | 2576647.8346 | 5576 |
| 126 | 319419.1551 | 2576536.3841 | 5578 |
| 127 | 319450.7637 | 2576440.2498 | 5582 |
| 128 | 319482.9638 | 2576341.1792 | 5586 |
| 129 | 319505.2211 | 2576261.0810 | 5588 |
| 130 | 319541.3069 | 2576142.7230 | 5592 |
| 131 | 319572.6925 | 2576128.7102 | 5598 |
| 132 | 319602.9949 | 2576055.3321 | 5596 |
| 133 | 319709.7865 | 2576028.4338 | 5598 |
| 134 | 319811.6839 | 2576031.0071 | 5600 |
| 135 | 319957.9848 | 2576030.0557 | 5602 |
| 136 | 320449.2987 | 2577774.1998 | 5608 |
| 137 | 320409.2490 | 2577796.0277 | 5608 |
| 138 | 320214.1456 | 2577737.3159 | 5596 |
| 139 | 320020.3153 | 2577662.5848 | 5604 |
| 140 | 319828.0217 | 2577589.1862 | 5602 |
| 141 | 319562.1406 | 2577487.9916 | 5600 |
| 142 | 319419.5433 | 2577436.4654 | 5598 |
| 143 | 319542.8711 | 2577481.2798 | 5600 |
| 144 | 319538.3476 | 2577494.0228 | 5600 |
| 145 | 319503.5037 | 2577496.5228 | 5596 |
| 146 | 319515.3611 | 2577463.1200 | 5596 |
| 147 | 319490.7627 | 2577454.7052 | 5596 |
| 148 | 319479.1526 | 2577487.4112 | 5596 |
| 149 | 319453.9250 | 2577462.8219 | 5600 |
| 150 | 319457.5650 | 2577452.5678 | 5600 |



- LEGEND**
- 5560 — EXISTING TOPOGRAPHY (FEET ABOVE M.S.L.)
 - - - 5570 - - - APPROXIMATE ROCK ELEVATION (FEET ABOVE M.S.L.)
 - — — EXISTING FENCE
 - 5560 — PROPOSED BASE GRADING (10' CONTOUR)
 - LIMIT OF LINER SYSTEM
 - [Hatched Box] SPLASH PAD (NOTE 2)
 - [Arrow] SLOPE DIRECTION AND GRADE
 - [Circle with B-1] APPROXIMATE SOIL BORING LOCATION
 - - - - - LEAK DETECTION PIPE TRENCH

- NOTES:**
- EXISTING TOPOGRAPHY OBTAINED FROM DENISON MINES (USA) CORP.
 - SPLASH PAD LOCATION TO BE FIELD SELECTED BY OWNER.

| | | | | |
|---|------|---|-----|-----|
| REV | DATE | DESCRIPTION | DRN | APP |
| <p>Geosyntec consultants 10875 RANCHO BERNARDO RD, SUITE 200 SAN DIEGO, CA 92127 PHONE: 606.674.6559</p> <p>DENISON MINES 6425 S. HIGHWAY 191 P.O. BOX 809 BLANDING, UTAH 84601 PHONE: 866.674.6559</p> | | | | |
| TITLE: BASE GRADING PLAN | | | | |
| PROJECT: CELL 4B WHITE MESA MILL | | | | |
| SITE: BLANDING, UTAH | | | | |
| THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION UNLESS SIGNED. | | DESIGN BY: GTC DATE: DECEMBER 2007 DRAWN BY: MAD CHECKED BY: RF REVIEWED BY: GTC APPROVED BY: GTC | | |
| IN 600077-200 GREGORY T. CONCORAN STATE OF UTAH PROFESSIONAL ENGINEER | | PROJECT NO.: SCD349 FILE: DRAWING NO.: 3 of 7 | | |