

Whirlwind Uranium Mine Construction Approval
40 C.F.R. Part 61, Subpart B
Background Information for Construction Approval

EPA Region 8 reviewed the Application for Construction Approval submitted by Energy Fuels Resources Corporation (“Energy Fuels”) to EPA pursuant to 40 C.F.R. § 61.07 “Application for approval of construction or modification,” entitled “Application for Approval of Construction; Whirlwind Mine; Mesa County; Colorado (Revised March 2011)” (the “Application”). The Application, submitted on March 7, 2011, is for the proposed operation of the Whirlwind Uranium Mine (the “Mine”). The Application states the Mine is expected to produce up to 50,000 tons per year of ore and over 100,000 tons over the lifetime of the mine. Additional documents relied upon in the review of the Application for construction of the tailings impoundments include the “Decision Record, Finding of No Significant Impact, and Final Environmental Assessment for the Whirlwind Mine Uranium Mining Project” produced by the Bureau of Land Management (BLM).¹

The mine will straddle the Colorado and Utah State line. EPA’s approval is for Phase I and Phase II and only applies to the portion of the Mine in Colorado. The State of Utah has authority for the portion of the Mine in Utah, since the State of Utah, Utah Department of Environmental Quality (UDEQ) since UDEQ has been delegated authority for 40 C.F.R. Part 61, Subpart B (40 Fed. Reg. 13912 (March 15, 1995)).

Facility location

The Whirlwind Mine underground uranium mine is located at:

30100 5/10 Road,
Gateway, Colorado 81522

Specifically, the uranium mine Colorado claims lie in:

Section 31, T51N, R19W; Section 6, T50N, R19W;
Sections 25, 26, 35, and 36 of T51N, R20W; and
Sections 1, 2, 11 and 12 of T50N, R20W, New Mexico Principal Meridian

¹http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/grand_junction_field/PDF.Par.16552.File.dat/WhirlwinMineEAFinal.pdf.

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Regulatory Authority

EPA Region 8's authority over the Mine is derived from the Clean Air Act ("CAA"), as amended at 42 U.S.C. § 7401 *et seq.* The radon discharge from the mine is regulated pursuant to 40 C.F.R. Part 61, National Emission Standards for Hazardous Air Pollutants ("NESHAP"), Subpart A – General Provisions ("Subpart A"); and Subpart B – National Emission Standards for Radon Emissions from Underground Uranium Mines ("Subpart B").

Subpart B applies to "the owner or operator of an active underground uranium mine which: (a) Has mined, will mine or is designed to mine over 90,720 megagrams (Mg) (100,000 tons) of ore during the life of the mine; or (b) Has had or will have an annual ore production rate greater than 9,072 Mg (10,000 tons), unless it can be demonstrated to EPA that the mine will not exceed total ore production of 90,720 Mg (100,000 tons) during the life of the mine." (40 C.F.R. § 61.20).

Subpart B requires that the "Emissions of radon-222 to the ambient air from an underground uranium mine shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/y." (40 C.F.R. § 61.22). In addition to the requirements of Subpart B, the requirements in 40 Subpart A apply to Subpart B regulated facilities. Subpart A requires owners or operators to submit to EPA an application for approval for either construction or modification of Subpart B regulated facilities before the construction or modification is planned to commence (40 C.F.R. § 61.07). Energy Fuels submitted the Mine Application for Construction Approval in accordance with Subpart A, 40 C.F.R. § 61.07.

Mine Operations and Proposed Facilities for Approval

Under 40 C.F.R. Part 61, Subpart B, the radon discharge from the mine vents is limited by limiting the radiation exposure of the most exposed resident to 10 millirem per year (mrem/yr) effective dose equivalent. COMP Y-R is the code used by Energy Fuels, as required by 40 C.F.R. § 61.23, to model the dose to the public in mrem/yr. The dose to the public is modeled in COMP Y-R by entering input data including the curie discharge rate of radon from release points (i.e., vents) and meteorological data. Modeling conducted by the Company projects that they will reach the 10 mrem/yr public dose regulatory limit in the sixth year of operation. This projection is based on:

- a. The use of the conservative default input parameters incorporated in the COMP Y-R program;
- b. The use of the *Draft Background Information Document, Proposed Standards for*

- Radon-222 Emissions to Air from Underground Uranium Mining* (EPA 520/1-84/002/2) equation for estimating radon discharges as a function of the tonnage of ore produced which is approximately 500,000 tons over a 10 year period;
- c. No implementation of control methods, such as bulkheading mined out ore bodies.

To avoid exceeding the dose limit, the Construction Approval limits the total Curie (Ci) discharge for radon to 1,100 Ci annually from this facility. This annual discharge limit was determined using COMP Y-R and corresponds to a dose of 10 mrem/yr to the nearest member of the public. The owner or operator proposes to collect site-specific data to justify any future request to increase the Curie discharge limit, showing that they will be in compliance with the 10 mrem/yr standard. Prior to adopting a new radon discharge limit, the supporting documents based on site-specific data must be submitted to the Administrator for review and approval. The detailed derivation of the Ci discharge limit is provided in Attachment 1 to this document and was taken from the Energy Fuels Application. The proposed locations of the vents are provided in Attachment 2. In order to prevent an exceedance of the 10 mrem/yr standard, if radon measurements exceed 75% of the discharge limit (i.e., 75% of the 10 mrem/yr standard) Energy Fuels must implement the appropriate corrective action(s) outlined in Section II.C of the Construction Approval and further described in the Energy Fuels Application.

Energy Fuels may account for the occupancy time of a receptor when calculating the dose by using EPA's *Guidance on Implementing the Radionuclide NESH PS* (1991). If Energy Fuels elects to model a reduced occupancy time for exposure to the nearest resident, they shall submit to EPA for review and approval a plan detailing how the reduced occupancy time is verified. The plan must be approved by EPA prior to it being used in the annual report required by 40 C.F.R. § 61.24.

Effective Date of Approval

EPA's approval of the construction of the Whirlwind Mine shall be effective immediately upon receipt of the signed Approval to Construct by the Applicant.

Paperwork Reduction Act

Any requirements established by this Approval for the gathering and reporting of information are not subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act, because this Approval is not an "information collection request" within the meaning of 44 U.S.C. §§ 3502(4), 3502(11), 3507, 3512 and 3518. Furthermore, this Approval and any information-gathering and reporting requirements established by this Approval are exempt from OMB review under the Paperwork Reduction Act because it is directed to fewer than ten persons, 44 U.S.C. §§ 3502(4) and 3502(11); 5 C.F.R. § 1320.5(a).