



Department of Energy
 Albuquerque Operations Office
 P. O. Box 5400
 Albuquerque, New Mexico 87115

P. LOHAUS
 LLWM

Dear Friend:

Enclosed is the U.S. Department of Energy's (DOE) Environmental Assessment of Remedial Action at the Spook, Wyoming, Uranium Mill Tailings Site (DOE/EA-0345).

In November 1978, Congress enacted Public Law 95-604, the Uranium Mill Tailings Radiation Control Act of 1978. The Act authorizes the DOE to enter into cooperative agreements with the affected states and Indian tribes in order to establish assessment and remedial action programs at inactive uranium mill tailings sites, including the Spook site. The Act stipulates that the Department will meet the applicable cleanup and disposal standards promulgated by the Environmental Protection Agency. It further states that the Nuclear Regulatory Commission is to concur in all major decisions and to license the maintenance and monitoring of the final disposal site.

The Environmental Assessment was prepared in compliance with the National Environmental Policy Act to assess the environmental impacts of the Department's proposal to perform remedial action at the Spook site and its related vicinity properties. As identified in the Environmental Assessment, the Department's action is stabilization of the residual radioactive material at the site.

The Department determined in April 1989, that the subject action was not a major Federal action significantly affecting the quality of the human environment, and as such, the preparation of an environmental impact statement was not required. The basis for this determination is presented in the enclosed Finding of No Significant Impact issued by the Assistant Secretary for Environment, Safety and Health. Remedial action at Spook commenced on April 20, 1989, after approval of the Environmental Assessment and is scheduled for completion by October 1989. We apologize for the delay in dissemination of the enclosed documents.

Sincerely,

Mark L. Matthews

Mark L. Matthews
 Acting Project Manager
 Uranium Mill Tailings Project Office

Enclosures (2)

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U.S. DEPARTMENT OF ENERGY

Finding of No Significant Impact for the proposed remedial action at the Spook Uranium Mill Tailings Site, Converse County, Wyoming

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: The U.S. Department of Energy (DOE) has prepared an environmental assessment (EA) (DOE/EA-0345) on the proposed remedial action for the Spook Uranium Mill Tailings site located 48 miles northeast of Casper, Wyoming, in Converse County, Wyoming. Based on the analysis in the EA, the DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.). This Finding of No Significant Impact (FONSI) is being issued by the DOE to document that the proposed action for the Spook site has been evaluated in an EA and that the Department does not conclude that there is a need to prepare an environmental impact statement.

BACKGROUND: On November 8, 1978, the Uranium Mill Tailings Radiation Control Act (UMTRCA), Public Law 95-604 (PL95-604), was enacted in order to address a Congressional finding that uranium

mill tailings located at inactive processing sites may pose a potential health hazard to the public. Title I of the UMTRCA authorized the DOE to enter into cooperative agreements with affected states or Indian tribes to clean up those inactive sites contaminated with uranium mill tailings and required the Secretary of Energy to designate sites to be cleaned up. On November 8, 1979, the DOE designated 24 inactive processing sites for remedial action under Title I of the UMTRCA, including an inactive uranium mill tailings site designated as the Spook site in Converse County, Wyoming (44 FR 74891-92) (December 18, 1979)

The UMTRCA also required the U.S. Environmental Protection Agency (EPA) to promulgate standards for remedial action at all inactive mill sites. The purpose of these standards is to protect the public health and safety and the environment from radiological and nonradiological hazards associated with residual radioactive materials at the sites. The final standards (40 CFR Part 192) were published on January 5, 1983, and became effective on March 7, 1983. However, on September 3, 1985, the United States Court of Appeals for the Tenth Circuit remanded groundwater standards 40 CFR 192.2(a)(2)-(3). Proposed draft standards were issued by the EPA on September 23, 1987. Under the UMTRCA, the DOE must comply with the proposed groundwater standards until the standards are promulgated in final form. The remedial action proposed for the Spook site would not preclude subsequent design enhancements if needed to achieve groundwater compliance and would not limit the selection of reasonable groundwater restoration methods that may be

necessary when final standards are promulgated. When the final EPA standards are promulgated, the DOE will evaluate the groundwater protection requirements and undertake such action as is necessary to ensure that the final standards are met. The need for and extent of aquifer restoration will be evaluated in a separate NEPA process.

Under the UMTRCA, all remedial actions must be selected and performed with the concurrence of the NRC. The NRC has not and does not intend to issue site specific licenses applicable to the Title I remedial actions at each inactive uranium mill tailings site. They will, instead, issue a general license applicable to the 24 inactive sites for long-term surveillance and maintenance after the remedial actions are complete.

On January 30, 1984, the DOE and the state of Wyoming entered into a cooperative agreement under the UMTRCA. The cooperative agreement set forth the terms and conditions for remedial action efforts including the DOE's development of a remedial action plan (in concurrence with the state of Wyoming), the DOE's preparation of an appropriate environmental document, real estate responsibilities, and other concerns.

In addition to being designated for cleanup under the UMTRCA, the Spook site was determined to be eligible for reclamation by the state of Wyoming Abandoned Mine Land (AML) Program under the Surface Mining Control and Reclamation Act of 1977 (SMCRA), Public Law 95-87. The SMCRA authorized the U.S. Department of the Interior to

reclaim abandoned mine lands and establish the Office of Surface Mining Reclamation and Enforcement to review individual state programs under the AML Program. However, the AML Program funds are not authorized for activities that are subject to other regulatory authorities and budgets. In consideration of the individual UMTRCA and AML Program requirements and associated cost-savings, a joint remedial action between the state of Wyoming and the DOE is proposed for the Spook site.

SITE DESCRIPTION: The Spook site consists of an inactive open pit uranium mine; nine piles of overburden materials, which originated from the pit; a uranium mill tailings pile; unprocessed ore piles; a mill yard area that contains a minor amount of mining debris; and adjacent windblown contaminated areas. The tailings pile extends from the ground surface to the bottom of the pit. The tailings cover about 3.2 acres on the ground surface and 1.8 acres in the pit. Contaminated materials are also found in the mill yard and windblown contaminated areas adjacent to the tailings pile. Small piles of unprocessed ore are 0.33 mile north of the open pit and cover approximately 0.8 acre.

When the Spook pit was excavated, two ephemeral drainages west of the pit were impounded and formed three ephemeral ponds. Two of these ponds remain dry most of the year; the third pond was used for sulfuric acid dumping south of the Spook pit and contains high levels of thorium-230 (Th-230), among other contaminants. In this acid disposal pond, Th-230 contamination extends to a depth of 72

feet. The surface extent of contamination is the pond itself, covering about 0.6 acre, while the areal extent of deep contamination is a circle with a radius of 200 feet, covering 2.9 acres.

The overburden piles consist of a mixture of alluvium and spoil materials from the Spook pit. Coarse sandy materials derived from the uranium host sandstone and finer-grained materials derived from the overlying alluvium, as well as waste rock, are present. Elevated selenium and radium levels are present in some of the piles.

The total disturbed area covers 135.7 acres and contains an estimated 240,000 cubic yards (cy) of milling related contaminated materials and 1,800,000 cy of overburden materials. The Spook site is remote from most human activity and is situated on private land owned by two ranches in Converse County, Wyoming. The nearest residence is 1.4 miles southwest of the site and there is an average of ten permanent residents within a three mile radius of the site. The majority of the Spook site is fenced; however, the open pit remains a hazard to wandering livestock and wildlife.

PROPOSED ACTION: The remedial action would consist of the consolidation of all milling related contaminated materials in a single pile at the bottom of the Spook pit. These materials would be underlain by a three foot thick foundation layer. Material for the foundation layer would be taken selectively from the overburden piles. Groundwater would be 18 feet below the base of the

stabilized pile.

The stabilized pile would be covered with a minimum 1.5-foot-thick layer of low-permeability overburden soil materials and then by ten feet of the coarsest overburden materials. The low permeability layer would help inhibit groundwater percolation while the coarse layer would encourage lateral flow around the stabilized pile. The remainder of the pit would be filled with overburden material and the surface would be graded for drainage control. Between 49 and 65 feet of backfill would be placed over the tailings and would serve as a radon barrier. An erosion protection barrier would not be needed at the site because the pile, covered with overburden and buried beneath the ground surface, would be geomorphically stable and would not be subject to erosion processes. Once the pit is filled to the surrounding grade, the entire disturbed area will be contoured and seeded with endemic plant species. It is anticipated that the remedial action would be completed within one construction season of 28 weeks.

The DOE would hold the license to the final 13-acre restricted site and would be responsible for surveillance and maintenance of the site. The final site license would be awarded to the DOE by the NRC after the NRC has approved the final site surveillance and maintenance plan. The AML Program responsibilities are limited to filling the pit, recontouring disturbed surface areas, and establishing a stable vegetative cover. After an AML three-year monitoring program is complete, the DOE will assume total

responsibility for the final restricted site (13 acres). In addition, a 200-foot subsurface buffer area around the pit would be controlled by the DOE to prevent subsurface mineral development adjacent to the pile. During the three-year AML Program monitoring period, the DOE would also have surveillance and maintenance responsibilities.

FINDINGS: The DOE has considered comments and concerns from cooperating agencies as well as the AML Program throughout the NEPA and engineering design process. In general, concerns were related to groundwater issues, engineering design aspects, and the identification of DOE and AML program responsibilities. The Spook EA will satisfy the NEPA requirements for both the AML and the DOE programs.

The EA discusses the environmental impacts resulting from the proposed remedial action and identifies mitigation measures that would be implemented to assure that the effects are not significant. The FONSI for stabilization at the Spook tailings site is based on the following findings which are supported by the information and analyses in the EA.

- o Radiation related health effects: There would be no exposure to direct gamma radiation or airborne radioactive particulates after remedial action. Due to the thickness of the fill materials covering the pile, radon releases from the stabilized site would be 4.49 picocuries per square meter per second (pCi/m^2) (vs. the

EPA standards of 20 pCi/m²). There would be an estimated 3.6×10^{-4} health effects to remedial action workers from radon daughter, gamma, and airborne particulate exposures, and 2.1×10^{-6} health effects to the general population during the 28-week remedial action. After completion of the remedial action, an estimated 0.63×10^{-6} health effect per year may occur as compared to 0.59×10^{-5} health effect per year that may occur without any type of remedial action. The calculations for the no action alternative do not consider the dispersion of the tailings by natural erosion or by people; thus, the total excess health effects may be greater.

The DOE would closely monitor the release of radon and airborne radioactive particulates during the remedial action. The release of radon and airborne radioactive particulates would be reduced by dampening contaminated material with water or chemical dust suppressants and by limiting the handling of contaminated material during adverse weather conditions. Drainage controls would be constructed to prevent contaminated water from leaving the site.

Based on the above information, it was determined that the radiation impacts from the proposed action would not be significant.

- o Air quality impacts: Activities related to the remedial action were predicted to generate maximum total suspended particulate

(TSP) concentrations of 386 micrograms/meter³ (microg/m³) over a 24-hour period; these levels would exceed the primary Federal and state standards. However, the modeling used to develop the TSP concentrations was based on conservative assumptions that did not include the benefit of mitigative measures. For example, a Fugitive Dust Plan has been developed for the Spook remedial action and has been approved by the state of Wyoming. Additionally, an air quality monitoring program is a standard operating procedure at UMTRA Project sites. It is highly unlikely that either Federal or state standards for any air quality component would be exceeded as a result of remedial action activities at the Spook site.

- o Surface water: Surface water runoff as a result of the remedial action activities would be minimal because the remedial action design includes the construction of drainage and erosion controls. No surface water bodies would be affected by remedial action activities.

- o Groundwater quality: Groundwater occurs in the upper and lower sandstone units of the Tertiary Wasatch Formation beneath the Spook site. These two sandstone units are separated by a thick, laterally extensive shale aquitard. Groundwater in the lower sandstone unit is not contaminated as a result of milling operations and existing contaminant concentrations are below the proposed EPA maximum concentration limits (MCLs). Groundwater in the upper sandstone unit is characterized by naturally

occurring background concentrations of uranium and selenium which exceed the MCLs. Percolation of leachate from the tailings into the upper sandstone unit has resulted in concentrations of uranium, selenium, and nitrate which exceed the proposed EPA MCLs and background.

Groundwater flow and transport modeling was used to predict the effects of the proposed remedial action on downgradient water quality in the uppermost aquifer at the Spook site. Results of the modeling, using the anticipated leachate percolation rate of 3×10^{-8} cm/s, indicate that the predicted concentrations of hazardous constituents attributable to leachate percolation from the stabilized disposal cell would be less than the natural range of background concentrations in groundwater (in the case of uranium and selenium), or below the proposed EPA MCLs (in the case of nitrate).

The proposed EPA regulations for UMTRA Project sites have a provision for obtaining supplemental standards for groundwaters designated Class III. At the Spook site, groundwater can be classified as Class III based on the criteria that the groundwater contains widespread ambient contamination and that this contamination cannot be cleaned up using methods reasonably employed by public water supply systems. Additional beneficial uses of the aquifer, such as stock watering, are also precluded due to high concentrations of selenium. Any application of supplemental standards at the Spook site will be protective of

human health and the environment because of a lack of exposure pathways for contaminants in groundwater. Based on the above, it was determined that the impacts on groundwater would not be significant. A separate NEPA process will evaluate the need for and extent of any aquifer restoration activity. Construction of the proposed disposal unit would not preclude or preempt future evaluation and implementation of groundwater cleanup or control activities.

- o **Wildlife:** This remedial action would result in an improvement of wildlife habitat due to reclamation of this highly disturbed site. There would, however, be potential short-term losses of habitat to resident wildlife.
- o **Vegetation:** There would be short-term losses of all existing vegetation, which would result from clearing the contaminated areas. A long-term positive benefit would occur from reseeding with endemic plant species.
- o **Threatened and endangered species (T&E):** There are no T&E species known to be present within the areas that would be affected by remedial action activities.
- o **Land use:** There would be a permanently restricted site area of 13 acres and a release of 122.7 acres for unrestricted use. Additionally, a 200-foot subsurface buffer area adjacent to the former pit would be acquired to prevent subsurface mineral development from affecting the integrity of the stabilized

tailings.

- o **Historical and cultural resources:** There are no known eligible archaeological or historical sites in the area that would be disturbed.
- o **Socioeconomic:** There would be short-term increases in local employment related to the UMTRA Project and projected local expenditures of \$4,127,000.
- o **Transportation:** There would be short-term (28 weeks) increases in traffic on access roads to the Spook site by commuting remedial action workers; however, all roads could easily accommodate the additional traffic related to the remedial action without adversely affecting local use.
- o **Nonradiological accidents:** The remedial action would involve the extensive use of heavy construction equipment on the site. Accidents associated with the operation of construction equipment and materials handling activities could occur. Off-site accidents would primarily occur while remedial action workers commute to the Spook site. The total projected accidents that may occur as result of the remedial action are estimated at 0.80 injury accident and 0.024 fatal accident.

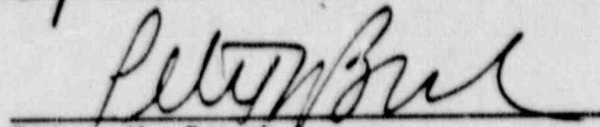
In summary, based on the analyses in the EA, the DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment within

the meaning of the NEPA of 1969 (423 U.S.C. et seq.). Therefore, the preparation of an environmental impact statement is not required.

SINGLE COPIES OF THE EA ARE AVAILABLE FROM: Mark Matthews, Acting UMTRA Project Manager, U.S. Department of Energy, UMTRA Project Office, 5301 Central Avenue, N.E., Suite 1720, Albuquerque, New Mexico 87108, (505) 844-3941.

FOR FURTHER INFORMATION, CONTACT: Carol Bergstrom, Director, Office of NEPA Project Assistance, Office of the Assistant Secretary for Environment, Safety and Health, Room 3E-080, Forrestal Building, Washington, D.C. 20585, (202) 586-4600.

Issued at Washington, D.C. April 6, 1989.


Peter N. Brush
Acting Assistant Secretary
Environment, Safety and Health