Author: Robert Bleil at DOEGJPO
Date: 04/28/97 11:25 AM
Priority: Normal
Receipt Requested
TO: Lila Duncan
CC: Sam Marutzky
CC: Lynn Pavelka-Zarkesh
Subject: Uranium Mill Tailings Remedial Action (UMTRA) Gr
---------- Message Contents ----------

Lila,

Please print this and place it in the Record File under GWADM 11.6.2

Thanks,

Rob

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DEPARTMENT OF ENERGY

Uranium Mill Tailings Remedial Action (UMTRA) Ground Water Project

AGENCY: Department of Energy.

ACTION: Record of decision.

SUMMARY: The Department of Energy (DOE) is issuing this Record of Decision regarding its programmatic decision for the Uranium Mill Tailings Remedial Action (UMTRA) Ground Water Project. This decision enables DOE to take action under its UMTRA Ground Water Project, and is based on the environmental analyses in the Final Programmatic Environmental Impact Statement (PEIS) for the Uranium Mill Tailings Remedial Action Ground Water Project (DOE/EIS-0198), which DOE issued in December 1996. The Nuclear Regulatory Commission, the Navajo Nation, the Hopi Tribe, the State of Colorado and the State of Texas cooperated in the preparation of the PEIS.

Under Title I of the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), DOE is responsible for performing remedial action to bring 22 designated former uranium mill processing sites into compliance with applicable Environmental Protection Agency (EPA) standards for milling-related contamination (40 CFR part 192). Under DOE's UMTRA Surface Project, DOE has completed surface remediation at 20 sites and work is underway at the remaining two sites. These sites are located in nine States and are on or near four Indian Tribal lands. The shallow ground water at most of these sites has been contaminated with uranium, nitrates, and other milling-related contaminants. The purpose of the UMTRA Ground Water Project is to protect human health and the environment by meeting EPA's ground water standards, which were issued January 11, 1995.

DOE has decided to implement the Proposed Action for conducting the Ground Water Project. The Proposed Action, which was identified as DOE's preferred alternative in the final PEIS, is intended to establish a consistent risk-based framework for implementing the UMTRA Ground Water Project and determining appropriate ground water compliance strategies for complying with EPA ground water standards at the UMTRA project former processing sites. Under this preferred alternative, DOE may use active, passive, and no-remediation strategies to comply with the ground water standards as conditions warrant at specific sites.

Before making site-specific decisions to implement the preferred alternative for the Ground Water Project, DOE will prepare appropriate further National Environmental Policy Act (NEPA) documentation. DOE encourages affected States, tribes, local government agencies and members of the public to continue to participate in the site-specific decision making processes for the Ground Water Project.

FOR FURTHER INFORMATION CONTACT: Further information on the final PEIS can be obtained by contacting Mr. Donald R. Metzler, Grand Junction Office, Department of Energy, 2567 B 3/4 Road, Grand Junction, Colorado

81503, telephone 970-248-7612. Information about the Department of Energy National Environmental Policy Act process can be obtained by contacting Carol M. Borgstrom, Director, Office of NEPA Policy and Assistance, EH-42, U.S. Department of Energy, 1000 Independence Avenue SW, Washington, D.C. 20585, telephone 202-586-4600, or leave a message at 800-472-2756.

SUPPLEMENTARY INFORMATION: DOE has prepared this Record of Decision pursuant to the Council on Environmental Quality Regulations for implementing the procedural provisions of NEPA (40 CFR parts 1500-1508) and DOE's NEPA regulations (10 CFR part 1021). This Record of Decision is based on the Final Programmatic Environmental Impact Statement for the Uranium Mill Tailings Remedial Action Ground Water Project (PEIS) (DOE/EIS-0198, issued December 1996). The Nuclear Regulatory Commission (NRC), the Navajo Nation, the Hopi Tribe, the State of Colorado and the State of Texas participated as cooperating agencies in the preparation of this PEIS.

A Notice of Intent was published in the Federal Register on November 18, 1992 (57 FR 54374), announcing that the Department would prepare a PEIS to examine programmatic alternatives for conducting the UMTRA Ground Water Project at former uranium processing sites. Dates, locations, and times for public scoping meetings were announced locally and published in the Federal Register on February 8, 1993 (58 FR 7551). Nineteen public scoping meetings in 16 communities were held between November 18, 1992, and April 15, 1993, to solicit public comment regarding the scope and content of the PEIS. The UMTRA Ground Water Project PEIS Implementation Plan (DOE/AL/62350-72D, March 31, 1994) summarized the comments received during scoping and described how the comments would be addressed in the PEIS.

A Notice of Availability of the draft PEIS was published in the Federal Register on May 17, 1995 (60 FR 26417). Nine public hearings were conducted in communities near tailings sites between June 7 and 28, 1995, to solicit public comment on the draft PEIS. Volume II of the final PEIS identifies and responds to the 576 comments received during the public comment period.

Alternatives Considered

Proposed Action (Preferred Alternative)

Under the proposed action, which was identified in the draft PEIS as DOE's preferred alternative, DOE would use ground water compliance strategies tailored for each site to achieve conditions that are protective of human health and the environment and that meet EPA ground water standards. The proposed action would consider ground water compliance decisions in a step-by-step approach, beginning with consideration of a ''no-remediation'' strategy and proceeding, if necessary, to consideration of passive strategies, such as natural flushing with compliance monitoring and institutional controls, and finally to consideration of more complex, active ground water methods, if needed. For example, under the proposed action, if a site risk assessment and Site Observational Work Plan

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indicate that the strategy of ''no-remediation'' would be protective of human health and the environment, a more complex and potentially environmentally disruptive strategy involving active cleanup methods would not be necessary.

The proposed action is intended to establish a consistent risk-based framework for implementing the UMTRA Ground Water Project and determining appropriate ground water compliance strategies for complying with EPA ground water standards at the UMTRA Project former

processing sites. In determining site-specific ground water compliance strategies DOE will consider: site-specific ground water conditions; human and environmental risks; the views of tribes, States and local communities; and cost. The proposed action as well as all the other alternatives discussed below except for ''no action,'' are sufficiently flexible to allow DOE to conduct interim actions, such as providing alternate water supply systems, should they be necessary in order to reduce risk and/or support institutional controls. The proposed action would also allow the consideration of new ground water cleanup methods as they become available.

No Action Alternative

The Council on Environmental Quality regulations for implementing NEPA require assessment of the no action alternative (40 CFR 1502.14(d)), even if the agency is under a legislative mandate to act, to enable decision makers to compare the magnitude of environmental effects of the action alternatives (51 FR 15618 April 25, 1986). Under the no action alternative, no further activities would be carried out to comply with EPA standards at the inactive UMTRA Project former processing sites.

Active Remediation to Background Levels Alternative

Under this alternative, ground water at the former processing sites would be restored to background levels or to levels as close to background as possible using active ground water remediation methods without regard to existing risk or cost of implementation. The philosophy behind this alternative is an assumption that ground water at most of the former uranium processing sites was of better quality before uranium processing activities occurred and that the ground water should be restored to its preprocessing quality. If this alternative were implemented, most of the UMTRA Project sites would require the use of active ground water remediation methods such as gradient manipulation, ground water extraction and treatment, or in situ ground water treatment, regardless of the quality of the unaffected background ground water. The specific active remediation method at each site would be determined using the observational approach and evaluation of site-specific data in the pertinent Site Observational Work Plans.

Passive Remediation Alternative

Under this alternative, only passive remediation strategies would be used to meet the EPA ground water standards.<SUP>1 The passive remediation strategies are: (1) Performing no remediation at sites that qualify for supplemental standards or alternate concentration limits as defined below or sites where contaminant concentrations are below maximum concentration limits or background levels, or (2) relying on natural flushing. Natural flushing means allowing the natural ground water movement and geochemical processes to decrease contaminant concentrations. This alternative differs from the no action alternative in that it includes site characterization, monitoring, and risk assessment activities.

<SUP>1 EPA's ground water protection standards provide three alternative approaches to determining site-specific cleanup requirements. Concentrations of certain contaminants that are within ''maximum concentration limits'' or at background levels are acceptable without further consideration. Alternatively, DOE may apply ''alternate concentration limits'' that will not pose a substantial present or potential hazard to human health or the environment under site-specific circumstances. Finally, when certain

criteria are met (e.g., ground water restoration is technically impracticable), DOE may develop and apply ''supplemental standards'' in lieu of the otherwise applicable standards.

Under the first strategy of this alternative, the DOE would apply supplemental standards or alternate concentration limits if maximum concentration limits and/or background concentrations were exceeded. If supplemental standards or alternate concentration limits are to be applied at any site, concurrence by the NRC would be required.

Under the second strategy of this alternative, natural flushing would be used to achieve background levels or maximum concentration limits if supplemental standards and alternate concentration limits are not applied. Concurrence by the NRC would be required. According to the EPA standards, natural flushing can be used if it is shown to be protective of human health and the environment, if it will meet the EPA standards within 100 years, and if it complies with other provisions that EPA established for its use. However, natural flushing may not always meet the EPA standards in 100 years, and may not be protective of human health and the environment at all sites. Therefore, if the passive remediation alternative were selected, DOE may not comply with the EPA standards at some sites.

The specific passive ground water compliance strategy selected for each site would be determined using the observational approach and evaluation of data gathered and included in the pertinent Site Observational Work Plan. Active ground water remediation methods would not be used under this alternative, even if the EPA standards cannot be met by passive methods.

Existing Conditions

The designated UMTRA Project processing sites were active for varying lengths of time from the 1940s into the 1970s. These sites, the surrounding areas, and the underlying ground water constitute the affected environment for this PEIS. Minority or low income groups near UMTRA sites that have the potential for disproportionately high and adverse effects include those near the Tuba City and Monument Valley, Arizona; Shiprock, New Mexico; Mexican Hat, Utah; and Riverton, Wyoming, sites. Land contaminated by uranium mill tailings and other contaminants associated with UMTRA Title I former processing sites ranged from a low of 21 acres (ac) (8 hectares (ha)) at the Spook, Wyoming, site to a maximum of 612 ac (248 ha) at the Ambrosia Lake, New Mexico, site. The amount of contaminated materials ranged from 85,000 cubic yards (yd<SUP>3) (65,000 cubic meters (m<SUP>3)) at the North Continent Slick Rock, Colorado, site to 5,764,000 yd<SUP>3 (4,407,000 m<SUP>3) at the Falls City, Texas, site. The total amount of contaminated material at the sites is 39,000,000 yd<SUP>3 (30,000,000 m<SUP>3). As a result of uranium processing, contaminants have entered the shallow ground water at most of the UMTRA Project sites. Some of the more common contaminants at UMTRA sites that exceed maximum concentration limits under EPA's standards include but are not limited to molybdenum, nitrate, selenium, and uranium.

DOE currently estimates that approximately 10 billion gallons (gal) (39 million m<SUP>3) of ground water are contaminated. One site (Lowman, Idaho) shows no sign of contamination related to processing activities. The site with the largest amount of contamination, Gunnison, Colorado, has an estimated 1.9 billion gal (7.0 million m<SUP>3) of contaminated ground water.

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Surface remediation of the designated sites has been in progress since the mid-1980s; surface remediation is complete at 20 sites and

under way at the remaining two sites. Two additional sites, in Belfield and Bowman, North Dakota, were included in the PEIS analysis but at the request of the State are not scheduled for surface remediation. These two sites therefore will not be included in the DOE Ground Water Program. Affected States are required by UMTRCA to share 10 percent of remedial action costs.

Impacts Analysis

The PEIS provides a qualitative analysis of potential impacts of the alternative ground water compliance strategies and compares the relative potential impacts of the alternatives. More detailed site-specific quantitative impact assessments will be provided in the NEPA documents that tier off the PEIS. Tiering is process in which broad environmental issues are analyzed in an initial NEPA document (the PEIS in this case) to facilitate subsequent NEPA reviews of narrower scope (site-specific reviews in this case).

To give more weight to impacts that may have more significant consequences (for example, human health), long-term and short-term impacts are compared separately in the PEIS. Long-term impacts are those that would occur from leaving contaminated ground water in place or from implementing institutional controls for an extended period of time. Short-term impacts would usually occur only during remediation activities. In general, short-term impacts would be less significant than long-term impacts, because most (for example, habitat destruction, noise, and dust emissions) would be relatively minor and temporary and could be mitigated. While these impacts are of concern, there is greater concern regarding potential long-term health and environmental effects.

Potential long-term impacts could arise under the following circumstances:

<bullet> If the contaminated ground water did not comply with EPA standards and its use were not sufficiently controlled. This could occur under the no action alternative and the passive remediation alternative.

<bullet> If the ground water compliance strategy were not protective of human health and the environment at all sites. This could occur under the no action alternative and passive remediation alternative.

<bullet> If institutional controls were implemented and were needed for longer than they should reasonably be relied upon (i.e., in excess of 100 years under the EPA standard). This could occur under all the alternatives except the no action alternative, but is unlikely to occur under the proposed action and active remediation alternatives.

If the no action alternative were selected, significant adverse impacts to human health and the environment could result. Under this alternative, the public could be exposed to hazardous contaminants by drinking contaminated ground water. Further, minority and/or low-income communities would be disproportionately impacted under the no action alternative because such communities comprise the majority of the population near several UMTRA Project sites. Adverse impacts to the environment could potentially occur if contamination enters the food chain (such as through livestock or produce) or affects sensitive habitats (such as wetlands) or threatened or endangered species. These potentially significant adverse impacts are not expected to occur under the proposed action or the active remediation to background levels alternative because these alternatives are intended to comply with EPA standards at all UMTRA Project sites in a reasonable timeframe. In addition, when required, surface and ground water monitoring would take place before, during, and after implementation of the proposed action and the active remediation to background levels alternative to ensure the public is not exposed to existing or potential surface and ground water contamination.

Implementation of the passive remediation alternative also could result in potential exposure of humans and the environment to hazardous contaminants because institutional controls may not always effectively restrict access to contaminated ground water. Under the passive remediation alternative, no active remediation of contaminated ground water would occur even if such a hazard were identified. In contrast, under both the proposed action and active remediation to background levels alternatives, DOE would use hydrogeologic data and risk assessments to identify the need for implementing active remediation strategies to mitigate risks.

While no active remediation would occur under this alternative, the passive remediation alternative could result in institutional controls for more than 100 years and could result in potentially significant long-term land use and social and economic impacts associated with access restrictions at contaminated sites. In contrast, the proposed action and the active remediation to background levels alternatives would implement strategies intended to achieve ground water compliance within 100 years.

In summary, the proposed action and active remediation to background levels alternatives are most effective in protecting human health and the environment from the contaminated ground water at the UMTRA Project sites. Short-term adverse environmental impacts associated with construction and operation of ground water remediation systems (e.g., habitat destruction, noise and dust emissions) would occur under both of these alternatives; such impacts would likely be greater under the active remediation alternative because remediation systems would be employed at every site. For all the reasons stated above, DOE regards both of these alternatives as environmentally preferable to the no action and passive remediation alternatives. The proposed action likely would be more cost effective than the active remediation alternative because it relies on less costly passive ground water compliance strategies at sites where these strategies can be shown to be protective of human health and the environment. The active remediation alternative would be the most costly option. Both it and the preferred alternative would result in compliance with the EPA ground water standards, but the active remediation alternative, with its reliance on active ground water remediation, would provide no substantial additional benefits to human health and the environment. Further, active remediation technologies may not always achieve background concentrations of contaminants within 100 years at former uranium processing sites.

Decision

The Department has decided to implement the proposed action, which was identified as the Department's preferred alternative in the draft PEIS. This approach provides a health and environmental risk-based framework for implementing the UMTRA Ground Water Project and for determining appropriate ground water compliance strategies at the UMTRA Project former processing sites.

The Department will use a logic framework established by the proposed action to identify the appropriate specific ground water compliance strategy or strategies for a site to ensure compliance with EPA standards and the protection of public health and the environment.

The first step in the decision process will be to determine whether the uranium processing activities at a specific site have resulted in ground

water contamination exceeding background levels or maximum concentration limits. If ground water contamination has not exceeded these standards and is not expected to do so in the future, remediation

will not be required.

Pursuant to the EPA standards, if ground water has been contaminated by uranium processing activities and the contamination exceeds background levels or maximum concentration limits, the next step will be to determine whether compliance with EPA ground water standards could be achieved by applying supplemental standards under 40 CFR 192.21(g), based on a determination that the ground water met EPA's definition of ''limited use ground water.'' ''Limited use ground water'' means ground water that is not a current or potential source of drinking water because of: high concentration of dissolved solids; ambient contamination unrelated to milling operations that cannot reasonably be cleaned up; or poor aquifer yield (40 CFR 192.11(e)). If limited use ground water is shown to exist and if supplemental standards are protective of human health and the environment, no site-specific remediation will be required. If supplemental standards based on limited use ground water is not applicable, the next step will be to determine whether alternate concentration limits apply.

If alternate concentration limits are protective of human health and the environment, alternate concentration limits will be applied. If not, it will be necessary to determine whether the contaminated ground water plume(s) will qualify for supplemental standards which, under 40 CFR 192.21(b) of the EPA ground water standards, may be appropriate if remediation will cause more environmental harm than benefit. At some sites where supplemental standards or alternate concentration limits may be applied, ground water monitoring and institutional controls may be necessary to ensure that the application of alternate concentration limits or supplemental standards will continue to be protective of human health and the environment. In addition, when limited-use ground water is present, supplemental standards must ensure that current and reasonably projected uses of the affected ground water are preserved.

If supplemental standards will not be protective, the next step will be to determine whether natural flushing (attenuation) will bring the contaminated ground water into compliance (i.e., within maximum concentration limits, background levels, or alternate concentration limits) within 100 years. Natural flushing could be used if DOE determines and NRC concurs that institutional controls could be implemented, maintained, and enforced during the natural flushing period; that this strategy is protective of human health and the environment; and that all other EPA provisions are met.

If natural flushing will not be protective, it will be necessary to determine whether natural flushing combined with active remediation methods will meet the EPA ground water standards and will be protective of human health and the environment. If so, a two-part strategy will be implemented. Active remediation methods will first be used for a short time to remove the most contaminated ground water in a discrete area, and then natural flushing will occur. When appropriate, DOE would use active methods that have low operational and maintenance requirements, such as gradient manipulation or geochemical barriers, in conjunction with natural flushing.

Site characterization data may show that natural flushing combined with active remediation will not result in ground water quality that is protective of human health and the environment. If that is the case, the next step in the framework will be to determine whether active ground water remediation techniques will meet the EPA ground water standards, and if so, to implement these techniques. Several methods of active ground water remediation could be used, including gradient manipulation, ground water extraction, and in situ ground water treatment. The active remediation methods could be used individually or in combination with other cleanup methods. If active remediation results in compliance with the EPA standards, remedial action will be complete. If these methods do not result in compliance, supplemental standards based on technical impracticability of remediation will be applied, along with institutional controls where necessary.

Site-specific NEPA documentation will be prepared to evaluate the impact(s) from alternative strategies for implementing the programmatic decision described above. In accordance with DOE policy, DOE will solicit input from the public, local organizations, and educational institutions on issues that should be identified, considered, and analyzed, and will conduct public meetings for that purpose in the affected communities. Furthermore, DOE will adopt all practicable means to avoid or minimize environmental harm during site-specific activities.

Issued in Washington, DC, on April 21, 1997.
Alvin L. Alm,
Assistant Secretary for Environmental Management.
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