

## POLICY ISSUE INFORMATION

July 8, 2005

SECY-05-0123

FOR: The Commissioners

FROM: Luis A. Reyes  
Executive Director for Operations

SUBJECT: STATUS OF THE DEVELOPMENT OF MEMORANDA OF  
UNDERSTANDING WITH NEBRASKA AND WYOMING, REGARDING  
THE REGULATION OF GROUNDWATER PROTECTION AT THEIR *IN  
SITU* LEACH URANIUM RECOVERY FACILITIES

PURPOSE:

To inform the Commission about the status of the U.S. Nuclear Regulatory Commission (NRC) staff's actions to develop Memoranda of Understanding (MOUs) that would allow the States of Nebraska and Wyoming to take lead responsibility for implementing regulation of groundwater protection at *in situ* leach (ISL) uranium recovery facilities located in these States.

BACKGROUND:

For several years, the staff has been pursuing an initiative to eliminate or reduce the overlapping regulation of groundwater protection provided by the NRC and the non-Agreement States at operating ISL facilities. In this regard, the inefficiencies associated with overlapping regulation are expected to increase, with the market price for "yellowcake" (uranium oxide,  $U_3O_8$ ) trending upwards in recent years. With this trend, uranium recovery licensees in both Nebraska and Wyoming have indicated interest in submitting license amendment applications for new satellite ISL facilities, within the next year.

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In SECY-03-0186, the staff presented several options for reducing or eliminating the overlapping regulation of groundwater protection at affected ISL facilities in non-Agreement States. In that paper, the staff recommended allowing the non-Agreement States to take lead responsibility for active regulation of groundwater protection through the development of MOUs. In a Staff Requirements Memorandum dated November 19, 2003, the Commission approved the staff's recommendation and directed the staff to develop a Regulatory Issue Summary (RIS) to inform the public about the proposal and proceed with the development of an MOU with each State.

RIS 2004-02 solicited public comment on the proposal to allow the non-Agreement States to take lead responsibility for active regulation of groundwater protection at affected ISL facilities. Comments on the proposal were received from the States of New Mexico, Texas, and Wyoming; the Wyoming Mining Association; the National Mining Association (NMA); the Nuclear Energy Institute; Crow Butte Resources, Inc.; and Power Resources, Inc. All comments were favorable and supported the NRC's proposal through the development of MOUs with the affected States. On June 7, 2004, the staff issued RIS 2004-09, to discuss the comments received in response to RIS 2004-02 and to inform the public of the NRC's continuing plans to allow the non-Agreement States to take lead responsibility for active regulation of groundwater protection in the affected States. RIS 2004-09 is provided as an Attachment to this paper.

In June 2004, the staff conducted a detailed evaluation of Nebraska's U.S. Environmental Protection Agency (EPA)-authorized Underground Injection Control (UIC) Program, using the NRC's groundwater protection program, as provided in NUREG-1569, "Standard Review Plan for *In Situ* Leach Uranium Extraction License Applications" (June 2003). In this regard, the NRC's groundwater protection program for ISL facilities is founded in the statutory requirements set forth in the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). The staff conducted a similar comparability review of Wyoming's EPA-authorized UIC Program in August 2004. The purpose of these reviews was to compare the States' groundwater protection programs with the NRC's groundwater protection program, to determine if the States' programs were at least equivalent to the NRC's program. The staff planned to use a finding of equivalency between the NRC and State groundwater protection programs as the basis for allowing these States to take lead responsibility for active regulation in this area through the development of MOUs. As more fully discussed below, the Nebraska and Wyoming groundwater protection programs were found to be not equivalent to the NRC's groundwater protection program.

#### DISCUSSION:

The processes involved in ISL mining of uranium from an underground ore zone chemically alter the groundwater quality relative to the conditions that existed before the onset of operations. After the completion of uranium recovery in a particular mining area, licensees are required to restore the affected groundwater to established standards to assure the protection of public health, safety, and the environment. Because the most significant impact of ISL mining is the chemical alteration of the groundwater in the ore zone of interest, the groundwater restoration elements of the NRC's groundwater protection program are the most important aspects of the NRC's program for ISL facilities.

As noted above, the NRC's groundwater protection program is grounded in the requirements of UMTRCA. UMTRCA directed the EPA Administrator to promulgate generally applicable

standards for the protection of public health, safety, and the environment from radiological and nonradiological hazards associated with the production, handling, and disposition of byproduct material resulting from uranium recovery operations. UMTRCA further specified that such generally applicable standards for nonradiological hazards "shall be consistent" with the standards issued by the EPA under the Solid Waste Disposal Act (SWDA) for hazardous wastes. EPA standards issued pursuant to the SWDA were provided in 40 CFR Part 264 ("Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities"). UMTRCA mandated that implementation and enforcement of the applicable EPA standards for both radiological and nonradiological hazards associated with byproduct material would be the NRC's responsibility.

Pursuant to the requirements of UMTRCA, the EPA promulgated its health, safety, and environmental standards for byproduct material in 40 CFR Part 192 ("Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings"). Subpart D of Part 192 establishes the standards for uranium byproduct materials, including groundwater protection requirements in 40 CFR 192.32(a)(2), which specify that uranium byproduct materials shall be managed in conformance with the groundwater protection standard in 40 CFR 264.92.

The requirements in 40 CFR 264.92 specify that hazardous constituents detected in groundwater at a regulated unit (e.g., NRC-licensed uranium recovery facilities) must not exceed the concentration limits provided in 40 CFR 264.94. The concentration limits in 40 CFR 264.94 are tiered, reflecting the underlying intent of the standards to prevent groundwater degradation from hazardous constituents, but recognizing that some degree of constituent contamination in the groundwater may be acceptable if those constituents do not pose a substantial present nor potential hazard to human health or the environment. The primary standard in the tiered set of standards in 40 CFR 264.94 limits the concentration of hazardous constituents in the groundwater to background levels. In the application of this standard to the NRC's licensed ISL facilities, the licensees must first make significant efforts to restore degraded groundwater from uranium recovery operations to background levels before consideration of alternative levels (e.g., specified maximum concentration limits, alternative concentration limits, or class-of-use concentration limits), based on technical, economic, health, or environmental reasons.

Although the underground mining zone is not byproduct material, it is part of the uranium extraction process which the NRC regulates. The Commission has approved the guidance in NUREG-1569 which is applied on a case-by-case basis to implement NRC regulation of groundwater protection at ISL facilities. The NRC's groundwater protection program for ISL facilities is primarily embodied in NUREG-1569 which, per Commission direction, the staff developed in lieu of a new 10 CFR Part 41 ("Domestic Licensing of Uranium and Thorium Recovery Facilities"). The proposed Part 41 would have implemented EPA groundwater protection standards for ISL facilities. Although those standards have not yet been embodied in NRC regulations, NUREG-1569 is grounded in the statutory mandate discussed above.

As described in NUREG-1569, the NRC's groundwater protection program includes both primary and secondary restoration standards. The primary goal of groundwater restoration is to return the water quality within the exploited uranium production zone, and any affected aquifers,

to pre-operational (baseline) water quality conditions. Licensees must make significant efforts to reach the primary restoration standards and must continue these efforts so long as restoration continues to result in significant improvements in groundwater quality. However, Section 84 of the Atomic Energy Act of 1954, as amended by UMTRCA, contemplates that the primary standards may not be attainable because of site-specific conditions or economic costs and secondary restoration standards are established at the time of licensing. The secondary standards recognize that ISL operations may result in permanent changes to water quality (i.e., relative to baseline water quality) in the uranium production zone which leaves some constituent concentrations higher than pre-operational baseline levels. Under these circumstances, secondary restoration goals are intended to return the water quality to its pre-operational class of use. The NRC standards for groundwater protection, in NUREG-1569, appropriately mirror the standards set forth in the SWDA. To illustrate the difference between the primary and secondary restoration standards, the Crow Butte Resources, Inc., ISL has a primary restoration standard of 0.092 mg/l for uranium compared to a secondary restoration standard of 5 mg/l.

The staff's June 2004 evaluation of Nebraska's groundwater protection program identified a major variance with respect to the groundwater restoration standards specified in Nebraska's Environmental Protection Act and regulations for its UIC Program, as provided in the Nebraska Administrative Code, Title 122, "Rules and Regulations for Underground Injections and Mineral Production Wells." In both the statute and the regulations, the Nebraska groundwater restoration standard is specified to "*....return each resource to a quality of use consistent with the uses for which the resource was suitable prior to the activity.*" In essence, the Nebraska restoration standard is equivalent to the secondary restoration standards in the NRC's groundwater protection program. Thus, the most important element of Nebraska's groundwater protection program is not equivalent to the corresponding element in the NRC's program.

The staff's August 2004 evaluation of Wyoming's groundwater protection program identified the same variance in Wyoming's Environmental Quality Act and Industrial Development and Information Siting Act, and the rules that the Wyoming Department of Environmental Quality (WDEQ) has proposed for implementation of its UIC Program. In the Wyoming statute, groundwater restoration is defined as "*....the condition achieved when the quality of all groundwater affected by the injection of recovery fluids is returned to a quality of use equal to or better than, and consistent with the uses for which the water was suitable prior to the operation by employing the best practicable technology.*" This restoration standard, like the Nebraska standard, is essentially equivalent to the secondary restoration standards in the NRC's groundwater restoration program. Until fairly recently, the WDEQ implemented a restoration standard for its UIC Program that was consistent with the NRC's primary restoration standards. However, as a result of a challenge to the more stringent restoration standards in WDEQ's regulations, from the Wyoming Mining Association, in July 2003, the WDEQ proposed new rules and regulations, in March 2004, to make the restoration standards consistent with the

standards established in the underlying statute. The staff understands that these new rules and regulations were promulgated in May 2005. Thus, the staff's findings of a major variance in the Wyoming groundwater restoration standards were similar to the findings in the Nebraska review.

The variance in Nebraska and Wyoming restoration standards would impact the NRC's ability to allow these States to take lead responsibility for active regulation of groundwater protection through a transparent MOU process. The following areas of the NRC's groundwater protection program would be impacted by the variance: (1) ISL site characterization; (2) pre-operational or baseline water quality monitoring; (3) production or operational monitoring; and (4) the groundwater restoration program, including proposed restoration methods, restoration monitoring, and post-restoration stability monitoring. The staff's comparability evaluation of the Nebraska and Wyoming groundwater protection programs also identified additional, but relatively minor, issues, in relation to well mechanical-integrity testing. However, the staff believes that these issues could be easily resolved with minor changes or enhancements to the States' groundwater protection programs. In that vein, the following areas of the NRC's groundwater protection program could be deferred to the States through the MOU process: (1) ISL process methodology and equipment design, including ISL process instrumentation and control; (2) well design; (3) well mechanical-integrity testing; and (4) well inspection.

In a letter to Chairman Diaz dated May 9, 2005, the NMA requested information about the status of the MOU development effort for Nebraska and Wyoming ISL facilities, suspecting that this effort may have "hit a roadblock." The NMA expressed interest in having its views heard prior to any final decisions on the MOU development effort and provided its understanding of the statutory requirements, and the guidance in NUREG-1569, for restoration of groundwater at ISL facilities operating under EPA-authorized UIC Programs. In the June 2, 2005, response to NMA, the staff stated their intent to meet with the NMA to discuss their concerns about the MOU development effort. In a subsequent letter to Chairman Diaz dated June 13, 2005, the WDEQ requested clarification of the NRC's groundwater restoration standards in NUREG-1569. The planned meeting with the NMA will also include representatives from the Nebraska and Wyoming UIC Programs, and other stakeholders, to discuss the issues raised by both the NMA and WDEQ, the significant variances identified in the Nebraska and Wyoming UIC Programs, the related impediments they pose to the MOU development effort, and the corresponding deferral of active regulation of groundwater protection to the States. After evaluating stakeholder feedback from this meeting, the staff will develop and present options with a recommendation for Commission consideration regarding the future direction of the MOU development effort.

#### COMMITMENTS:

Listed below are the actions or activities committed to by the staff in this paper:

1. Meet with stakeholders to discuss results of the staff's comparability reviews of the States' UIC Programs and related impacts on MOU development (July 2005).
2. Prepare options and a recommendation for Commission consideration regarding the MOU development effort (October 2005).

The Commissioners

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COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. This paper does not contain sensitive information. The staff requests that this paper be made publicly available at the Commission's earliest convenience.

*/RA Martin J. Virgilio for/*

Luis A. Reyes  
Executive Director  
for Operations

Attachment: RIS 2004-09

ATTACHMENT

STATUS OF THE DEVELOPMENT OF MEMORANDA  
OF UNDERSTANDING WITH NEBRASKA AND WYOMING,  
REGARDING THE REGULATION OF GROUNDWATER  
PROTECTION AT THEIR *IN SITU* LEACH RECOVERY FACILITIES

ML041540558

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
WASHINGTON, D.C. 20555-0001

June 7, 2004

**NRC REGULATORY ISSUE SUMMARY 2004-09  
STATUS ON DEFERRAL OF ACTIVE REGULATION OF  
GROUND-WATER PROTECTION AT *IN SITU* LEACH  
URANIUM EXTRACTION FACILITIES**

**ADDRESSEES**

All holders of materials licenses for uranium and thorium recovery facilities.

**INTENT**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to inform addressees and other interested parties of (1) the NRC's plans for the deferral of active regulation of ground-water protection at *in situ* leach (ISL) uranium extraction facilities; and (2) the comments received in response to RIS 2004-02 on this topic. This RIS supersedes RIS 2004-02 in its entirety. No specific action or written response is required.

**BACKGROUND**

Over the past several years, the uranium recovery industry has expressed concern that the NRC regulation of ground-water at ISLs duplicates the ground-water protection programs required by the Safe Drinking Water Act (SDWA), as administered by the U.S. Environmental Protection Agency (EPA) or EPA-authorized States. EPA and the States protect ground-water quality through the Underground Injection Control (UIC) program, under the SDWA. Some EPA-authorized States require additional measures in their UIC programs that are more stringent than the Federal program.

Historically, the NRC has imposed conditions on ISL operations to ensure that ground-water quality is maintained during licensed activities and that actions are taken to ensure the restoration of ground-water quality before the license is terminated. The specific conditions imposed in ISL licenses have typically been the result of NRC's independent review of site-specific conditions at the ISLs, as documented in safety evaluation reports and appropriate environmental evaluations.

In addition to the NRC's review, licensees must also obtain a UIC permit from EPA or the EPA-authorized State, before uranium recovery operations can begin. The EPA or the authorized State conducts many of the same types of reviews as the NRC. This is illustrated by the NRC

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incorporating ground-water protection limits from a State's permitting program into specific license requirements, after conducting its own review of the licensee's ground-water protection program, including the use of State-imposed standards. The staff routinely accepts specific methodologies and guidance developed by the EPA or States for ground-water monitoring programs and well construction. RIS 2000-23, "Recent Changes to Uranium Recovery Policy," dated November 30, 2000 (ML003773008) provides additional background information on this topic.

Since the publication of RIS 2000-23, the NRC staff has held additional discussions with EPA; the States of Nebraska, New Mexico, and Wyoming; and the industry. As a result of these discussions, the staff prepared SECY-03-0186, "Options and Recommendations for NRC Deferring Active Regulation of Ground-Water Protection at *In Situ* Leach Uranium Extraction Facilities," dated October 29, 2003 (ML031210874). In this SECY, the staff recommended that the NRC defer such active regulation to EPA-authorized non-Agreement States through the development of a Memorandum of Understanding (MOU or agreement) with individually affected States. In a Staff Requirements Memorandum dated November 19, 2003, (ML033230208) the Commission approved the staff's recommendation and directed the staff to develop a RIS to obtain public comment about this proposal before proceeding with the development of an MOU with each appropriate State.

On February 23, 2004, NRC issued RIS 2004-02 (ML040550197) to request that, on a voluntary basis, addressees and other interested parties submit information pertaining to the proposed deferral of active regulation of ground-water protection at ISL uranium extraction facilities. A notice of availability was published in the Federal Register on March 12, 2004 (69 FR 11899). The comment period closed on April 11, 2004.

## **SUMMARY OF ISSUE**

The NRC plans to enter into an MOU, with each State, to defer active regulation of both licensing and inspection activities for ground-water protection. This process began with an initial official contact with the appropriate program director in each State, by the Director of the Office of Nuclear Material Safety and Safeguards, requesting agreement to begin the MOU process (ML033570409 and ML033570472). As part of the agreement process, the NRC staff will work with each State to compare its ground-water protection program with that of NRC's. This comparison will examine the general review areas and staffing of each State, similar to the Integrated Material Performance Evaluation Program review performed for Agreement States.

The NRC staff will use NUREG-1569, "Standard Review Plan for *In Situ* Leach Uranium Extraction License Applications," as the basis for performing the programmatic comparison with each State. Areas identified as essentially equivalent to the NRC program will be included in the MOU as programmatic areas where NRC will defer active regulatory oversight to the State. Any areas determined not essentially equivalent to the NRC program will be identified in the MOU as areas where the NRC will continue its direct regulatory oversight. Only the production

well-field ground-water protection aspects of the NRC's licensing and inspection programs will be deferred to the State. The NRC will enter into an MOU with the State, if the NRC concludes that the State's ground-water protection program is equivalent to the NRC's program, providing adequate protection of public health and safety, and the environment.

The following table provides information concerning the currently operating ISLs in non-Agreement States.

Currently Licensed and Operating ISLs  
in Non-Agreement States

Licensee	State	License No.	Docket No.
Crow Butte Resources	Nebraska	SUA-1543	040-008943
Cogema	Wyoming	SUA-1341	040-008502
Power Resources, Inc.	Wyoming	SUA-1548	040-008964

Based on the NRC staff's experience in working with Nebraska and Wyoming, it expects that the comparison will result in finding that these States' ground-water protection programs are equivalent to NRC's.

On successfully completing an MOU with a State, the NRC will then amend each of the affected ISL licenses at the request of each licensee. The amendment will remove, as appropriate, the specific conditions pertaining to ground-water protection. Each amendment will be subject to an environmental review and a notice of opportunity for a hearing, in accordance with current NRC policy and practices. Thereafter, the NRC will periodically document its review of UIC permits and State inspection reports, as well as State-identified program changes, to determine that the State continues to conduct an acceptable program in accordance with the MOU. The NRC will continue to conduct licensing reviews and inspections for public and worker radiation safety at the affected ISL facilities.

Although implementation of this approach will initially require the expenditure of additional NRC staff resources to achieve the agreements before any resource savings will be realized, the approach offers several advantages. The current dual regulatory burden of the NRC and State reviews of the licensees will be eliminated once the agreement is finalized. Public health, safety, and environmental protection, with regard to ground-water, will be assured at licensed ISL facilities through the State's direct oversight. At the same time, the NRC will retain its authority to regulate ground-water protection at ISLs and can re-enter active regulation in this area if a State's program became inadequate. The effectiveness and efficiency of the NRC's ISL licensing program will be enhanced by making its active role clear to the licensee and other

stakeholders. In time, it is anticipated that the initial outlay of resources to develop the MOUs will be more than offset by the gains from reductions of reviews.

**Summary of Comments on RIS 2004-02:**

Comments on the proposal described in RIS 2004-02 were received from the States of New Mexico, Texas, and Wyoming; the Wyoming Mining Association; the National Mining Association (NMA); the Nuclear Energy Institute (NEI); Crow Butte Resources, Inc.; and Power Resources, Inc. All comments were favorable and supported NRC's proposal to defer active regulation in this area using the MOU process discussed in RIS 2004-02.

NEI commented that the NRC should relinquish regulation of all *in-situ* well-field operations. NEI stated that such operations are equivalent to the mining of ores in conventional open pit or underground operations that are not subject to NRC licensing. In response, NRC staff pointed out that ISL operations involve the in-place (i.e., *in-situ*) processing of ores to extract (i.e., recover) the uranium; therefore, unlike conventional open pit or underground mining in which the ore is removed from the earth and the uranium is later extracted from the ore in a mill, the extraction of the uranium for ISL processes occurs directly in the ore deposit. The NRC has jurisdiction and licensing authority over the milling of uranium (as defined in 10 CFR 40.4). Therefore, we have concluded that for the NRC to relinquish its regulatory authority over the extraction portion of ISL operations, either a State must enter into an agreement with the NRC which provides for the discontinuance of the NRC's regulatory authority over the activities associated with uranium and thorium recovery facilities pursuant to section 247b. of the Atomic Energy Act of 1954, as amended (AEA), or a statutory change would be necessary. We are not convinced at this time that a statutory change would be a cost effective undertaking.

NMA commented that the process described in RIS 2004-02 could be rather lengthy. NMA encouraged the NRC to use the appropriate personnel and needed resources to move forward with the process as expeditiously as possible. In response, NRC will apply the available resources that are needed, consistent with its budget and other priority work.

The State of Wyoming commented on the contents of the example MOU that was included as an attachment to RIS 2004-02. The State of New Mexico commented that a detailed review of the example MOU would be needed before entering into an agreement. Each MOU will be unique because of circumstances unique to each State. Because of these circumstances, discussions with each State will be necessary to develop final MOUs; therefore, an example MOU is not included with this RIS. Similarly, the States' comments on the example MOU have not been included.

This RIS requires no specific action nor written response. If you have any questions about this summary, please contact the technical contact listed below.

**/RA/**

Robert C. Pierson, Director  
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and Safeguards  
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Attachment: List of Recently Issued NRC Regulatory Issue Summaries

**LIST OF RECENTLY ISSUED  
NRC REGULATORY ISSUE SUMMARIES**

Regulatory Issue Summary No.	Subject	Date of Issuance	Issued to
2004-08	Results of the License Termination Rule Analysis	05/28/2004	All holders of operating licenses for nuclear power reactors, research and test reactors, as well as decommissioning sites.
2004-07	Release of Final Review Standard (RS)-002, "Processing Applications for Early Site Permits"	05/19/2004	All holders of operating licenses for nuclear power reactors, all applicants for early site permits (ESPs), and all prospective vendors of nuclear power plants in the United States.
2004-06	Independent Survey of Power Reactor Licensees	04/16/2004	All holders of operating licenses for nuclear power reactors except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.
2004-05	Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power	04/15/2004	All holders of operating licenses for nuclear power reactors except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.
2004-04	Use of Code Cases N-588, N-640, and N-641 in Developing Pressure-Temperature Operating Limits	04/05/2004	All holders of construction permits or operating licenses for nuclear power reactors except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

**Note:** NRC generic communications may be received in electronic format shortly after they are issued by subscribing to the NRC listserver as follows:

To subscribe send an e-mail to <[listproc@nrc.gov](mailto:listproc@nrc.gov)>, no subject, and the following command in the message portion:  
subscribe gc-nrr firstname lastname