

Gallagher, Carol

From: sricpaul@gmail.com on behalf of Paul Robinson <sricpaul@earthlink.net>
Sent: Tuesday, June 16, 2015 1:23 PM
To: Mandeville, Douglas
Cc: Susan Gordon
Subject: Comments on NRC Standard Review Plan, NUREG-2126, Docket No 2014-0178
Attachments: 2015-06-16 Final SPR Comments.docx

Dear Doug;

Attached please find a "Observations and Recommendations regarding the "Standard Review Plan for Conventional Uranium Mill Heap Leach Facilities," Nuclear Regulatory Commission (NRC) Document NUREG-2126, NRC Docket Number 2014-0178, Prepared June 16, 2015. These comments have been prepared on behalf of Multi-Cultural Alliance for a Safe Environment (MASE), <http://masecoalition.org/> by Paul Robinson, Research Director, Southwest Research and Information Center.

Thank you for the opportunity present comments on this important matter. We look forward to the NRC staffs' consideration of the observations and recommended provided.

Sincerely,

Paul

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Paul Robinson
Research Director
Southwest Research and Information Center
PO Box 4524
Albuquerque, NM 87196-4524
phone 505-262-1862 fax 505-262-1864
website www.sric.org

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**Observations and Recommendations regarding the
"Standard Review Plan for Conventional Uranium Mill Heap Leach
Facilities," Nuclear Regulatory Commission (NRC) Document
NUREG-2126, NRC Docket Number 2014-0178**

Prepared June 16, 2015

Prepared on Behalf of
Multi-Cultural Alliance for a Safe Environment (MASE)
<http://masecoalition.org/>

by
Paul Robinson
Research Director
Southwest Research and Information Center
www.sric.org
PO Box 4524
Albuquerque, NM 87106
sricpaul@earthlink.net

Submitted to
Douglas T. Mandeville, Office of
Nuclear Material Safety and Safeguards,
U.S. Nuclear Regulatory Commission,
Washington, DC 20555-0001
email: Douglas.Mandeville@nrc.gov

Summary

These comments provide observations and recommendations related to the "Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities," (hereinafter "Standard Review Plan" - SRP), Douglas T. Mandeville, Project Manager. The SRP was issued by the Nuclear Regulatory Commission (NRC) for comment November 2014 as document number NUREG-2126 and assigned NRC Docket Number 2014-0178. It is available at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2126/>

These comments were prepared on the behalf of the Multicultural Alliance for a Safe Environment (MASE) - www.masecoalition.org. Rooted in the experiences of uranium-impacted communities in the southwestern U.S., MASE works to restore and protect the natural and cultural environment, respectfully promoting intercultural engagement among communities and institutions for the benefit of all life and future generations.

These comments focus on the radioactive materials licenses that make-up the current and reasonably foreseeable workload of the NRC Uranium Recovery Office and NRC-Agreement States with uranium materials licensing authority. The current NRC workload in New Mexico and Wyoming, includes only renewal licenses and amendments on decommissioning mill tailings facilities and extending stand-by status. The only possible new license application would cover a proposed rare earth recovery facility where uranium would be a secondary metal recovered. Agreement states with conventional uranium facilities, Utah and Colorado, will address or are likely to address license renewals and amendments for the single conventional mill with an operating license in the US - though that facility is not currently processing uranium ore, renewals and amendments for facilities in stand-by or decommissioning status and a recently issued license for a new facility whose construction has been deferred indefinitely by the license holders.

To reflect this workload, the SRP should be revised to focus on the license application review issues and challenges that reflect the complex technical evaluations, uncertainty, and stakeholder involvement aspects of the current and reasonably foreseeable license applications. These challenges are largely ignored in favor of a simplistic and skeletal summary of application requirements and "scripts" to use to report NRC staff findings.

Based on the observations provided, it is recommended that the SRP be revised to:

- I. Reflect the types of license applications before the NRC Uranium Recovery Office staff currently or likely in the foreseeable future.
- II. Include review criteria requiring comprehensive demonstration of compliance with applicable requirements needed for acceptance, review, and evaluation.
- III. reflect the complexity of multi-decade decommissioning license applications.
- IV. Provide guidance on consideration of applications for major modifications or amendments to licenses.
- V. provide guidance on applications addressing development and use of innovative technology for remediation and decommissioning.
- VI. Insure that renewal applicants consolidate all applicable information demonstrating current license commitment in a single renewal application filing.

I. SRP should be revised to reflect the types of license applications before the NRC Uranium Recovery Office staff currently or likely in the foreseeable future.

The Standard Review Plan (SRP) fails to provide an accurate or realistic view of the current and reasonably foreseeable future workload for the NRC Uranium Recovery Office. As a result, the SRP fails to provide guidance focused on the current and future range of licensing issues and challenges facing the Office and staff for which it is intended.

“This SRP provides guidance for the detailed safety (technical) review of new and renewal license application and amendment requests associated with conventional uranium mills and heap leach facilities. The staff will use information in this SRP in the review of applications for new facilities, renewals, and amendments.” SRP at p. xi.

The SRP focuses almost exclusively on applications for new conventional mill and heap leaching uranium recovery licenses, however none of those types of applications are pending now or in the reasonably foreseeable future. The NRC's list of current and pending uranium recovery licenses applications, posted quarterly at <http://www.nrc.gov/materials/uranium-recovery/license-apps/ur-projects-list-public.pdf>, for June 1, 2015 shows no new license applications under review or projected for filing.

Currently, the NRC has licenses in force for:

- two conventional mill licenses undergoing decommissioning
 - GE/UNC Churchrock - NRC License No. SUA-1475 and
 - Barrick Gold/Homestake Grants in New Mexico - NRC License No. SUA-1471 - and
- one standby mill license subject to a renewal application – Rio Tinto/Kennecott – Sweetwater in Wyoming - NRC License SUA-1350 - under its jurisdiction.

NRC has signed agreements with several uranium producing states allowing the states to issue uranium recovery licenses. Agreement states currently have the following uranium recovery facility licenses in force:

- one operating mill license – Energy Fuels White Mesa in Utah - Utah License No. UT1900479 - though the operator has deferred ore processing indefinitely,
- one standby mill license – Anfield Resources – Shootaring Canyon - Utah License UT 0900480,
- one mill licensed for decommissioning only - General Atomic/Cotter Canon City Colorado License Number 369-01, and
- one license for a new mill – Baobab Asset Management (and others) Pinon Ridge - Colorado License 1170-01 - that has been deferred indefinitely following its acquisition by its current owner.

No heap leach uranium recovery facilities are identified among NRC's list of proposed applications or among agreement states-based proposed license applications. NRC's list of

current and pending uranium recovery license applications for June 1, 2015 shows no proposed new uranium recovery licenses applications and only one license renewal application, for the Sweetwater, Wyoming facility undergoing acceptance review.

The Sweetwater facility only operated during the 1981-1983 period though the current license renewal application is reported to seek to retain operational status and again defer decommissioning. License renewal applications or amendments for the GE/UNC and Barrick Gold/Homestake facilities are not listed among the pending "Major Uranium Recovery License Applications" posted by NRC.

The single new license application mentioned in the NRC's June 1, 2015 "Uranium Projects List" is for an unprecedented type of uranium material license not addressed in the SRP, a license for a mill facility where uranium is not the main metal to be recovered. This project is listed as "Rare Elements Resources, Inc. Bear Lodge Project" - NRC has established Docket No. 040-38367 - and reports the posting of a source material possession license application for the Bear Lodge Project - dated May 2015 - ML15132A726. The SRP does not address the acceptance, review or evaluation of applications for uranium recovery facilities where uranium is not the primary metal of interest for the operation.

Therefore, for the foreseeable future, the conventional uranium recovery workload for the NRC-license states - New Mexico and Wyoming - and the states issuing licenses pursuant to NRC-State delegation of authority agreements - Utah, Colorado and Texas - is almost exclusively limited to renewal and decommissioning licenses, with the only new applications for operating licenses for a facility that proposes to process uranium as part of a rare earth recovery project.

RECOMMENDATION: NRC should delineate the range of license applications anticipated in the workload for staff for the foreseeable future, identify segments of the current and anticipated applications where acceptance, review and evaluation criteria may require a different emphasis than for new or operating facility renewal license applications.

NRC should review the program-wide implementation of 10 CFR Appendix A - Criteria 3 - "Dispose of tailings below grade or provide equivalent isolation" for all current licensees including requirements for a transition to below grade or equivalent isolation providing for closure of existing above-grade storage sites and removal of the above-grade tailings to below-grade sites for permanent disposal. More than 30 years after adoption that Criteria 3, the three current uranium facilities under NRC licensees, GE/UNC Churchrock, Barrick Gold/Homestake, and Kennecott Sweetwater continue to maintain above grade tailings storage facilities.

II. SRP should be revised to include review criteria requiring comprehensive demonstration of compliance with applicable requirements needed for acceptance, review, and evaluation.

SRP guidance does not identify the level of detail necessary for reviewers to conduct full evaluations during application review in a meaningful way. The SRP's guidance to NRC staff regarding the level of detail necessary for application review is only described in very general terms. Examples include:

The Executive Summary of the DSPR states, "An applicant must clearly demonstrate the manner in which the requirements and objectives in applicable sections of 10 CFR Part 20 and 10 CFR Part 40 have been addressed, as well as NRC regulations in 10 CFR Part 51 implementing the National Environmental Policy Act of 1969, as amended (NEPA)." SRP at p. xi.

Acceptance Review Criteria - "The evaluation findings need to address the unique nature of the application or specific site conditions and proposed practices. Acceptance is determined 'if the information is adequate and complete and the staff finds that the application meets the applicable acceptance criteria.'" SRP at p. 1-1

Evaluation Findings - "the applicant or licensee provided adequate and complete information that fully addresses all relevant regulatory requirements." SRP at p. 1-3

Both the Acceptance and Evaluation Review Guidance in the SRP use the same phrase, "adequate and complete," as the measure of application information addressing regulatory requirement. No information is provided to characterize the difference, if any between "adequate and complete" for Acceptance Review and "adequate and complete" for Evaluation Review or what level of review of data in the application or applicable reference documents constitutes either "adequate" or "complete."

Similarly, the SRP fails to provide guidance for NRC staff to delineate the basis for their determination that "the applicant or licensee provided adequate and complete information that fully addresses all relevant regulatory requirements." As stated at SRP p. 2-3 and other Evaluation Findings sections of the SRP, NRC staff are advised to merely include the statement, "Based on the review conducted by NRC staff, the information provided in the application meets the applicable acceptance criteria," and not identify either key findings or other bases for the determination that applicable criteria have been met. To address this shortcoming, the SRP should be revised to provide guidance for NRC staff to state their findings and delineate, cite or refer to portions of the applications that support an "adequate and complete" determination.

The use of "adequate" as a standard for review in the SRP may provide for approval of facilities that do not operate at an optimal level, such as facilities that would not operate in the "most protective" manner, allow release rates that are not "as low as reasonably achievable," eliminate risks of tailings impoundment failures, or facilities not using best practices for design and operation.

A key area of concern in this matter is water use in tailings management. Use of highly-thickened, paste or dry tailings reduces water demand, increases tailings stability and reduces the overall size of tailings disposal sites. Paste or dry tailings in below grade disposal cells prevents the risk of tailings dam failure and significantly reduces the potential for seepage to groundwater from the tailings.

(See, for example, "*Perceived and realized benefits of paste and thickened tailings for surface deposition*," by A.B. Fourie, in *The Journal of The Southern African Institute of Mining and Metallurgy*, Volume 112, November 2012, available at: <http://www.saimm.co.za/journal-papers>).

NRC should identify and implement a mechanism for review of the water use cycle at new and existing facilities to insure that water is being used as efficiently as possible and disposal of water in tailings is minimized to the greatest extent practical. NRC should implement a stronger statement of its review standard than "adequate and complete" to insure that the uranium recovery license results in best practices, in the lowest release rates achievable throughout the life of the facility and during the post-closure period, and eliminates the risk of tailings impoundment failure.

As uranium mills are unique facilities at unique sites, are sited using elaborate environmental and geotechnical investigations, and designed using engineering, chemical and metallurgical expertise, "adequate and complete" doesn't imply any significant meaning regarding the detailed showing necessary to demonstrate regulatory compliance.

Regarding the Standard Review Plan Organization, "This SRP is written to address a variety of potential site conditions and facility designs for the detailed safety review," SRP at p xv, and

Regarding the Evaluation Findings Subsection, the SRP states, "The evaluation findings need to address the unique nature of the application or specific site conditions and proposed practices," SRP at p. xv.

The SRP provides no meaningful criteria assessment of application contents for either determination of acceptance of license application for detailed review or the demonstration of compliance with applicable regulations by that application. The SRP refers to "adequate and complete" the basis for assessment of both acceptance and compliance with applicable regulations.

RECOMMENDATION: The "adequate and complete" review standard does not provide an appropriate measure of the comprehensive demonstration of performance using best practices that an applicant should be able to meet.

Rather than merely "adequate and complete", NRC staff should be required to issue findings showing whether the contents of the application "comprehensively and definitively demonstrate full compliance with applicable regulations." Such a standard should be incorporated in a Revised SRP to insure that NRC requires that applications rigorously demonstrate compliance with applicable authorities for license approval rather than merely determining "adequacy".

III. SRP should be revised to reflect the complexity of multi-decade decommissioning license applications.

The NRC Uranium Recovery office is responsible for enforcement of licenses in New Mexico for facilities in their fifth decade of decommissioning – the GE-UNC Churchrock and Barrick Gold-Homestake Grant sites. Although these two facilities have been subject to a multi-decade sequence of renewal and or modifications applications, the SRP does not review or acknowledge the NRC's experience at these sites, and the unique requirements of applications addressing these facilities or review criteria applicable to them.

The SRP does not identify how NRC will address stakeholders in the license application process, including Federal and State authorities with regulatory responsibility for the facilities, members of the public and Native American tribal governments and tribal members. No information is provided in the SRP as to when and how stakeholders are made aware of the license application and status of the application review process. No information is provided regarding when opportunities will be provided to identify concerns and interests of the range of stakeholders and how communication will be maintained with stakeholders throughout the application review process.

Both of these facilities, and all other conventional uranium mills, are subject to a range of applicable requirements at both the State and Federal levels in addition to the requirements implemented by NRC. Both have been the subject of extensive public interest during the past several decades as schedules for attainment of decommissioning objectives have been missed, reset and missed again at each site on multiple occasions.

Development of applications that demonstrate compliance with applicable authorities must demonstrate how compliance will be achieved and verified with ALL applicable authorities, not just those of the NRC at both the acceptance and evaluation phases for license application review. Unfortunately, the SRP does not require that NRC staff be familiar with the full range of applicable administrative requirements for the applicant or be required to coordinate the application review with review of similar or identification documents with other authorities.

Similarly, the SRP does not delineate when and how public and tribal stakeholder involvement will be integrated in the acceptance review and evaluation of license applications.

The SRP does not address standard methods for NRC to communicate with Tribes and tribal members, the public or other applicable authorities. It does not address how the professional staff at NRC will consult with the professional staff in the other agencies, incorporate those agencies and the public's comments into the NRC review of the application or determine whether the license application demonstrates comprehensive compliance with all applicable authorities. Demonstrating that all applicable authorities is

fundamental requirement that is necessary before Uranium Recovery Office staff can determine if an application is "adequate and complete" or a license decision appropriate.

At the Federal level, a range of Environmental Protection Agency (EPA) regulations are applicable to the NRC licensed facilities and essentially all uranium mill tailings facilities are conveyed to the Department of Energy upon termination of NRC license authority for perpetual monitoring and maintenance. State authorities, such as the New Mexico groundwater regulations, are authorities that are applicable to uranium mill and waste sites. NRC has entered into working agreements with Federal and State authorities to delineate the roles of the agencies with applicable authorities.

RECOMMENDATION: The SRP should be revised to specifically delineate when and how NRC staff engage the full range of applicable authorities for specific license applications. The SRP should be revised to reflect how NRC staff will coordinate the acceptance and evaluation of license applications with authorized Federal and State agencies. Often license applications are documents prepared for and submitted to several jurisdictions simultaneously and applicable state and federal agencies may review the same documents for compliance with differing regulatory criteria.

The SRP should be revised to insure that NRC staff determines that the full range of regulatory authorities applicable to license application is addressed fully.

The SRP should be revised to delineate opportunities for members of the public and Native American Tribes and tribal members to be engaged early and often in the license application review process. The revised SRP should reflect NRC commitments to environmental justice and public involvement, Tribal engagement and interagency agreements coordinating Federal and State agencies roles in ongoing licensing matters.

IV. SRP should be revised to provide guidance on consideration of applications for major modifications or amendments to licenses.

Following a lengthy interagency review process, GE/UNC Churchrock is responsible for developing a license amendment to allow the disposal of more than one million tons of additional waste – from a nearby Northeast Churchrock GE/UNC owned inactive uranium mine - on top of the mill tailings already at the site as part of EPA-regulated mine clean up plan. Through the license amendment application addressing the disposal on mine waste on top of the tailings, NRC is reviewing GE/UNC applications for delayed implementation of corrective action including final placement of a radon barrier and relaxation of applicable groundwater standards.

This "multi-track" situation, where NRC is considering several license revision applications at the same time, is not addressed in the SRP, though several license amendments or revision maybe be "on the table" for other facilities. At the BG/Homestake Grants facility, the NRC review of the most recent modification of the Corrective Action Plan has been in

process since 2006, resulting in the review overlapping with the license renewal application that incorporates the "yet-to-be-approved" Corrective Action Plan.

The SRP does not address the application or application review requirements associated with current license applications including:

- relaxation of groundwater standards – Alternate Concentration Limits (ACLs) – in place at GE/UNC Churchrock and BG/Homestake, among other conventional mill tailings sites,
- deferred corrective action,
- addition of uranium-and heavy-metal bearing wastes not generated from a uranium mill to a tailings disposal site or
- options for disposal of additional uranium mine waste near the site at the tailings facilities (as at Churchrock, the Rio Algom (formerly Kerr-McGee No 1 mine not owned by GE/UNC within two miles of the GE/UNC Churchrock tailings site includes 100,000s of tons of waste for which a disposal site has not been identified).

RECOMMENDATION: This condition where multiple applications for a single facilities are before the NRC is typical, not unusual. The SRP should provide guidance to staff on how to coordinate and consolidate multiple renewal and amendment applications to provide for an orderly review process.

The SRP should be revised to provide a framework for development and review of license applications for amendments that changes the mix of waste disposed at the site, such as that proposed at the GE/UNC Churchrock decommissioning site.

Similarly, the SRP should be revised to identify the process for determination of the scope of the National Environmental Policy Act (NEPA) review for such proposals or the process for NRC staff consideration of the major modification, including acceptance of additional wastes with hazardous constituents, including uranium and its decay products, at a site subject to a current decommissioning plan.

V. SRP should be revised to provide guidance on applications addressing development and use of innovative technology for remediation and decommissioning.

In the decades since the Barrick Gold/Homestake (BG/H) Grants site began groundwater remediation, a wide range of groundwater treatment technologies have been employed, but none have been successful enough to have achieved applicable standards in the 39 years since evidence of offsite groundwater contamination was published.

In the past five years, BG/H has conducted laboratory and field experiments with a wide array of alternative uranium treatment technologies to address the continuing release of uranium and other constituents of concern from the tailings pile at that site. The investigation of these alternative technologies has involved laboratory and field research

on impacted groundwater with elevated uranium, selenium and other constituents of concerns at the Grants site.

The SRP fails to provide guidance for staff as to what guidelines should be applied to applications seeking to amend permitted treatment technologies. As a result, the research related to alternative treatment technologies does not follow an identified process. Further, technology demonstrations are not systematic or rigorous and reports on the technology demonstrations associated with license amendments often read like marketing proposals rather than verified technology demonstrations at the level needed to attain standards in perpetuity.

RECOMMENDATION: The SRP should be revised to include guidelines for determining if and when alternative technology research demonstrates successful results at a pilot, field or full facility scale.

The SRP should be revised to identify when and how NRC staff determine when additional expertise from expert consultants are necessary to insure that the NRC review attains the highest professional standards in each area of expertise associated with license application review. This recommendation is not intended to discredit the experience and capacity of NRC staff but to recognize the wide range of scientific and engineering specialties involved in the development and review of uranium material license applications.

The SRP should be revised to insure that NRC staff has guidelines for supplementing staff activities with independent reviews of representations, data or conclusions presented in application documents. Such reviews may provide opportunities to insure that applications provide comprehensive and rigorous demonstrations of compliance rather than merely meeting the "adequate and complete" threshold.

The SRP should be revised to provide a mechanism for NRC staff to determine if technology change should result in an application for a license amendment when major modifications to mill or groundwater treatment process are proposed or new waste streams are proposed for disposal at existing site. Similarly, the SRP should identify the range of experimental programs to be conducted, reviewed and evaluated before changes to process of treatment systems can be authorized.

The SRP should be revised to identify what evaluation is necessary for determination if the alternative technologies are meeting performance goals or capable of achieving groundwater remediation. Similarly, the SRP should be revised to provide for determination of what level of NEPA analysis is appropriate if groundwater remediation measures are proposed as modifications to existing requirements.

VI. SRP should be revised to insure that renewal applicants consolidate all applicable information demonstrating current license commitment in a single renewal application filing.

The SRP should be revised to provide clear and detailed guidance to staff and the public on the level of detail necessary for demonstration of the effectiveness, or ineffectiveness, of technologies being developed and tested during the license renewal cycle.

Appendix A, "GUIDANCE FOR REVIEWING HISTORICAL ASPECTS OF SITE PERFORMANCE FOR LICENSE RENEWALS AND AMENDMENTS", is the single portion of the SRP that focuses on license renewal applications. While Appendix A identifies review of historical information on a proposed licensee, it does not include a requirement that the renewal application incorporate all necessary information in a single application document.

As license commitments often are identified by a series of original documents each with a series of amendments, no comprehensive compilation of the full range of license commitments will be available for NRC staff review or review by other stakeholders unless NRC requires such a filing. Consolidation of all renewal and amendment application information in a single filing also demonstrates that the applicant is currently cognizant of all commitments, including those that have evolved over many years.

Current NRC licensees in New Mexico, GE/UNC Churchrock and Barrick Gold/Homestake Grants facilities, are updating and modifying existing decommissioning plans, field testing alternative treatment technologies not addressed in current licenses, and implementing decades-old decommissioning commitments. The reliance on such decommissioning and corrective action plans with multiple modifications at these sites results in a bewildering mix of separate documents that constitute the current commitments by licensees. Reviewers, whether NRC staff, other agencies or the public, face the challenge of compiling the relevant designs and commitments from the applicant, as the NRC does not require a consolidated renewal amendment application that incorporates all applicable documents.

For the past fifty years, uranium mill operations across the USA have been subject to stops and starts not projected in pre-operational plans and decommissioning efforts have seldom if ever been successful on the timetable planned during the permitting stage. The SRP should require license applications to provide for a full range of operational variations, not merely a generic construction-operate until ore depletion-decommission scenario.

As NRC has no new conventional uranium mill license applications in its near future, it is reasonable to focus the revised SRP on the range of current and foreseeable future conventional uranium mill site licenses.

RECOMMENDATION: The SRP should be revised to fully detail the criteria for preparation of acceptable renewal and amendment applications and the evaluation of such applications once accepted as complete, rather than addressing renewal application and amendments as a brief single-page appendix. License renewal applications are the current focus of all

conventional mill-related NRC uranium recovery office as no new license applications are identified as being received or due on an identifiable schedule.

The SRP should be revised to include guidance for staff to consolidate and organize applicant filings during the license renewal cycle. The current body of conventional uranium mill licenses are all more than 30 years old, and they incorporate an enormous body of underlying documents. Often these underlying documents are revisions of filings that incorporate many clarifying and updating amendments and modifications but are not recompiled as a single updated document. The failure to require license renewal applicants to compile all current commitments and requirements in a single license application results in a bewildering mix of current and out of date material in the site docket.

The SRP should be revised to require license applications to provide for a full range of operational variations, not merely a generic construction-operate until ore depletion-decommission scenario

The SRP should be revised to outline how the standard review integrates public review and comments during either the acceptance or compliance evaluation phase of application review.