UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 15, 2020

Mr. Mark Kautsky, Site Manager
U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION STAFF REVIEW OF THE U.S. DEPARTMENT OF ENERGY REPORT ENTITLED "REVISED GROUNDWATER COMPLIANCE ACTION PLAN (GCAP) WORK PLAN FOR THE SHIPROCK, NEW MEXICO, UMTRCA TITLE I DISPOSAL SITE" DATED MARCH 2020 (DOCKET WM-00058)

Dear Mr. Kautsky:

I am writing in response to your request for comments on the U.S. Department of Energy's (DOE's) "Revised Groundwater Compliance Action Plan (GCAP) Work Plan for the Shiprock, New Mexico, [Uranium Mill Tailings Radiation Control Act] UMTRCA Title I Disposal Site" dated March 2020 [Agencywide Document Access and Management System (ADAMS) Accession Number ML20079J823]. U.S. Nuclear Regulatory Commission (NRC) staff reviewed the draft work plan and have the following comments and questions.

Summary of the Work Plan

The draft work plan states that a revised GCAP is necessary because: 1) the site conceptual model that the current groundwater compliance approach was based upon requires significant updates with information gathered since 2003; 2) the current groundwater compliance approach is not expected to achieve the regulatory compliance goals set by the GCAP; and, 3) the evaporation pond liner needs replacement or removal and a decision to remove the pond would require a viable alternate strategy.

The original groundwater compliance strategy outlined in the 2002 "Final Ground Water Compliance Action Plan for Remediation at the Shiprock, New Mexico, UMTRA Site" [ADAMS Accession Number ML022240683] was based on the risk of exposure to mill-related contamination from the use of terrace or floodplain groundwater as a primary source of drinking water. The goals of the revised GCAP are to determine if there is an alternate strategy to address the site conditions in a more efficient way than the current strategy and what controls are needed in the future to ensure the protection of human health and the environment. The draft work plan is intended to provide the basis for the development of the revised GCAP.

The purpose and scope of the work plan is to identify data needs, or as defined in the draft work plan, data quality objectives (DQOs), the rationale for data needs, and planned data collection and analysis activities in order to prepare a revised GCAP that presents a clear picture of the site conditions and site conceptual model. The draft work plan includes: a summary of general groundwater compliance considerations and strategic approach; a summary of relevant data

evaluations in the context of the 2002 GCAP; the identification of outstanding data gaps related to the guidelines in NUREG-1724 “Standard Review Plan for the Review of DOE Plans for Achieving Regulatory Compliance at Sites With Contaminated Ground Water Under Title I of the Uranium Mill Tailings Radiation Control Act”; updated site groundwater plume metrics based on monitoring to date; the DQOs that encompass the data gaps and the current understanding of the site GCAP considerations; details on the data collection strategy to address the DQOs; and, implementation considerations regarding data collection activities, including safety and health, quality assurance, data management, and environmental management.

Five DQOs were formulated to encompass the requirements of NUREG-1724 and the primary goals of the revised GCAP. These are:

- O1: Define the source mass term and update the extent of mill-related uranium, nitrate, and sulfate contamination;
- O2: Characterize the hydraulic connection between the terrace and the floodplain;
- O3: Evaluate how the hydrology of the floodplain impacts natural contaminant flushing or groundwater treatment;
- O4: Determine whether remediation options other than groundwater extraction and evaporation are a viable alternative for groundwater compliance; and,
- O5: Define the range of appropriate institutional controls to be protective of human health and the environment.

Comments

1) Section 1.1 indicates that the draft work plan will include the identification of outstanding data gaps related to NUREG-1724 guidelines, and updated site groundwater plume metrics based on monitoring to date. NRC staff was not able to clearly identify these two components within the draft work plan and suggest that the draft work plan be revised to make them easier to discern (e.g., a matrix table matching data gaps with acceptance criteria from NUREG-1724 would be helpful).

2) Figure 5 on page 19 of the draft work plan indicates that DOE will seek NRC concurrence on the updated site conceptual model, the complete site characterization report, the groundwater standards report, the hazard assessment and the final GCAP. However, NRC staff will only concur on the final GCAP and will provide comments on the other DOE reports. NRC concurrence on the final GCAP will require that NRC comply with the National Environmental Policy Act (NEPA) by evaluating the potential impacts of the implementation of the GCAP in an Environmental Assessment and by evaluating the safety of implementing the final GCAP in a Safety Evaluation Report. NRC has been working with DOE staff to coordinate the NRC’s review of the final GCAP. Suggest that Figure 5 be revised to show NRC review and comment on the reports other than the final GCAP so that the reader is not confused as to the scope of the NRC reviews for these reports.

3) On September 3, 2019, the NRC staff provided three comments on the DOE report entitled “Investigation of Non-Mill-Related Water Inputs to the Terrace Alluvium at Shiprock, New Mexico” dated April 2019 [ADAMS Accession Number ML19233A270]. Based on the staff’s review of the draft work plan, the staff’s first comment has been incorporated into activities related to the draft work plan. The staff believes that the second and third comments are also relevant to the draft work plan and the staff is including them below:

Previous Comment 2. Section 4.2 of the April 2019 report states that the Mancos Shale has highly negative values of S-34 (<-10‰); however, it also states that the Mancos Shale water from well 648 has a very positive value of 12‰. Gypsum dissolution is given as the cause for the high positive value in the water sample from well 648. It is unclear if gypsum dissolution effects the S-34 ‰ values from other Mancos Shale water locations and unless well 648 is an anomaly, the original statement that water from the Mancos Shale has highly negative values appears to be incorrect.

Previous Comment 3. Section 4.2 of the April 2019 report lists sulfate sources at the Shiprock site as either sulfuric acid used in ore processing, dissolution of sulfide minerals in the tailings, Mancos Shale groundwater, San Juan River water, Animas River water, or a combination of these sources. Infiltration of meteoric water is mentioned in Section 5 as an additional source. All potential sources of water are briefly discussed in the report except for river waters from the two rivers. Apparently, water from the Animas River is piped in for domestic use by Shiprock residents; however, this is not discussed in the report. A brief description in the report on how and where the river waters of the Animas and San Juan Rivers are used in the Shiprock area would provide better context and put some of the report's findings in perspective.

4) Section 4 of the draft work plan discusses implementation of the DQO process and includes seven major planning steps. Step number one was to define the problem that necessitates the study, or to "State the Problem." The two main components of the problem statement on page 28 of the draft work plan included: i) the evaporation pond liner is aging, such that a decision is needed regarding its removal or replacement; and, ii) groundwater compliance has not been achieved over the treatment period and is not expected to be achieved within the regulatory time frames established in the 2002 GCAP.

Since these two components are the basis of the problem statement, and therefore the proposed activities of the draft work plan, more detail would be appropriate in the final work plan, (although not necessarily in the problem statement itself) in order to help the reader better understand the rational for developing the proposed activities in the draft work plan. For example, additional descriptions for the evaporation pond liner could include expected or minimum life-span performance based on informed sources or general calculations on length of expected performance for the near-future, degradation observations, and overall urgency before contaminants leak into the subsurface. More information was provided on the second problem component, however, additional description on the expected failure to achieve the regulatory compliance goals could include the expected status at the end of the regulatory time frames, i.e., providing information as to the magnitude of the difference between the intended goals of the 2002 GCAP and the actual, expected concentrations at the end of the regulatory time frames.

5) DOE/LM produced a very informative report entitled "Flow Processes in the Floodplain Alluvial Aquifer at the Shiprock, New Mexico, Disposal Site" dated November 2016 [ADAMS Accession Number. ML17082A150]. It appears that a few of the study objectives for DQO O3 in Section 4.2 are similar to some of the topics that were studied in the floodplain report. Suggest that DOE review the November 2016 floodplain report for information that could be useful in developing the final work plan

6) Section 4.5 in the draft work plan discusses "Decision Rules" and how some data collection activities will only be needed under certain circumstances. It also discusses how Decision Rules will determine which of those data collection activities will be performed. NRC staff

suggests that those data collection activities associated with Decision Rules be clearly labeled throughout the work plan, thereby enabling readers to recognize the scope of required activities as opposed to those from potential activities that may also be performed based on the Decision Rules.

7) In Section 4.7 the draft work plan states that additional information will be added to the final work plan to further detail locations and field methodologies for each of the tasks in the work plan. In addition, a parallel ongoing effort by DOE to evaluate and mitigate the risks from the site could result in modifications to portions of the final work plan. If modifications to the work plan are envisioned, we would appreciate the opportunity to review and provide comments on the proposed revision, after DOE has obtained input from the Navajo Nation.

8) In Section 5.1.9 it is unclear what construction activities are involved in the installation of the flumes at the artesian well and Bob Lee Wash and if they could have consequences for the wetland at the mouth of Bob Lee Wash. It would be helpful if the draft work plan described the flumes to allow the reader to have a better understanding of what their installation would entail.

9) Section 6 discusses the DOE's health and safety plan and Section 8.6 discusses the DOE's waste management program but neither discuss the precautions or activities associated with the tailings or contaminated water that would be excavated during the boring into the tailings in Section 5. Please provide additional information on how DOE plans to manage excavated tailings and contaminated water and the safety measures to protect workers and the public during the excavation of the tailings.

Conclusion

The draft work plan is a very comprehensive plan for identifying data gaps and describing the intended activities to fill those gaps. The necessity of a new revised GCAP was clearly stated as were its goals. The draft work plan is intended to provide the basis for the development of the revised GCAP purpose, and goals of the work plan were clearly delineated. The plan for meeting the goals, i.e., to identify data gaps and activities to obtain the necessary data and information, was clear and reasonable.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice" a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's ADAMS. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions concerning the NRC comments, please feel free to contact me at 301-415-6749 or at Dominick.Orlando@nrc.gov.

Sincerely,

Dominick A. Orlando

Digitally signed by Dominick A. Orlando
Date: 2020.07.15 14:09:34 -04'00'

Dominick Orlando, Senior Project Manager
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Decommissioning Branch
Division of Decommissioning, Uranium Recovery
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Docket No.: WM-00058

cc: Shiprock list serve

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