Cimarron Monthly Status Teleconference Notes
February 23, 2022

Attendees:

NRC - HQ	DEQ	EPM (or Contractors to the Trust)
Jim Smith	Paul Davis	Jeff Lux
Ian Irvin	Mike Broderick	Bill Halliburton
Rob Evans	Kelly Dixon	Jay Maisler
John Saxton	Anna Fernow	John Hesemann
Ron Burrows	Jon Reid	Dan Clement
Karen Pinkston	Pam Dizikes	
Linda Gersey		

Groundwater Flow Model

Recent concerns related to groundwater flow models have been expressed by both the NRC and the DEQ. The DEQ's concern had to do with the projected advancement of the uranium plume toward the Cimarron River. A June 2004 technical memorandum prepared by a PhD hydrogeologist working for Kerr-McGee estimated that it would take 1,900 years for the plume to reach the river and over 2,700 years for the maximum concentration of uranium (less than 2 pCi/L) to reach the river. At that time, the furthest downgradient well on site was more than 600 feet from the river. We now know that the uranium plume has already reached the river. The highest uranium concentration in the BA1 plume yielded > 5,000 pCi/L uranium, and it's now approximately than 3,000 pCi/L.

Discussion regarding NRC concerns about the groundwater flow model and the estimated duration of remediation was limited because this meeting had not been publicly noticed, and there was no vehicle for public participation/input. The following summarizes the basic conceptual differences between the groundwater flow model developed for the decommissioning plan (DP) and the conceptual site model upon which the groundwater flow model should be based.

The groundwater flow model for Burial Area #1 transition zone material assumes isotropy that does not reflect the 3-dimensional depiction of the transition zone developed by Burns & McDonnell. If licensed material in fine-grained soil in the transition zone does not report to extraction trenches as modeled, the duration of remediation in this area could be significantly longer than the 150 months on which the decommissioning cost estimate is based.

EPM asserted that evaluation of groundwater and soil data from the 2002 groundwater assessment demonstrated that soil and groundwater higher uranium concentrations is contained in the coarser grained material. The relatively insignificant amount of licensed material that may be present in finer-grained soils should not impact the duration of remediation; in fact, if licensed material is almost exclusively contained within the coarser-grained soil in the transition zone, the duration of remediation may be overestimated.

It was agreed that a public meeting will be scheduled, during which NRC, EPM and Burns & McDonnell personnel will more specifically address NRC's concerns and how to most effectively and efficiently address those concerns.

Potential Paths Forward

Path #1 – Active Remediation to Achieve Unrestricted Release

Assume that the NRC's concerns regarding groundwater flow modeling can be overcome quickly and economically (with no field investigation). Also assume that EPM can respond to NRC's concerns (both related to the groundwater flow model and the pre-application audit) and submit *Facility Decommissioning Plan – Rev 3* (the DP) to the NRC by the end of April. The DP will include an updated decommissioning cost estimate (DCE). Assume that the DCE is less than available funding at that time (without contingency). Finally, assume that the DP passes the NRC's acceptance review and makes it through the detailed technical review with few and only very minor RAIs, so that construction can begin around the end of 2023 and operation can begin in 2024. Under these conditions, the NRC and the DEQ, as beneficiaries, may decide that this is the path to pursue.

The Trust Agreement states that one of the objectives of the Cimarron Environmental Response Trust (the CERT) is "… the preparation and implementation of an NRC-approved decommissioning plan and groundwater remediation plan, and all Environmental Actions required under federal or state law." "All Environmental Actions required under federal or state law." have not been defined in detail, but for the purpose of this meeting, assume that termination of the license with no restrictions satisfies the "under federal law" portion of the Environmental Actions, and that remediation for all COCs to State criteria are considered Environmental Actions required under state law.

The benefits of this approach are:

- A considerable mass of uranium will have been removed from the groundwater. The mass of uranium that could eventually migrate to the Cimarron River would be very small, and uranium would never be detected in the river.
- The "Environmental Actions" that satisfy federal law will have been completed.

The major drawbacks of this approach are:

- Regardless of how good and conservative the groundwater flow models are, aquifer remediation often takes longer than anticipated. And a large portion of the Trust accounts will be consumed by pre-construction and construction activities. With little or no contingency, it is possible that funding will not be sufficient to achieve license termination. What do you do if there is no money and the license has not been terminated?
- "Environmental Actions required under state law" would not be addressed for ***any*** of the COCs, and funding could not provide for monitoring of COCs after license termination. If the property is sold after achieving license termination, restrictions on the future use of the property that would "run with the land" would still have to be instituted.

Path #2 – Passive Remediation to Achieve Unrestricted Release

If the DCE is ***not*** sufficiently less than available funding, or if the schedule for approval of the DP extends the schedule enough that funding is no longer adequate, the beneficiaries of the Trust may approve the withdrawal of the DP and the submission of a revised decommissioning plan that relies upon passive remediation, which we will refer to as monitored natural attenuation, or MNA. The term monitored natural attenuation is somewhat misleading because some of the

assumptions upon which MNA is based may not fit the Cimarron site. A revised decommissioning plan would be submitted for review and approval, a small building would be constructed on CERT property, and a long-term groundwater monitoring program would be initiated. The license would be amended significantly to reflect the fact that the only licensed material "generated" on site would be the extremely small quantities of uranium in groundwater samples collected for laboratory analysis on a periodic basis. Many of the over 200 monitor wells on site could be plugged and abandoned.

Site maintenance activities would be limited to maintaining access to monitor well locations. The Trustee would obtain approval to invest the Trust funds more "aggressively" so that the annual return on the Trust accounts would always exceed (after amendment of the license and construction of the CERT "office" annual expenditures.

The benefits of this approach are similar to the benefits of Path #1. However, due to the longer timeframe involved, the concentrations of ***all*** COCs would be reduced to far lower concentrations than would be achieved in Path #1.

The major drawbacks of this approach are that:

- As with Path #1, Environmental Actions required under state law would not be addressed for ***any*** of the COCs.
- The duration of remediation extends far beyond the term for which MNA is normally considered a viable remediation option.
- Costs associated with the radiation protection and quality assurance programs and NRC fees could make it impossible to generate sufficient income to the Trust accounts to last as long as needed to achieve license termination.
- Stakeholder acceptance may be a greater issue for this approach than for active remediation because we are basically just allowing the uranium plume to migrate to the Cimarron River. We could easily demonstrate that licensed material uranium would never be detectable in the river due to dilution, but it would be obvious that we're just allowing the plume to disperse and flow to the river.

<u>Path #3 – License Termination Under Restricted Conditions</u>
If the DCE is not sufficiently less than available funding, or if the schedule for approval of the DP extends the schedule enough that the DCE is no longer adequate, the beneficiaries of the Trust could agree that the decommissioning plan should be withdrawn. EPM will instead apply for "License Termination Under Restricted Conditions" (in accordance with 10 CFR 1403). Ironically, the dose model that was prepared to inform us of the relationship between uranium and Tc-99 concentrations and radiological dose for various pathways demonstrates that, with durable institutional controls, the Site currently meets the applicable criteria for license termination with restrictions per 10 CFR 1403.

EPM would submit the dose model for NRC review and propose a "reasonable exposure scenario" per NUREG-1757 Volume 2 Appendix M. The dose model will demonstrate that the criteria for License Termination Under Restricted Conditions are met. The durable institutional controls would be implemented, the license terminated, and a long-term monitoring program, performed by the Trust and overseen by the DEQ, would be implemented.

The benefit of this approach is that termination of the NRC license would significantly reduce the cost to control and monitor the site, and the annual return on the Trust accounts would likely always be greater than annual expenditures.

The most significant drawbacks to this approach are:

- The same issues regarding stakeholder acceptance described in Path #2 would apply.
- The public may not believe that the DEQ is as trustworthy as capable as the NRC to ensure protection of health from exposure to radioactive materials.
- The NRC stated that license termination under restricted conditions has not yet ever been approved.

Financial Implications of Section 3.2.4 of the Trust Agreement

Section 3.2.4 of the Trust Agreement says that the Trustee must notify the NRC "no later than 180 days prior to the anticipated date, that all contractual and other projected obligations will have exhausted 25%, 50%, and 75% of the Cimarron Federal Environmental Cost Account. Upon notification that 75% of the Cimarron Federal Environmental Cost Account has been exhausted, the Cimarron Trustee shall cease remediation work and commence passive maintenance and monitoring only …". There is another requirement that the NRC be notified if 5% of the Cimarron Environmental Federal Cost Account (herein the Federal Account) will be spent within the next 6 months.

Several aspects of the funding of the Cimarron Trust created problems with the requirements of Section 3.2.4 of the Trust Agreement. Because 1) in addition to the Federal Account there is a Standby Trust for which the sole beneficiary is the NRC, 2) the Federal Account received substantial income from the Anadarko Litigation, and 3) the Federal Account has received and/or will continue to receive income from property sales, oil and gas leases and royalties, we needed to determine what value we should use for the funding of the Federal Account; the value used to calculate 25%, 50%, and 75% of the Federal Account. It was later agreed upon by the NRC, the DEQ, and the DOJ that the value of the Federal Account for the purpose of Section 3.2.4 would be the value of the Federal Account, plus the value of the Standby Trust Fund, at the time the DP is approved.

Based on the DCE contained in the DP, the value of the Federal Account (calculated as described above) will be approximately $54,300,000. By the time construction has been completed, we will have spent over $18,300,000 from the Federal Account, which is over 30% of the initial value of the Federal Account, and we will have triggered the 5% reporting criterion twice. If we would have to stop remediation at 25% of the Federal Account (approximately $13,600,000), we would have to stop remediation after spending about $22,400,000. According to the remediation schedule in the DP, this would not get us to the point that we would achieve the NRC criterion for uranium in groundwater. If the schedule is extended beyond that presented in the draft *Facility Decommissioning Plan – Rev 3* (and it almost certainly will), the initial value of the Federal Account could be significantly less than described above.

The Trust Agreement does provide the NRC the opportunity to authorize the expenditure of more funds from the Federal Account. But if we get to the point where there's only a little over

$13,000,000 left in the Federal Account, and we haven't achieved the level of concentration reduction we needed to achieve by that time, would the NRC agree to continue to spend what funds remain in the Federal Account?

A letter has been drafted providing much more information than is presented herein. It will be submitted following internal review by EPM. This overview was provided during this meeting because consideration of the requirements of the Trust Agreement may be an important factor in the beneficiaries' determination of the best path to proceed forward.

The Agencies' Roles as Regulator and Beneficiary

Discussion about the NRC's and the DEQ's role as beneficiary and the impact this has on the normal regulator-licensee relationship and regulatory process was discussed multiple times during this meeting. EPM pointed out that in addition to regulatory and license requirements, the 2011 Consent Decree and Environmental Settlement Agreement and the Trust Agreement, which were jointly executed by both Federal and State agencies (including the NRC and the DEQ), represent additional legal requirements to which both the Trustee and the beneficiaries are subject.

The NRC and the DEQ will conduct inter-government agency meeting(s) without the participation of the Trustee to discuss issues related to the obligations of the beneficiaries as well as the issues addressed above.

EPM Responses to NRC Comments on the Pre-Application Audit

In an email dated January 31,2021, the NRC issued comments on the draft DP that EPM submitted November 11, 2021. EPM submitted nine requests for clarification of the NRC's comments related to the DP on February 1, 2022, and Enercon submitted 5 requests for clarification of the NRC's comments related to the radiation protection program on February 4, 2022. EPM will proceed with the revision of the decommissioning plan. Discussions on the groundwater flow model will be conducted to address the NRC's concerns; addressing those concerns may extend the schedule for submission of *Facility Decommissioning Plan – Rev 3.*

Next Teleconference

The next monthly project status teleconference will be conducted on March 16, 2022.