40-8714



Western Division

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May 2, 1984

Mr. R. Dale Smith, Director Uranium Recover Field Office Region IV U. S. Nuclear Regulatory Commission P. O. Box 25325 Denver, CO 80225

21/191

Re: Source Material License No. SUA-1352 Docket No. 040-08714

Dear Mr. Smith:

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PDR

The enclosed report is submitted in response to your letter dated March 8, 1984, which requested additional information in regard to the groundwater restoration at the Collins Draw In Situ Uranium Mining Project.

In reviewing the restoration that has been conducted and in evaluating the groundwater quality that has been achieved at the Collins Draw Project, several extenuating and impact mitigating factors should be considered. These factors are briefly discussed herein to assist in your review and evaluation.

Cleveland-Cliffs has used all reasonable groundwater technologies. An extensive literature search was conducted and a significant amount of time and money was invested in conferring with colleagues, consultants, and equipment sales personnel in the in situ mining industry and other industries to discover reasonable groundwater and mine zone restoration methods. In addition, Cleveland-Cliffs has consulted with the Wyoming Department of Environmental Quality (DEQ), the EPA, and the NRC during numerous meetings and by correspondence to determine practicable and reasonable means to restore the groundwater.

As discussed in the restoration reports and correspondence submitted to the NRC and the Wyoming DEQ, restoration technologies tested and used have included but have not been limited to the following: lixiviant transfer, ion exchange, reverse osmosis, air stripping, groundwater sweep, groundwater flood, and various combinations of these technologies. All restoration technologies were used to the limit of their reasonable effectiveness. Some of the technologies were better than others. For example, the groundwater sweep, which included the injection of a high quality water (drinking water quality) into the production zone with concurrent pumping and removal of production zone water, was one of the best available technologies. (The water from the production zone was treated and discharged on the surface.) The superiority of this restoration method was due to the washing of the mine zone with a high quality water, and total removal of production zone water by pumping. Other restoration methods required the reinjection of treated

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production zone water; however, the quality of the treated water was inferior since no treatment method could remove all of the contaminants.

The restoration objective has been to restore all groundwater constituents to pre-mining baseline concentrations. Restoration was conducted until it was no longer effectively improving the groundwater quality. The groundwater quality has been significantly restored. However, in situ mining has altered the baseline geochemical conditions of the host rock in the production zone. It has not been possible to restore the mine zone groundwater to baseline quality, due to the variable retention of ammonia in the clay constituents in the host rock. The host rock cannot be restored to the condition where it does not release contaminants to the groundwater. Extensive research has not developed a means to either release all of the constituents from the host rock or to permanently attach the constituents to the host rock. Existing technology cannot restore all groundwater parameters to drinking water quality or baseline concentrations. Additional use of the groundwater.

In November, 1978, when Cleveland-Cliffs submitted application and in June, 1979 when the NRC issued the Source Material License, it was understood by both parties that restoration to baseline or drinking water quality may not be possible. Therefore, the Source Material License limited the wellfield area to less than 1-1/4 acres and limited the operational flowrate to 100 gpm. During the operation, in situ mining was limited to an area of approximately 0.74 acres in one aquifer. The groundwater impacts were limited to a very small area and volume.

Cleveland-Cliffs has spent approximately \$4.4 million in an attempt to restore the groundwater to baseline quality. This amounts to an investment of approximately \$5.9 million per acre of mine zone. At the time the Source Material License was submitted, it was never envisioned that an expenditure of such magnitude would be required to restore the groundwater quality. As a result, the costs of groundwater restoration have been significant and additional expenditures will not significantly improve the groundwater quality.

The mine zone aquifer at Collins Draw is at a depth of approximately 425 feet and is approximately 50 feet thick. The pre-mining baseline groundwater quality did not meet State of Wyoming standards for drinking water use, agricultural use or livestock use due to the concentrations of radium and iron. The groundwater has been restored to the quality of use that was present prior to mining. The water in the mine zone aquifer is not known to have ever been used prior to mining in the region of Collins Draw. The restored water in the mine zone aquifer is currently of adequate quality for industrial use purposes, the same as it was prior to mining.

As reported in the groundwater restoration report dated May 21, 1982, the mine zone aquifer in the Collins Draw region is vertically confined above and below by extensive zones of impermeable siltstone and claystone. The residual groundwater Mr. R. Dale Smith

constituents will not reach and impact other aquifers or sources of water. Significant horizontal migration of the groundwater contaminants in the mine zone is not predicted to occur due to the slow rate of natural groundwater movement and due to adsorption and dispersion of the contaminants. Natural processes are expected to continue to restore the groundwater.

The groundwater in the mine zone aquifer at the Collins Draw site has been permitted and appropriated for industrial use by Cleveland-Cliffs. As discussed with the Wyoming DEQ, the groundwater appropriation could be returned to the State of Wyoming, and the Wyoming State Engineer could restrict future appropriations of groundwater from the mine zone aquifer in the region of the Collins Draw site. In addition, brass caps or other appropriate signs could be installed at the site to warn potential future water users that the water in the mine zone aquifer is not to be used except for industrial purposes.

In the Collins Draw region, there is a productive aquifer at a depth of approximately 200 feet which contains water of drinking water quality. Unless a well was for in situ uranium mining purposes, anyone drilling a water well in the Collins Draw region for water appropriation and use would most reasonably tap and utilize the more shallow (less expensive) and better quality water source.

Since the initial groundwater restoration report was submitted to the NRC and the Wyoming DEQ, approximately 2-1/2 years ago, Cleveland-Cliffs has consulted with the NRC and Wyoming DEQ staffs numerous times to seek their comments and advice. During this period, restoration reports and correspondence were submitted to both agencies to demonstrate use of best practicable technology and to demonstrate fulfillment of the respective groundwater restoration requirements. As a result of the meetings and the documentation, the Wyoming DEQ has concurred that "best practicable technology" has been used to restore the groundwater.

During the period of time from November 13, 1981, until Cleveland-Cliffs meeting with the NRC staff on January 12, 1984, the NRC had not provided comment on the adequacy of the restoration at Collins Draw as requested by Cleveland-Cliffs. Cleveland-Cliffs was informed on May 11, 1983, by NRC representatives that the NRC was giving their jurisdiction in regard to the adequacy of groundwater restoration to the Wyoming DEQ. During the meeting on January 12, 1984, it was determined that the NRC had reversed its decision. As a result, review and discussions of groundwater restoration that should have been conducted months ago, are taking place at this time. This has created certain inefficiencies in providing information. Operating and managerial staff that worked on the project have left Cleveland-Cliffs' employment. Information is not as fresh and as precise now as it was during the active stage of restoration two years ago. The delays in review of the adequacy of groundwater restoration have caused monitoring costs, plant maintenance costs, etc., to continue during the period of inactivity. Cleveland-Cliffs desires to resolve all outstanding groundwater restoration issues as soon as possible.

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Cleveland-Cliffs believes that all groundwater restoration requirements have been adequately fulfilled. Could you inform us of any statutory or regulatory requirements in regard to restoration that have not been satisfied?

In accordance with discussions held during our meeting on January 12, 1984, it was Cleveland-Cliffs' understanding that the NRC planned to complete review of the groundwater restoration; complete review of the process drainfield post-operational sampling program; and complete review of the project area decontamination and decommissioning plans during the early spring of this year. These reviews were planned to be completed so that Cleveland-Cliffs could decommission and dismantle the project facilities during the summer, and conduct surface reclamation of the project area during the fall of 1984. Should we still anticipate that Cieveland-Cliffs can receive NRC authorization to decommission and dismantle the project this summer and conduct surface reclamation this fall? If not, what is a reasonable schedule, considering that Cleveland-Cliffs has been subjected to significant review delays during the last two years?

If you should have any questions in regard to this letter or the enclosed report, please contact me personally at your earliest convenience.

Sincerely,

Truman E. Louderback Director of Environmental Affairs

TEL/emb
enclosure
cc: Mr. Lyle D. Randen, Administrator
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