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Docket File No. 40-8681

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MEMORANDUM FOR: Docket File 40-8681

FROM: Daniel M. Gillen
New Facilities Section
Uranium Recovery Licensing Branch
Division of Waste Management

SUBJECT: AMENDMENT NO. 13 TO SOURCE MATERIAL LICENSE NO. SUA-1358 ENERGY FUELS NUCLEAR - WHITE MESA

In a December 3, 1981 letter from Energy Fuels Nuclear (EFN), which responded to the NRC staff's review of a semi-annual environmental monitoring report, EFN included a proposal for a revised groundwater monitoring program. EFN has, to this date, been performing quarterly groundwater sampling (monthly the first year) and testing for concentrations of a broad suite of chemical parameters. The present licensed program is non-specific with regard to the chemicals to be monitored, but does require that a more specific program be established based on an analysis of the tailings liquid. EFN submitted a November 30, 1981 report by D'Appolonia wherein a revised program of groundwater sample testing was proposed based on the comparison of the chemicals occuring in the tailings liquid and the chemicals naturally occuring in the groundwater at the White Mesa site.

In addition, a recent licensing action has affected the present groundwater monitoring program. By letter dated February 10, 1982, Amendment No. 10 to Source Material License No. SUA-1358 was issued authorizing construction of the second phase of the tailings management system. As a result of the staff's review and approval of the second phase construction, the locations of groundwater monitoring wells have been changed. Certain wells have been eliminated due to new construction at their locations and other wells have been added to adequately monitor the total tailings disposal area. The staff's review and conclusions regarding the wells to be added are contained in the Amendment No. 10 backup technical review memorandum dated February 10, 1982.

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OFC	WMUR	WMUR	WMUR			40-8681/dmg/82/06/17/0
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Proposed Action

Based on a review of EFN's proposed groundwater monitoring program changes, and on the monitoring location changes resulting from Amendment No. 10, the proposed action is the amendment of Source Material License No. SUA-1358 by adding a revised groundwater monitoring program to the requirements of existing License Condition No. 38. The staff has reviewed the licensee's proposed revisions to the groundwater sample testing program. A summary of the proposed modified program is given in Table 2 of the November 30, 1981 D'Appolonia report (see attachment). In addition, the staff has reviewed all groundwater monitoring data collected to date at the White Mesa site, and found no indication of any seepage development. The staff has concluded that the proposed quarterly testing of only pH, specific conductance and temperature is insufficient. A determination of the chloride concentration should also continue to be performed quarterly since it is the most mobile and least retarded chemical species that would be expected to be present in seepage at the White Mesa site. Analysis of chloride can be performed quickly and accurately by simple titration with silver nitrate. In addition, uranium, the most mobile and least retarded radionuclide, should continue to be monitored quarterly. Quarterly monitoring of chloride and uranium would provide a direct indication of any chemical and/or radionuclide migration for use as necessary verification of the proposed indirect field tests for pH and specific conductance. The proposals for comprehensive semi-annual and annual water sampling and testing shown on the attached Table 2 were found to be acceptable. The large list of constituents to be tested semi-annually and annually will provide adequate confirmation of the quarterly readings and evaluation of all parameters with elevated concentrations in the tailings cells. Therefore, the requirements for testing frequency and parameters to be tested would be revised to reference the program given in Table 2 with the staff's modifications discussed above.

In addition, the groundwater monitoring locations would be updated to account for the well changes previously approved by Amendment No. 10.

Issuance of this amendment would not result in any incremental impacts above those previously assessed for this project. Approval of a license amendment containing the following addition to License Condition No. 38 is recommended:

Notwithstanding any requirements or specifications in Appendix G regarding monitoring of groundwater, the licensee shall comply with the following:

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Groundwater Sample Collection			Groundwater Sample Testing
Number	Well Location	Method & Frequency	Type and Frequency
9	One deep cross-gradient east, one deep cross-gradient west, two shallow cross-gradient west, three deep down-gradient in Cell 3 dike, one deep down-gradient in Cell 4 dike, one deep far down-gradient	Grab Quarterly	Testing frequencies and parameters to be tested shall be in accordance with Table 2 (Chemical Parameter Monitoring Schedule, Recommended Operational Phase Groundwater Program) presented in the November 30, 1981 D'Appolonia report transmitted by Energy Fuels Nuclear letter dated December 3, 1981, with the exception that Chloride and Uranium shall be added to the list of parameters tested quarterly.
1	Control location up-gradient (not influenced by tailings seepage)	Grab Quarterly	
Each Well	Each well used for drinking water or watering livestock or crops within 2 km of tailings cells	Grab Quarterly	

Original Signed by
D. M. Gillen

Daniel M. Gillen
New Facilities Section
Uranium Recovery Licensing Branch

Approved by: Original Signed by:
D. E. Martin

Dan E. Martin, Section Leader
New Facilities Section
Uranium Recovery Licensing Branch

Case Closed: 04008681120E

OFC	WMUR	WMUR	WMUR				40-8681/dmg/82/06/17/0
NAME	DMGillen	FWRoss	DEMartin				
DATE	6/23/82	6/25/82	6/28/82				

TABLE 2

CHEMICAL PARAMETER MONITORING SCHEDULE
RECOMMENDED OPERATIONAL PHASE GROUNDWATER PROGRAM

QUARTERLY SAMPLING	SEMIANNUAL SAMPLING	ANNUAL SAMPLING
pH (F)	Indicator Parameters:	pH (F,L)
Specific Conductance (F)		Specific Conductance (F,L)
Temperature (F)	pH (F,L)	Temperature (F)
	Specific Conductance (F,L)	Total Dissolved Solids (L)
	Temperature (F)	Alkalinity (F,L)
	Sulfate (L)	Sulfate (L)
	Chloride (L)	Chloride (L)
	Gross Alpha (L)	Ammonia (L)
		Phosphate (L)
	Accuracy Assessment Parameters:	Aluminum (L)
		Arsenic (L)
	Calcium (L)	Cadmium (L)
	Magnesium (L)	Calcium (L)
	Potassium (L)	Chromium (L)
	Alkalinity (F,L)	Copper (L)
	Sodium (L)	Lead (L)
	Total Dissolved Solids (L)	Magnesium (L)
		Manganese (L)
		Mercury (L)
		Molybdenum (L)
		Potassium (L)
		Selenium (L)
		Sodium (L)
		Vanadium (L)
		Zinc (L)
		Gross Alpha (L)
		Gross Beta (L)
		Uranium (L)
		Radium-226 (L)
		Thorium-230 (L)
		Lead-210 (L)
		Polonium-210 (L)

NOTE: F = Parameter measured in field
L = Parameter measured in laboratory
All radionuclides and metals are analyzed for dissolved concentrations only