



Docket:  
40-8907

December 30, 2004

Mr. Gary Janosko, Branch Chief  
Fuel Cycle Licensing Branch, FCSS  
c/o Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Mr. Mark D. Purcell  
Remedial Project Manager  
Superfund Division  
U.S. Environmental Protection Agency, Region 6  
1445 Ross Avenue, Suite 1200  
Dallas, TX 75202-2733

Re: 2004 Groundwater Corrective Action Annual Review Report  
License No. SUA-1475  
United Nuclear Corporation's Church Rock Site, Gallup, New Mexico

Dear Messrs. Janosko and Purcell:

On behalf of United Nuclear Corporation (UNC), N.A. Water Systems (formerly USFilter) has prepared this annual performance review of the groundwater corrective action at UNC's Church Rock Mill and Tailings Site near Gallup, New Mexico, pursuant to License Condition 30C. This report is for the 2004 operating year and represents the period from October 2003 through October 2004.

This report, similar to the 2003 report, focuses on the groundwater performance of the natural systems without active remediation. As indicated in the U.S. Environmental Protection Agency's *First Five-Year Review Report* (September 1998) and by the approvals to decommission or temporarily shut off the three corrective action systems, the agencies recognized that the corrective actions have reached the limit of their effectiveness in Zone 1 and Zone 3, and may have reached their limit of effectiveness in the Southwest Alluvium. Presentations and reports prepared to document the geochemical processes in the Southwest Alluvium (Earth Tech, 2000d and 2002c) and the Zone 1 hydrostratigraphic unit (Earth Tech, 2000c) showed that the natural geochemical mechanisms are at least as effective as the active remediation systems in controlling the migration of constituents of concern. This annual report focuses on how these natural processes are performing.

EPA's *Second Five-Year Review Report* (September 2003) recommended that a Supplemental Feasibility Study should be done to assess appropriate future actions to

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take in Zone 3. This Study was submitted by UNC in October 2004 and it is addressed in this annual report.

## **RECOMMENDATIONS**

Based on the results of the 2004 annual performance evaluation, the following recommendations are provided for each of the three hydrostratigraphic units at the Site.

### **Southwest Alluvium**

Predicted performance of Southwest Alluvium natural attenuation (NA) is summarized in Table 6. The NA reassessment in this annual report is the basis for the following recommendations for the Southwest Alluvium corrective action system:

- Decommission the pumping wells.
- Continue to perform monitoring on an annual basis because the seepage-impacted water quality is stable, the offsite impacted water quality is not hazardous, and a yearly frequency is sufficient for tracking the migration of the seepage-impact front (estimated to be moving southwestward toward new Well SBL 1 at an average rate of 30 ft per year).
- Closure of the Southwest Alluvium corrective action program using Monitored Natural Attenuation (MNA) for chloride, chloroform, metals, and radionuclides.
- The Southwest Alluvium seepage-impacted area has attained ALARA goals. In the future, it should be managed via ACLs established by NRC and/or TI Waiver. A TI Waiver would be non-traditional in the sense that there would not be a classic TI zone. Instead, UNC proposes that the projected 200-year seepage front be used, which we understand to be compatible with NRC guidance.
- The background water quality is likely to exceed the Site standards for sulfate and TDS downgradient for miles, but this water quality is unrelated to seepage impact. The estimated location of the seepage-impact front 200 years from now, during 2204, is shown in Figure 58 of this annual report. This predicted 200-year seepage front location is approximately 6,000 ft south-southwest of the current front location along Pipeline Arroyo.

### **Zone 3**

Continue Zone 3 remediation using the natural system to stabilize the seepage impacts. The revised monitoring program requested by the NRC and implemented in 2001,

combined with the seepage-impact boundary wells that UNC installed in 2002, have proven to be very useful for evaluating the migration of the seepage and the performance of the natural system in attenuating constituents. UNC is currently conducting an ongoing, extended pilot program toward evaluating the use of hydrofracturing to enhance the remedy for cutoff and containment of the migrating seepage-impacted water.

UNC recommends that the NRC revise the ROD background concentrations for metals, just as they did in 1996 for sulfate, nitrate, and TDS. The background metals of relevance include arsenic, molybdenum, nickel, cobalt and manganese.

### Zone 1

Predicted performance of the Zone 1 NA system is summarized on Table 16. UNC requests proceeding to closure of the Zone 1 corrective action program using a combination of:

- MNA for metals and radionuclides;
- TI Waiver for sulfate, TDS, and manganese in the TI zone shown on Figure 58; and
- Institutional Controls for support of MNA and the TI Waiver.

Please contact Mr. Roy Blickwedel (General Electric Corporation) at (610) 992-7935 if you have any questions or need additional information.

Sincerely,



Mark Jancin, P.E.  
Project Manager

Enclosures (2 copies for each addressee)

cc: Bill von Till, Nuclear Regulatory Commission  
Robin Brown, New Mexico Environment Department  
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