



Update on Ground Water Cleanup

United Nuclear Corporation Church Rock Superfund Site
Church Rock, McKinley County, New Mexico May 2006

This Information Bulletin will tell you about:

- Pilot test for injecting water into Zone 3 to improve remedy
- Current Status of Cleanup
- Site Description
- How to find out about the Site

Recent Progress

With oversight by the U.S. Environmental Protection Agency (EPA), the United Nuclear Corporation (UNC) is about to undertake a pilot study to enhance the ongoing cleanup of ground water contamination at the UNC Church Rock Superfund site (Site). The pilot study will consist of placing (injecting) cleaner, less acidic, ground water from a deeper aquifer (the Dakota and/or Morrison Formation) at the Site into the target aquifer, referred to locally as Zone 3 of the Gallup Formation. The injection of this water is anticipated to (1) decrease the acidity of the Zone 3 ground water; (2) stop the movement of contaminants such as radium and heavy metals; and (3) increase the volume of contaminated ground water that can be collected by the pumping wells. The pilot test is scheduled to start in May 2006 and continue for a period of three months. The area selected for water injection is very small. It is located close to the former tailings disposal area and well within the area of ground-water contamination (*see* Site Map).

Ground Water Remedy Selected By EPA

In a 1988 Record of Decision (ROD), EPA selected a ground-water remedy to clean up contaminated tailings water that seeped from the tailings disposal area into the underlying ground

water of the alluvium (unconsolidated sand, silt, and gravel deposits commonly referred to as the Southwest Alluvium), and two underlying sandstone zones within the Upper Gallup Formation (known as Zone 1 and Zone 3). The remedy called for the operation of pumping wells to extract the contaminated ground water and evaporation ponds and spray systems to evaporate the collected water.

Current Status of Cleanup

Over the last several years, the ground-water pumping wells have been shut down for all three water-bearing units because they reached the limit of their effectiveness as was anticipated in the ROD. For Zone 1 and Zone 3, the pumping rates in wells decreased significantly over time due to declining water levels and a gradual dewatering of the rock. This was caused by insufficient natural recharge of water to the aquifers. The loss of water reached levels that did not support pumping and the operations were shut down. The Zone 3 pumping wells were also shut down because pumping at those locations accelerated the movement of contaminated water away from the tailings disposal area. For the Southwest Alluvium, the operation of the pumping wells showed no continuing progress towards achieving the Site cleanup criteria for a few, non-hazardous, regulated constituents and, therefore, pumping was temporarily discontinued.

Monitoring shows that some constituents still exceed the cleanup levels established in the ROD. In Zones 1 and 3, the cleanup levels are exceeded for several heavy metals and/or radionuclides. However, in the Southwest Alluvium, the cleanup levels are being achieved for all hazardous constituents. Regulated water quality constituents such as sulfate and total dissolved solids (TDS) still exceed the cleanup levels for all three units,

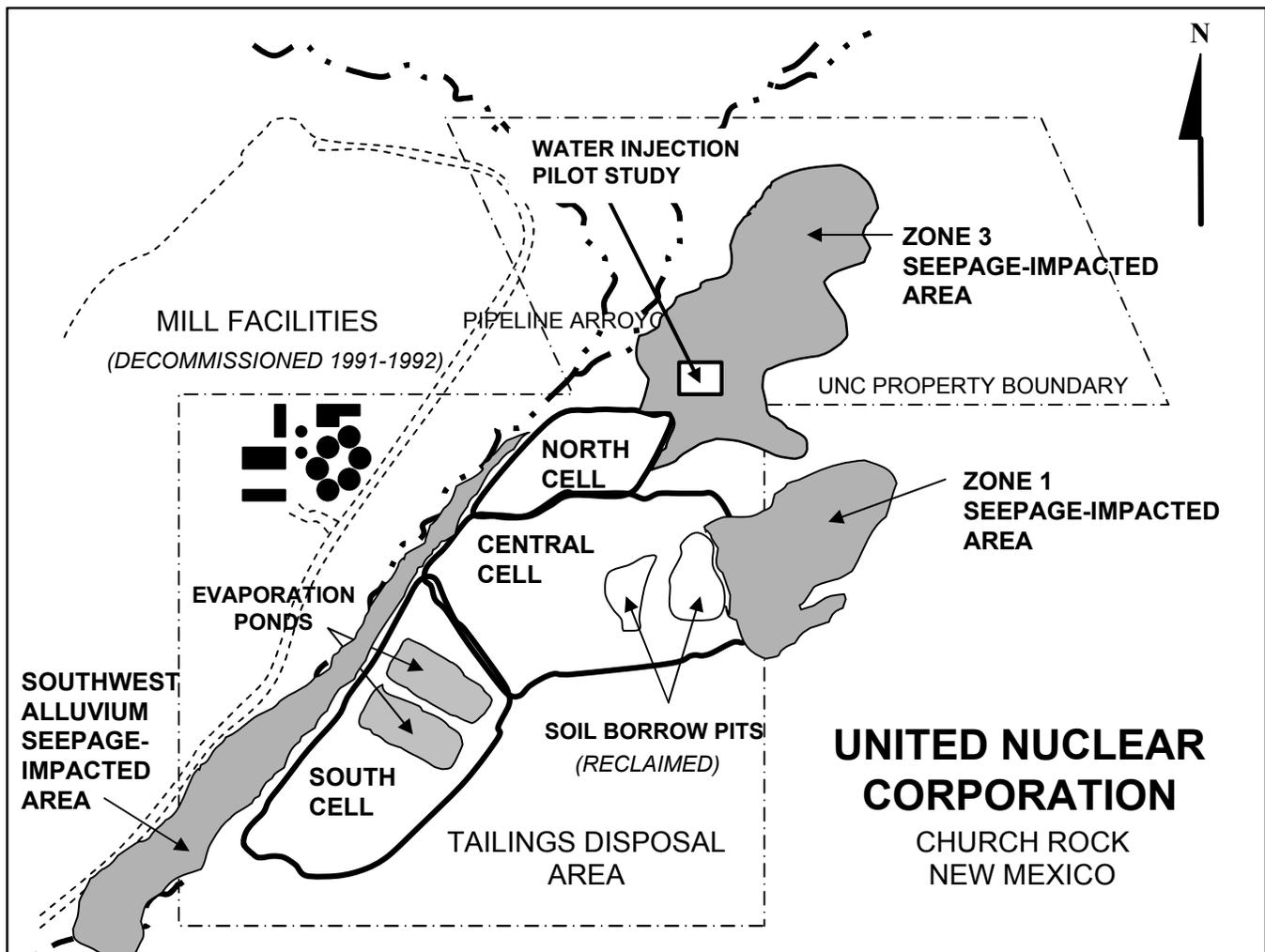
but they are also above cleanup levels at background locations (background refers to constituents or locations that are not influenced by the tailings seepage). The Site Map shows the location of the tailings seepage impacted areas.

During this past year, UNC installed several wells and used a technology called hydraulic fracturing as a pilot test in an attempt to increase water production from Zone 3 at more desirable locations. While EPA is currently evaluating the performance of hydraulic fracturing on Zone 3 water recovery, it has approved UNC's proposal for the water injection pilot test.

Based on the findings of a Five-Year Review of the remedy in 2003, EPA has decided that a supplemental study is to be performed to evaluate the feasibility of other cleanup alternatives and support further possible EPA-decision making with respect to the remedy. It is referred to as a Supplemental Feasibility Study or SFS. Hydraulic

fracturing and water injection may be remedial alternatives considered in the SFS for Zone 3 if tested successfully. This study will also include an examination of institutional controls as a mechanism for possible use with remedial alternatives to minimize the potential for human exposure to impacted ground water outside of the UNC property. The EPA has participated in recent discussions with the Navajo Nation about institutional controls, although no consensus has been reached about their use in connection with the Site.

Several new federal drinking water standards have been promulgated for some contaminants at the Site, including uranium. The EPA is evaluating whether or not the Site cleanup levels established in the ROD need to be revised to reflect those new standards to continue protecting public health and the environment. If revised, the current levels of some hazardous constituents would exceed their new cleanup levels. As part of this effort, EPA is



reassessing background levels for some constituents to determine if they are above the existing cleanup levels or new standards.

The EPA is also evaluating whether to waive the cleanup standards for sulfate, TDS and manganese due to technical impracticability. Active remediation does not appear to be effective in reducing these constituents to below the standards.

Site Description

The Site is located approximately 17 miles northeast of Gallup, New Mexico, along State Highway 566. UNC operated the Site as a uranium mill facility from 1977 to 1982. It included an ore processing mill and tailings disposal area, which covered about 25 and 100 acres respectively. The tailings disposal area was subdivided by cross-dikes into three cells identified as the South Cell, Central Cell, and the North Cell. The mill was disassembled and tailings cells capped as part of the surface reclamation activities directed by the

U.S. Nuclear Regulatory Commission (NRC). Two evaporation ponds have been constructed on top of the South Cell as part of EPA's ground-water cleanup.

The tailings are a wet, acidic waste byproduct of the milling operation. The disposal of tailings resulted in seepage of acidic tailings liquids from the unlined cells into the underlying Southwest Alluvium, and Zones 1 and 3 of the Upper Gallup Formation, contaminating the ground water with heavy metals, radionuclides such as uranium and radium, and other chemical constituents.

The area around the Site is sparsely populated and includes Navajo Tribal trust and allotted land, as well as UNC-owned property. The Navajo Reservation boundary is located approximately one mile north of the Site. The nearest residence is located approximately 1.5 miles northwest of the Site. Land use near the Site is primarily grazing for sheep, cattle and horses.

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On the web...

Information can also be accessed via the U.S.EPA Internet Homepage at:

U.S.EPA Headquarters: www.epa.gov

U.S.EPA Region 6: www.epa.gov/region6

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