contamination permitted by an ACL will remain on the licensed site or within 500 meters of the disposal area, whichever is closer. Because Section 108(a) of UMTRCA requires the Commission's concurrence with DOE's selection and performance of remedial actions to conform to EPA's standards, this rule makes the same provision for administration by the NRC of those functions for Title I as it did in the case of the Title II standards, and also provides for NRC concurrence on supplemental standards.

V. Implementation

UMTRCA requires the Secretary of Energy to select and perform the remedial actions needed to implement these standards, with the full participation of any State that shares the cost. The NRC must concur with these actions and, when appropriate, the Secretary of Energy must also consult with affected Indian tribes and the Secretary of the Interior.

The cost of remedial actions is being borne by the Federal Government and the States as prescribed by UMTRCA. The clean-up of groundwater is a largescale undertaking for which there is relatively little long-term experience. Groundwater conditions at the inactive processing sites vary greatly, and, as noted above, engineering experience with some of the required remedial actions is limited. Although preliminary engineering assessments have been performed, specific engineering requirements and detailed costs to meet the groundwater standards at each site have yet to be determined. We believe that costs averaging about 10-15 million (1993) dollars for each of the approximately fourteen tailings sites at which remedial action may be required are most likely.

The benefits from the cleanup of this groundwater are difficult to quantify. In some instances, groundwater that is contaminated by tailings is now in use and will be restored. Future uses that will be preserved by cleanup are difficult to project. In the areas where the tailings were processed, groundwater is an important resource due to the arid condition of the land. However, much of the contamination at these sites occurs in shallow alluvial aquifers. At some of these sites such aquifers have limited use because of their generally poor quality and the availability of better quality water from deeper aquifers.

Implementation of the disposal standard for protection of groundwater will require a judgment that the method chosen provides a reasonable expectation that the provisions of the standard will be met, to the extent reasonably achievable, for up to 1000 years and, in any case, for at least 200 years. This judgment will necessarily be based on site-specific analyses of the properties of the sites, candidate disposal systems, and the potential effects of natural processes over time. Therefore, the measures required to satisfy the standard will vary from site to site. Actual site data, computational models, and expert judgment will be the major tools in deciding that a proposed disposal system will satisfy the standard.

The purpose of the groundwater cleanup standard is to provide the maximum reasonable protection of public health and the environment. Costs incurred by remedial actions should be directed toward this purpose. We intend the standards to be implemented using verification procedures whose cost and technical requirements are reasonable. Procedures that provide a reasonable assurance of compliance with the standards will be adequate. Measurements to assess existing contamination and to determine compliance with the cleanup standards should be performed with 1 reasonable survey and sampling procedures designed to minimize the cost of verification.

The explanations regarding implementation of these regulations in §§ 192.20(a)(2) and (3) have been revised to remove those provisions that the Court remanded and to reflect these new requirements.

These standards are not expected to affect the disposal work DOE has already performed on tailings. On the basis of consultations with DOE and NRC, we expect, in general, that a pile designed to comply with the disposal standards proposed on September 24, 1987, will also comply with these disposal standards for the control of groundwater contamination. DOE will have to determine, with the concurrence of the NRC, what additional work may be needed to comply with the groundwater cleanup requirements. However, any such cleanup work should not adversely affect the control systems for tailings piles that have already been or are currently being installed.

However, at three sites (Canonsburg, PA; Shiprock, NM; and Salt Lake City, UT) the disposal design was based on standards remanded in part on September 3, 1985. We have considered these sites separately, based on information supplied by DOE, and reached the tentative conclusion that modification of the existing disposal cells is not warranted at any of them. Final determinations will be made by DOE, with the concurrence of NRC.

The disposal site at Canonsburg, PA, is located above the banks of Chartiers Creek. Contamination that might seep from the encapsulated tailings will reach the surface within the site boundary, and is then diluted by water in the creek to insignificant levels. Under these circumstances, this site qualifies for an ACL under § 192.02(c)(3)(ii), and modification of the existing disposal cell is not warranted.

The site at Shiprock, NM, which is located above the floodplain of the San Juan River, is over an aquifer that may not be useful as a source of water for drinking or other beneficial purpose because of its quality, areal extent, and yield. Most of the groundwater in this aquifer appears to have originated from seepage of tailings liquor from mill impoundments and not to be contributing to contamination of any currently or potentially useful aquifer. Additionally, the quality of this water may be degraded by uncontrolled disposal of municipal refuse north and south of the site. DOE is currently in the process of completing its characterization of this groundwater, and may or may not recommend use of a supplemental standard under §192.21(g). In any case, however, it appears unlikely that modification of the existing disposal cell will be necessary.

The site containing the tailings from the Salt Lake City mill is located at Clive, Utah, over groundwater that contains dissolved solids in excess of 10,000 mg/l and is not contributing to contamination of any currently or potentially useful aquifer. Under these circumstances, this site also qualifies for a supplemental standard under § 192.21(g), and modification of the existing disposal cell is not warranted.

VI. Relationship to Other Policy and Requirements

In July 1991 EPA completed development of a strategy to guide future EPA and State activities in groundwater protection and cleanup. A key element of this strategy is a statement of 'EPA Groundwater Protection Principles' ¹ that has as its overall goals the prevention of adverse effects on human health and the environment and protection of the environmental integrity of the nation's groundwater resources. To achieve these

¹ Protecting the Nation's Groundwater: EPA's Strategy for the 1990s, The Final Report of the EPA Groundwater Task Force, U.S. Environmental Protection Agency, Washington, (Report 21Z–1020), July 1991.