

remediation of the OU II Non-Surface and Ground-Water Impacted Peripheral Properties, 40 CFR 192.12, specifies the following maximum allowable Ra-226 concentrations for land:

- 5 picocuries per gram (pCi/g) above background in the first 15 centimeters (cm) of soil, averaged over 100 square meters (m²) (the background Ra-226 concentration for Monticello is approximately 1.0 pCi/g); and
- 15 pCi/g above background in any 15-cm interval more than 15 cm below the surface, averaged over 100 m².

40 CFR 192.12 specifies the following maximum allowable radon concentrations and gamma radiation levels for occupied or habitable structures:

- Radon decay-product concentrations (RDCs): less than 0.02 working level (WL) to the extent practicable, and shall not exceed 0.03 WL; and
- Gamma exposure rates: a maximum of 20 microrentgens per hour (μR/h) above background (the background gamma exposure rate for Monticello is approximately 15 μR/h).

In conjunction with the cleanup standards set forth at 40 CFR 192.12, the "hot spot" criteria specified in the DOE's Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites (FUSRAP/SFMP) were considered for cleanup standards. The DOE hot spot criteria specify the maximum radionuclide concentration allowable for a deposit of contamination of a given size that is still protective of human health and the environment.

Supplemental standards, as provided for in 40 CFR 192.21, were implemented in lieu of the 40 CFR 192.12 cleanup standards for the following OU II Non-Surface and Ground-Water Impacted Peripheral Properties. The supplemental standards were developed on a case-by-case basis and were based on health risk assessments. UDEQ and EPA approved the application for these supplemental standards on June 17, 1999, and July 1, 1999, respectively:

- Supplemental standards were implemented for radiologically contaminated material located in an environmentally sensitive piñon/juniper area on property MP-01041-VL. Supplemental standards were implemented on this property because remedial action would directly produce environmental harm that is clearly excessive compared to the health benefits (40 CFR 192.21(b)), and because the cost of remedial action would be unreasonably high relative to the long-

term benefits and the residual radioactive materials do not pose a clear present or future hazard (40 CFR 192.21(c)). The supplemental standards permitted radiological contamination exceeding the 40 CFR 192.12 cleanup standards to remain in place. In conjunction with the supplemental standards, institutional controls were implemented that will limit future public exposure to any remaining radiological contamination. The institutional controls, recorded in the San Juan County Courthouse, restrict ownership to a public entity, require the owner to manage the property as publicly accessible open space, prohibit the construction of habitable structures, limit land use to day-use recreation, and prohibit the removal of soil from the property. Institutional controls also include fencing to direct traffic to defined entry and exit points and a requirement for DOE to conduct regular inspections to ensure the selected remedy remains protective of human health and the environment.

- Supplemental standards were implemented for radiologically contaminated material associated with city-owned street and utility rights-of-way. Radiological contamination associated with city-owned street and utility rights-of-way was confirmed on property MP-00180-CS, and may exist within city-owned street and utility rights-of-way located on other OU II Non-Surface and Ground-Water Impacted Peripheral Properties. Supplemental standards were implemented on city-owned street and utility rights-of-way because the cost of remedial action would be unreasonably high relative to the long-term benefits and the residual radioactive materials do not pose a clear present or future hazard (40 CFR 192.21(c)). The supplemental standards permitted radiological contamination exceeding the 40 CFR 192.12 cleanup standards to remain in place. In conjunction with the supplemental standards, institutional controls were implemented that will limit future public exposure to any remaining radiological contamination. The institutional controls, established through a Cooperative Agreement between DOE and the City, require that city-owned street and utility rights-of-way remain open as public rights-of-way without any structures or encumbrances, define the responsibilities of DOE and the City with regard to excavating these areas and managing any radiological contamination that is encountered, and require DOE to conduct inspections to ensure the selected remedy remains

protective of human health and the environment.

Property-specific cleanup standards for contaminants in addition to those addressed in 40 CFR 192.12 were established for one property, MP-00211-VL. Cleanup standards were established for thorium-230 (Th-230), uranium, and vanadium for the Phase I portion of MP-00211-VL because of the presence of uranium yellow cake. The maximum allowable Th-230, uranium, and vanadium concentrations for Phase I of MP-00211-VL were:

- Th-230: 15 pCi/g above background in any 15-cm interval of soil more than 15 cm below the surface, averaged over 100 m² (derived from the DOE FUSRAP/SFMP guidance);
- Total uranium: 6,100 milligrams per kilogram (mg/kg) (approximately 4,290 pCi/g) in any 15-cm-thick layer of soil, averaged over 100 m² (derived from the EPA Region III Risk-Based Concentration Table, Soil Ingestion, Industrial Setting (First Quarter 1995)); and

- Total vanadium: 14,000 mg/kg in any 15-cm-thick layer of soil, averaged over 100 m² (derived from the EPA Region III Risk-Based Concentration Table, Soil Ingestion, Industrial Setting (First Quarter 1995)).

Cleanup standards were established for uranium for the Phase II portion of MP-00211-VL because of the proximity of this area to the former mill processing plant. The maximum allowable uranium concentration for Phase II of MP-00211-VL was:

- Total uranium: 300 pCi/g in any 15-cm-thick layer of soil, averaged over 100 m² (developed to meet the general radiation protection standards specified in DOE Order 5400.5 "Radiation Protection of the Public and the Environment").

The cleanup standards for these additional contaminants for MP-00211-VL are appropriate for the current industrial/recreational land use of this property. In conjunction with these additional cleanup standards, institutional controls were implemented that will limit public exposure to any remaining contamination should the land use change to residential in the future. The institutional controls, implemented through a zoning restriction (City Ordinance No. 2003-2), prohibit the construction of habitable structures on the property unless certain conditions prescribed by the zoning restriction are met. These conditions include a requirement for DOE to survey the excavated foundation footprint of any habitable structure being constructed to check for the presence of uranium. The zoning restriction also