



U.S. Department Of Energy

National Environmental Policy Act – Environmental Checklist

Project/Activity Title Shiprock Phytoremediation Pilot Study	Program Office Office of Legacy Management LM-50	NEPA ID Number LM 11-05
		Date August 4, 2005
Contractor Project Manager D. Miller	Signature 	
Contractor NEPA Contact C. Bahrke	Signature 	
DOE Project Manager R. Bush	Signature	

A. PROJECT/ACTIVITY DESCRIPTION

Project Scope

The U.S. Department of Energy (DOE), Office of Legacy Management, is proposing to conduct a phytoremediation pilot study in the radon barrier borrow pit area and the escarpment terrace area at the Uranium Mill Tailings Radiation Control Act site near Shiprock, New Mexico. This study will help determine if the use of deep-rooted plants will enhance the evapotranspiration of terrace water and thus limit the spread of contaminants. Phytoremediation occurs when the plants remove groundwater through uptake and consumption to contain or control the migration of contaminants. This provides hydraulic control of contaminated groundwater. This is currently occurring by plants that have established in the radon barrier borrow pit area and on the terrace between the disposal cell and the San Juan River floodplain. This study will help determine if placing desired vegetation in the areas of interest can increase the evapotranspiration rates and can become an economical addition to the current groundwater compliance remedy.

The project will consist of identifying and characterizing two test plot locations. The acreage identified for the plots will be approximately 0.5 acres in the radon barrier borrow pit area and approximately 0.5 acre on the terrace. Candidate species such as fourwing saltbrush, black greasewood, hybrid poplars, native cottonwoods, and non-noxious exotics will be planted to increase the hydraulic control. The plants will be provided from a greenhouse, from seed, or from populations originating on the Navajo Nation and the Four Corners region. Actual plant species will be determined on the basis of the physical and chemical properties in the soil at each test location. Each plot will have a drip irrigation system. The water supply will be hauled by pickup truck. The plots will be fenced to keep out livestock and rabbits. Once planted, a monitoring plan will be developed and the plots will be monitored for 3-5 years. The results of the study will then be evaluated to determine any changes to the Shiprock groundwater compliance remedy.

All activities will occur in previously disturbed areas. Therefore, natural and cultural resources are not anticipated to be present or affected by the proposed activity. No regulated hazardous chemicals, substances, or materials would be used, generated, managed or stored during this activity. The area of the test pads was cleaned

up during surface remediation, so no radioactive soils or materials will be encountered. Conventional work attire is acceptable for this work.

This initial selection of the test pits is scheduled to begin August 9, 2005, with all follow on activities occurring once acceptable locations have been determined.

Background Information

Shiprock was the site of a uranium-vanadium ore-processing mill that operated from 1954 to 1968. DOE remediated the site and contained the mill tailings in an engineered cell on the site in 1986. Groundwater in the former mill site area was contaminated by uranium, nitrate, and sulfate as a result of mill operations.

The groundwater is divided hydrologically and physiographically into two regions, terrace and floodplain, that are separated by an escarpment. In March 2003, DOE began pump-and-treat remediation for the groundwater in the terrace with the extracted water going to an evaporation pond. Ten extraction wells and two interceptor drains were expected to produce about 20 gallons per minute, but as of March 2004, they were producing only half that amount. In 2004, the site conceptual model for groundwater was reevaluated and one of the recommendations to improve the efficiency of groundwater remediation was to evaluate the feasibility of using phytoremediation to enhance evapotranspiration of the groundwater and thus limit the spread of contaminants.

B. ENVIRONMENTAL AND HUMAN HEALTH CONSIDERATIONS

If the proposed actions could result in potential sources of impacts, or could result in affecting environmental and human health considerations listed in Table 1 below, the "Y (Yes)" column is checked and an explanation is provided as to the physical, chemical and radiological sources or impacts (qualified or quantified when possible). An item checked "Y" does not necessarily mean that an adverse impact would occur. However, it does indicate that DOE believes an explanation is warranted, including actions DOE would implement to minimize or eliminate the potential impact, and actions to comply with federal, state, and tribal regulations. An item checked "N (No)" does not require further explanation.

Table 1. Potential Sources of Impacts, and Environmental and Human Health Considerations

Source	Potential Sources of Impacts		Explanation
	Y	N	
AIR EMISSIONS (Dust, Hazardous Pollutants, etc.)	X		Air emissions in the form of fugitive dust would likely be generated in small amounts while preparing the test plots for planting. These would not require permitting. Best management practices would be used to control dust.
CHEMICAL STORAGE/USE (SARA Title III Chemicals, etc.)		X	No regulated chemicals will be used, managed, or stored at the test plots for this activity.
EXPLOSIVES USE/MANAGEMENT (Including those with explosive potential)		X	No explosives will be used for this activity.
GROUNDWATER USE/CONTAMINATION (Existing/Future)		X	Water will be hauled to irrigate the plantings. No groundwater will be used or discharged to.
MIXED WASTE MANAGEMENT (Radiological/hazardous)		X	No mixed waste will be generated, managed, or stored during this activity.
NOISE (In Excess of Background)		X	No heavy equipment will be used to prepare the soil for planting.

PESTICIDE/HERBICIDE USE (General and Regulated Quantities)		X	Using pesticides or herbicides is not anticipated.
PETROLEUM STORAGE/USE (Regulated quantities)		X	Petroleum will be used by machinery to prepare the soil, but no petroleum will be stored at the site.
RADIOACTIVE MATERIALS/SOILS (Management)		X	No radioactive soils or materials will be managed as a result of this activity.
SOLID WASTE GENERATION (Non-hazardous/Recyclable Material)		X	No solid waste will be generated as a result of the proposed activity.
SURFACE DISTURBANCE (Soils/Vegetation-Clearing/Excavation)	X		All vegetation in the test plots will be removed and any preparation will be done with hand implements.
SURFACE WATER USE/CONTAMINATION (Effluent/Storm water – Generation/Discharge)		X	Water will be hauled to irrigate the plants. No surface water will be used or discharged to.
TOXIC SUBSTANCES MANAGEMENT (Asbestos/PCBs)		X	No asbestos or PCBs will be generated, managed, or stored as a result of the proposed activity.
TRANSPORTATION (Regulated Materials/Waste or Traffic Increase)	X		Traffic will increase in the area of the test plots during soil preparation and planting, but will return to normal once the planting is complete. No regulated materials will be generated, managed, or stored. Therefore, there will be no need for any shipment of regulated materials.
UTILITY SYSTEMS (Installing/Maintaining/Disturbance)		X	No utility systems will be affected. All irrigation will be conducted manually.
Environmental and Human Health Considerations			
Consideration	Y	N	Explanation
AIR QUALITY		X	Fugitive dust would not result in a violation of air quality standards.
ACCESS TO/USE OF NON-DOE PROPERTY	X		Access is accomplished through the Cooperative Agreement with the Navajo Nation.
ACCIDENTS – PUBLIC/WORKERS	X		All work performed shall be conducted in accordance with safety regulations promulgated by OSHA (Health and Safety regulations at 29 CFR 1926, "Construction Safety Standard," and 29 CFR 1910, "General Industry Standards," contractor and subcontractor documents, and applicable local, state, and Federal regulations.
ENVIRONMENTAL RESTORATION SITE	X		The Shiprock site is a former UMTRCA site that was surface remediated in 1986 and is still undergoing groundwater remediation per the standards set forth at 40 CFR 192.
EXPOSURE-PUBLIC/WORKERS		X	Not applicable
GROUNDWATER QUALITY		X	Not applicable
PUBLIC INVOLVEMENT/AWARENESS	X		Officials of the Navajo Nation are aware of and support the proposed activity.
SURFACE WATER QUALITY		X	Not applicable
SPECIAL STATUS / PROTECTED RESOURCES			
Archeological/Cult. Resources		X	Not present in the vicinity of the proposed activity.
Floodplains/Wetlands		X	No activities will be conducted in the floodplain or wetlands.
Migratory Birds		X	Would not be adversely affected
National and State Monument/Parks		X	Not present in the vicinity of the site.
Prime and Unique Farmlands		X	Not present in the vicinity of the site.
Scenic By-ways		X	Not present in the vicinity of the site.

Threatened/Endangered Species - Federal	X	Nine sensitive species were listed in the <i>Environmental Assessment of Groundwater Compliance at the Shiprock Uranium Mill Tailings Site</i> (DOE 2001) as most likely to be present. During two surveys and in the past 4 years of operations at the site, only one species, the Western Burrowing Owl, was sighted. The owl was observed at south end on the Terrace East and not in the vicinity of the proposed activity.
Threatened/Endangered Species - State/Tribal	X	Nine sensitive species were listed in the <i>Environmental Assessment of Groundwater Compliance at the Shiprock Uranium Mill Tailings Site</i> (DOE 2001) as most likely to be present. During two surveys and in the past 4 years of operations at the site, only one species, the Western Burrowing Owl, was sighted. The owl was observed at south end on the Terrace East and not in the vicinity of the proposed activity.
Wild and scenic Rivers	X	Not present in the vicinity of the site.
Wilderness	X	Not present in the vicinity of the site.

C. Eligibility/Conditions

Does the proposal meet the following criteria for application of Categorical Exclusion?

- The proposal fits within a class of actions listed in Appendix A, B, or C of subpart D of 10 CFR Part 1021.
- There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal.
- The proposal is not “connected” to other actions with potentially significant impacts, or related to other proposed actions with cumulatively significant impacts, and is not precluded by 40 CFR 1506.1 or 10 CFR Part 1021.211.

To fit within the classes of actions listed in 10 CFR Part 1021, Appendix B of Subpart D, proposed action must not:

- Violate applicable statutory, regulatory, or permit requirements for environment, safety, and health, including requirements of DOE Orders.
- Require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators and facilities for treating wastewater, surface water, and groundwater).
- Disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases.
- Adversely affect environmentally sensitive resources. An action may be categorically excluded if, although sensitive resources are present on a site, the action would not adversely affect those resources.

Meets Criteria X

Does not meet Criteria _____

Unsure _____

