June 2002

NAVAJO NATION

Navajo AMLR/UMTRA Newsletter

Monument Valley AML

Located within the Navajo Nation along the borders of southeastern Utah and Northeastern Arizona is the magnificent Monument Valley which is one of the "Seven Wonders of Navajoland." A breath taking view of majestic sandstone masterpieces towering at heights of 400 to 1,000 feet. For hundreds of millions of years, materials slowly eroded from the early Rocky Mountains leaving altering layers of soft and hard rocks slowly revealing the natural beauty of what is known today as, Monument Valley.

Thousands of tourist from all vast of the continents come to visit the overwhelming view of the landscapes. The beautiful rich red valley is surrounded by miles of deeply cut mesas and buttes, shrubs, trees, windblown sand dunes, sandstone uplifts, and the talus slopes that make up the majestic view. In fact, the "Winter Olympics 2002 Torch Relay," was showcased in the Monument Valley vicinity attracting more than 5,000 people from different parts of the state on February 4, 2002. Monument Valley is known as the backdrop for commercials and movies, such as John Wayne and Forest Gump.

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Tuba City AML Open House

About 120 people attended the Open House and Dedication of the new Tuba City modular office building on Tuesday, June 4, 2002. The new office building house 12 administrative and technical staff to perform reclamation and administrative activities.

A traditional blessing ceremony was performed by a local medicineman to dedicate the office building.

Refreshments and awards to sponsors followed the dedication.

Among the 1,100 AML sites inventoried, the Western Agency had the most abandoned mines pits on the Navajo Nation. Thus, the Tuba City AML has been successful in reclaiming about 241 AML sites costing $12.6 million in the Western Agency.

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Monument Valley AML 4

Nonetheless, among the majestic masterpieces, uranium deposit were discovered in the early part of the twentieth century. From 1942 to 1944, during World War II, many exploration and mining companies employed Navajo individuals to mine the Monument Valley area for vanadium (a base product needed for manufacturing and to harden the steel when uranium ore was discovered among the materials). Uranium mining peaked with the realization that uranium deposits on the Navajo Nation were abundant and in demand. Uranium production increased significantly after the war spurred in 1948 by the manufacture of atomic energy. About 767,166 tons of uranium ore were processed at the Monument Valley Uranium Processing Mill which was operated by Vanadium Corporation of America (VCA) from 1943 to 1964.

After the uranium ore was taken, companies left the mines with hazardous mine features (portal, shaft, highwalls) and low-level radioactive protore and waste materials which posed health, safety, and environmental hazards. For more than 40 years, the wind transported these harmful mine wastes down the washes and into the valley floor. It was not until 1978 that the Navajo

The cardboard boxes that the polyurethane foam (PUF) is packed in are utilized to create a retaining wall for the PUF when activated.

Nation approved the Navajo Reclamation Code to begin the long process of reclaiming abandoned mine sites in an effort to restore Mother Earth and to protect the health and safety of the Navajo people and their livestock.

Among the 1,100 Navajo AML sites inventoried on the Navajo Nation, 44 abandoned mine sites were within the Monument Valley area. The 26 remaining AML sites in Monument Valley will be reclaimed in April 2002. Reclamation involved a total of 126,905 bank cubic yards (bcyds) of mine waste. The Monument Valley 4 AML Project involved the excavation of about 106,055 bcyds of radioactive mine waste and backfilling abandoned portals, shafts, highwalls, rimstrips, pits and subsidence. The potential of erosion is minimized by compacted earthwork (2,000 bcyds) and constructing berms to divert drainage off the reclaimed sites for long term surveillance.

Local rocks are used to close the mine opening and create a full camouflage effect.

The 26 portals, two prospects and three vertical shafts are closed with the 380 cyds of "PolyUrethane Foam (PUF)." This method of closure is especially feasible in remote terrain locations where it is difficult to use bulkhead or concrete techniques to close mine openings. Due to the PUF material sensitivity to ultraviolet light, local rocks are used to close the exterior of mines opening to create a full camouflage closure. The construction of Monument Valley 4 is anticipated to be completed in May 2002. This will conclude the majority of the reclamation of abandoned mines within the Monument Valley vicinity.

For the past 11 years, the Navajo AML Reclamation Program has been successful in reclaiming 90% of coal and uranium

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Navajo AML Awards $4.8 million

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abandoned mines that covers more than 27,000 square miles at a cost of $18.4 million. Land is one of the four sacred elements of the Navajos' (Dine') traditional beliefs. We refer to the Land as "*Mother Earth*" which provide abundance for our Dine' people and their livestock. Restoring Navajolands from the scars of past mining and protecting the health, safety and welfare of our Dine' people will once again balance the harmony with the environment. Navajo AML anticipates the completion of all AML reclamation activities in the year 2004.

In June 1999, Public hearings were held across the Navajo Nation: Ft. Defiance, Chinle, Crownpoint, Shiprock, Oljato, Shonto, Cameron, and Dilcon to receive public comments on the Proposal Criteria for the Public Facility Projects (PFP) funding. Many comments were received and considered in preparation of the final proposal procedures. On September 28, 2001, the Resource Committee of the Navajo Nation Council approved the Navajo AML PFP Proposal Procedures.

Request for Proposals (RFP) were advertised through the local media. Our public information campaign began from the three AML offices (Window Rock, Tuba City and Shiprock).

Overwhelmingly, Navajo AML received 110 PFP proposals. Forty (40) proposals were considered and 20 were selected for funding under the PFP criteria totaling $4.8 million. The table below list the Chapters/entities and their projects that were selected for funding by the Project Review Committee and approved by the Resources Committee of the Navajo Nation Council. The second allocation of funding and RFP's will be announced in the local media in November 2002.

FY 2002 FUNDED PFP PROJECTS

	Chapter/Entity Name	Project Name	Impact	Amount Funded
1	Aneth Chapter	Rocky Flats Waterline Extensions (P3)	Non-Coal	300,000.00
2	Beclabito Chapter	Head Start Phase I	Coal	200,000.00
3	Black Mesa Chapter	Black Mesa Power Line Extension	Coal	297,031.48
4	Canoncito Band of Navajos	Behavioral Health Sysems Facility	Coal/Entity	300,000.00
5	Coalmine Canyon Chapter	Multi-Purpose Facility	Coal	300,000.00
6	Coalmine Canyon Chapter	Coal Mine Mesa Watereline Extension	Coal	37,384.00
7	Coppermine Chapter	Coppermine West Power Line Extension	Non-Coal	60,139.73
8	Cove Chapter	Senior Citizen Center	Non-Coal	300,000.00
9	Dennehotso Chapter	Cane Valley Community Water System	Non-Coal	124,000.00
10	Ft. Defiance Chapter	Blue Canyon Power Line Extension	Coal	192,238.55
11	Lake Valley Chapter	Senior Citizen Center	Coal	300,000.00
12	Manuelito Chapter	Manuelito South Water and Waste Waterline	Coal	299,992.00
13	Monument Valley Arts & Crafts Council	Monument Valley Arts & Crafts Mall (P2)	Non-Coal/Entity	300,000.00
14	Navajo Parks & Recreation	Upper Antelope Canyon Access Road	Active/Entity	129,000.00
15	Oljato Chapter	Senior Center Expansion	Non-Coal	295,000.00
16	Rock Springs Chapter	Multi-Purpose Facility	Coal	300,000.00
17	Rough Rock Chapter	Senior Citizen Center	Non-Coal	266,460.00
18	San Juan Chapter	Multi-Purpose Facility	Coal	300,000.00
19	Tachee/Blue Gap Chapter	Senior Citizen Center	Coal	300,000.00
20	Twin Lakes Chapter	Senior Citizen Center Infrastructure	Coal	202,000.00
		Total Funded PFP		**4,803,245.76**

Phytoremediation and Distillation site tour

In coordination with the University of Arizona Environmental Research Laboratory and the US Department of Energy (DOE), representatives from the Cane Valley community and Navajo UMTRA participated in site tours at various remediation sites at the following locations: Tucson, Arizona; Buckeye, Arizona; and Twenty-nine Palms, California.

The purpose of the tour was to visit active remediation sites and learn about various technologies that could be implemented at the former uranium mill site in Cane Valley, Arizona. The ground water at the site contains a plume of high nitrate, ammonium, uranium, and sulfate.

SM Stoller personnel explains the distillation and ion exchange system at Tuba City UMTRA.

The tour began at the Tuba City UMTRA Distillation and Ion Exchange Unit System. In 1999, DOE installed a distillation unit to initiate the first phase of ground water cleanup at the former uranium mill site located five miles east of Tuba City. The site contains high concentrations of nitrate, sulfate, and molybdenite, which caused the filters in the unit to clog, therefore halting plant operations. To accommodate the conditions, in May 2002, DOE added an Ion Exchange unit that pre-treats the water with a softener before it enters the filters. Although, the system is not operating at full-scale, DOE is continuing to conduct performance test to debug the problems.

(Left: Levon Benally, Ed Glenn, Randy Sloan, James Sloan, Theo Shorty) Ed Glenn of U of A explains fishery breeding.

On the second day, the participants toured the University of Arizona Environmental Research Laboratory (ERL) in Tucson, Arizona. ERL is conducting research in Cane Valley on the feasibility of using native plants to clean up contaminated ground water, a process known as phytoremediation. The study of phytoremediaton to remove nitrate and ammonia from the soil and aquifer at Cane Valley has been on-going for five years. The results of the study indicate that the plants' root system has established themselves in the contaminated plume and are up-taking the nitrate and ammonium. Mr. Glynn provided a tour of several greenhouses that are growing halophyte plants and aquaculture habitat. The participates also toured an acre plot where ERL is growing salicornia as an oilseed – the plant used at a phytoremediation site in coastal Mexico to recycle nitrogen from a coastal aquaculture farm.

Next, Dr. Martin Karpisak with the Arid Land Studies Program at the Pima County Sweetwater Wetlands provided a tour of constructed wetlands marsh park where the county is utilizing treated wastewater sewage effluent to remove nitrogen and other contaminants before discharging it into the Santa Cruz River. The park sustains lush vegetation such as cottonwood trees, and aquatic wildlife. The City of Tucson anticipates that in 20 years, they will be utilizing recycled sewage wastewater as a source of drinking water.

On the third day, Ms. Vanda Gerhart, U of A Research Specialist, and Mr. Larry Houghtby, Pinnacle West Power Company, gave a tour of an abandoned cotton farm adjacent to the new Pinnacle West Power Plant in Buckeye, Arizona. The farm is approximately 1100 acres and is currently being plowed and irrigated to promote vegetation and wildlife. This project was initiated at the requested by the surrounding communities in exchange for construction of the power plant.

Variety of vegetation species gram at Environmental Research Laboratory.

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Shiprock Groundwater Remediation

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On day four, the participates visited the Flouride Removal Treatment Plant in 29 Palms, California. A site tour of the facility was provided. There, 250 gallons per minute of saline wastewater is used to irrigate 15 acres of saltbush plants, under permits from the State of California Regional Water Quality Board.

Navajo UMTRA staff (Terri Lameman, Levon Benally &Theo Shorty) listen and video tape ERL activities.

Overall, the site tours were beneficial to the Navajo UMTRA staff and to the community representatives of Cane Valley. In the future, we hope that this tour will lead to a decision to implement a remedial technology that will clean up the aquifer in Cane Valley.

The Shiprock uranium and vanadium ore-processing mill, known as the Navajo Mill, was operated by Kerr-McGee Oil Industries and later sold to Vanadium Corporation of America. In 1967, VCA merged with Foote Mineral Company until ore processing ended August 1968. Shiprock UMTRA is one of four UMTRA sites location within the Navajo Nation.

DOE began the decontamination of the Shiprock UMTRA site in 1975 and completed the surface remediation in 1986. The water used to process the ores during the milling introduced contaminates into the groundwater underlying the millsite an the adjacent floodplain. At the requested of the Navajo Nation, DOE went into a cooperative agreement to begin groundwater cleanup at the Shiprock UMTRA site.

Silver State Construction Company began construction of Ground Water remedial action at the Shiprock Uranium Mill Tailings Site in Shiprock, New Mexico. The DOE has begun the first phase of site remediation which consists of extraction of ground water from the terrace in the east area of the site, extraction of ground water from the contaminant plume on the floodplain area as an aid to the natural flushing process

Phase II of remediation consists of the installation of a flow barrier and interceptor drain in the floodplain at the base of the escarpment. The purpose of the barrier is to stop contaminated terrace ground water from entering the floodplain should any still exist in the terrace east area after the remedial action. The remediation will take at least 20 years to fully clean the contaminants from the plume area.

UREO PROJECT SEEKING RFP'S FOR TEACHERS

The EPA Office of Air and Radiation (OAR), Radiation Protection Division, Washington DC Office, in July 2002 granted continued funding of the Uranium and Radiation Education Outreach (UREO) project for an additional two years. The UREO project of the Institute for Tribal Environmental Professionals' Environmental Education Outreach Program (ITEP-EEOP) is an on-going formal education program with a two-year track record of providing balanced uranium/radiation education to southwestern tribal community schools impacted by uranium milling and mining activities.

The ITEP-EEOP office is now accepting mini-grant requests for proposals (RFP) from past UREO teacher-participants. The RFP, "Educator Curriculum Development Project," is an opportunity for teachers of Native American students to write a uranium/radiation curriculum in collaboration with UREO staff and other partners from the University of New Mexico and Dine' College. Proposals are not limited to math and science teachers; all teachers are encouraged to apply for a mini-grant.

Previously, the UREO project focused on providing teacher professional development workshops, with a problem based learning & community based education approach. Now the focus is to develop curriculum projects that integrate culturally appropriate and balanced environmental information for use in the classroom.

Contact Mansel Nelson, ITEP-EEOP Program Coordinator, by email at Mansel.Nelson@nau.edu, or by telephone at (928) 523-1275 for more information about the teacher curriculum development mini-grant or to request a uranium/radiation classroom visit.

For more information, contact our office.

NAVAJO NATION

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"Restoring Navajo lands to Enhance Beauty, Harmony and Quality of Life"

Navajo AML Newsletter will be published semi-annually (June and December). If you wish to provide an article to the newsletter, please submit articles to Harlan Charley, Public Information Officer or e-mail to: hcharley@osmre.gov

Website
www.navajoaml.osmre.gov

Who we are . .

Navajo AML Reclamation

In 1988, the Navajo Nation Council approved the Navajo Reclamation Plan and Code in compliance with Title IV of the Surface Mining Control and Reclamation Act of 1977 (SMCRA) to implement, administer and conduct reclamation of abandoned coal and mineral (*uranium & copper*) mines within the boundary of the Navajo Nation.

The NAMLRD has 35 staff located in three location on the Navajo Nation to provide project development and reclamation construction work (Window Rock, Arizona, Tuba City, Arizona and Shiprock, New Mexico). Since 1991, Navajo AML has inventoried over 1100 abandoned mines on the Navajo Nation. About 90% is completed and the remaining 30% is anticipated to be completed in Year 2004.

Thus, Navajo AML has expanded its services by implementing the "Public Facility Project" (PFP) to assist Navajo communities/chapters with PFP funds for the renovation/construction of community public facility projects through competitive proposal grants with the remaining AML funds collected from active coal mining on the Navajo Nation.

UMTRA Program

In 1978, U.S. Congress passed the Uranium Mill Tailings Radiation Control Act (UMTRCA) to clean up 24 abandoned sites nationally that had processed uranium and related ores. The U.S. Department of Energy (DOE) Environmental Restoration Program works in partnership with the Navajo Nation Uranium Mill Tailing Remedial Action (UMTRA) Program and U.S. Nuclear Regulatory Commission to remediate four UMTRA sites located within the Navajo Nation (*Tuba City, Monument Valley, Mexican Hat, & Shiprock*).

The UMTRA project performed cleanup of the surface contaminants at the former Uranium Mill operating sites on the Navajo Nation. Remediation of surface contamination consisted of consolidating the contaminated materials (i.e., tailings, demolished buildings) into an engineered disposal cell that is designed to last over 100 years.

The former operating sites impacted approximately 660 acres, of which included tailing piles, evaporation ponds, raffinate pond areas, mill buildings, foundations, contaminated soil and windblown contamination materials. The surface remediation of all Navajo UMTRA were completed at a cost of $30 million.

The UMTRA Groundwater Remediation Project has begun with the Tuba City UMTRA site. DOE determined three UMTRA sites contain high concentration of sulfate, nitrate, uranium and other constituents. Today, Navajo UMTRA is assisting U.S. DOE to determine the best technology to treat contaminated groundwater.