U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Section 32 Abandoned Uranium Mine (AUM) - Removal Polrep

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**Region IX**

**Subject:** **POLREP #4**
**Progress**
**Section 32 Abandoned Uranium Mine (AUM)**

**Thoreau, NM**
**Latitude: 35.4905248 Longitude: -108.0170846**

**To:**
**From:** Randy Nattis, On Scene Coordinator
**Date:** 11/5/2012
**Reporting Period:** 10/29/2012 - 11/04/2012

## 1. Introduction

### 1.1 Background

| | | | |
|---|---|---|---|
| **Site Number:** | 09XN | **Contract Number:** | EP-S9-12-01 |
| **D.O. Number:** | | **Action Memo Date:** | 10/5/2012 |
| **Response Authority:** | CERCLA | **Response Type:** | Time-Critical |
| **Response Lead:** | EPA | **Incident Category:** | Removal Action |
| **NPL Status:** | Non NPL | **Operable Unit:** | |
| **Mobilization Date:** | 10/8/2012 | **Start Date:** | 10/8/2012 |
| **Demob Date:** | | **Completion Date:** | |
| **CERCLIS ID:** | NNN000908747 | **RCRIS ID:** | |
| **ERNS No.:** | | **State Notification:** | |
| **FPN#:** | | **Reimbursable Account #:** | |

#### 1.1.1 Incident Category

Removal Action

#### 1.1.2 Site Description

The Site consists of approximately 20 acres, including the mine area and what appears to be a Former Transfer Area approximately 2000 feet to the southwest. The Site is located approximately 1 mile east of County Road 19, Prewitt, McKinley County, New Mexico, roughly 10 miles north of I-40. There is a residence located on the main mine area and both areas of the Site are currently accessible to grazing animals.

AUM 32 is located approximately 1 mile east of County Road 19, Prewitt, McKinley County, New Mexico. AUM 32 is located in an Indian Allotment land which is part of the Casamero Lake Chapter of the Navajo Nation (Latitude: 35°29'26.7576"N, Longitude: -108°1'2.7798"W) and. The Chapter House is approximately 1.4 miles northwest of AUM 32. AUM 32 is in a vacant land surrounded by open space. AUM 32 has approximately 308,632 square feet (sf) of surface Uranium contamination of at least twice investigation level and contains an unsecured deep shaft located in the southeastern portion, and an undetermined extent of underground workings. The mine area is relatively flat with sparse vegetation. Available geographical information show an ephemeral stream or river located north and south of the site which converges approximately 0.25 mile west of the site. A 10-foot deep ditch was observed to run from east to west and bounded the mine area to the north. The ditch connects to a pond located northwest of the mine area.

AUM 32 Transfer Area is located approximately 0.3 miles south southwest of AUM 32. AUM 32 Transfer Area is located in an Indian Allotment land which is part of the Casemero Lake Chapter of the Navajo Nation (Latitude: 35°29'11.94"N, Longitude: 108°1'9.98"W). AUM 32 Transfer Area has approximately 322,592 sf of surface Uranium contamination of at least twice investigation level. The area also contains a concrete pad and a sealed air vent that support mining operations. The AUM 32 Transfer Area is located on a slight elevation with sparse vegetation. Evidence of past water flows toward a northwest direction was observed.

##### 1.1.2.1 Location

Lat: 35.4907656429N, Long: -108.017439362W
1 mile east of CO-19 approximately 10 miles north of I-40 off of Exit 63
Prewitt, New Mexico, 87045
McKinley County

##### 1.1.2.2 Description of Threat

Current Site conditions pose ongoing releases and the threat of future releases of hazardous substances, namely: uranium and its progeny (i.e., radium-226 and radon) and ionizing gamma and alpha radiation associated with those progeny. The likelihood of direct human exposure, via ingestion and/or inhalation of hazardous substances, and the threat of future releases and migration of those substances, pose an imminent and substantial endangerment to the public health or welfare or the environment based on the factors set forth in the NCP, 40 CFR § 300.415(b)(2).

**1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results**

In November 2009, U.S. EPA conducted radiation assessments at the Site in coordination with NNEPA. A site screening for AUMs was conducted at the site which included collection of site information and gamma radiation activity (gamma activity) survey data. Gamma activity was measured from surface soil along the initial boundary of the mine areas and along two diagonal intersecting transects from the mine areas' four corners. Gamma activity measurements ranged from 10,689 to 180,367 counts per minute (cpm) at AUM 32, and 14,322 to 140,917 cpm at AUM 33. A rock from a waste pile at AUM 33 emitted over 800,000 cpm. Gamma activity was also measured from a background location. The gamma activity exceeded two times background which ranged from 16,630 to 17,128 cpm. The building materials in the nearest residence had gamma activity measurements of approximately 12,000 cpm. Based on these results, in 2011 the NNEPA requested assistance from the U.S. EPA in performing a removal assessment of AUM 32 and AUM 33 to determine the nature and extent of the contamination for the purpose of mitigating any potential impacts to human health and/or the environment.

A background area was established 0.45 miles east southeast of AUM 32 and AUM 33 in an area with no suspected impacts from mining. The area is up wind and up slope from all suspected activities and within line of sight to the nearest resident and mining areas. Surface soil samples were collected from random locations within the background area. The sample results and co-located 1-minute gamma activity measurements are presented in Table 4-1. The background Ra-226 concentrations ranged from 0.592 to 0.900 picocuries per gram (pCi/g). The highest Ra-226 background concentration of 0.900 pCi/g was used to calculate the action level for the AUMs. The action level for Ra-226 was based on the sum of the highest background concentration of Ra-226 and the USEPA Preliminary Remediation Goal (PRG) of 1.21 pCi/g.

1.21 pCi/g (PRG) + 0.900 pCi/g (background) = 2.11 pCi/g
The site specific action level for Ra-226 in soil at the AUMs is 2.11 pCi/g.

Based on the 2009 radiation assessment and preliminary gamma activity measurements at AUM 32, AUM 32 Transfer Area, and AUM 33, sampling grids were established. The grid size and number of samples to be collected within each grid were determined using the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). A total of 68 samples were collected: AUM 32 – 01 through 25, AUM 32– 26 through– 49 (Transfer Area), and AUM 33 – 01 through 16 and AUM 33 WP - 01 through 03.

AUM 32: The sample results (samples AUM 32 - 01 through -25) and co-located 1-minute gamma radiation activity measurements from the AUM 32 mine area are presented in Table 4-2. Ra-226 concentrations in surface soil at the mine area ranged from 1.19 pCi/g to 37.3 pCi/g. Ra-226 concentrations detected down to 4 feet bgs in subsurface soil ranged from 0.787 pCi/g to 112 pCi/g. The soil depths of Ra-226 concentrations exceeding the action level are shown in Figure 4-1. Soil around the open shaft in the mine area contained Ra-226 concentrations above the action level down to depths of 2 to 3 feet bgs. The remainder of the mine area showed Ra-226 concentrations above the action level in surface soil and down to depths of 1 to 2 feet bgs except for AUM-32-04 which slightly exceeded the action level at 3 feet bgs.

AUM 32 Transfer Area: The sample results (samples AUM 32 - 26 through -49) and co-located 1-minute gamma radiation activity measurements from the AUM 32 Transfer Area are presented in Table 4-2. Ra-226 concentrations in surface soil ranged from 0.923 pCi/g to 300 pCi/g. Ra-226 concentrations detected down to 3 feet bgs in subsurface soil ranged from 0.740 pCi/g to 94.8 pCi/g. The soil depths of Ra-226 concentrations exceeding the action level are shown in Figure 4-2. Soil in the area with gamma radiation activity of above 1 million cpm during the survey contained Ra-226 concentrations of 237 pCi/g to 300 pCi/g in surface soil as detected in sampling locations AUM32 -27, -28, and -29. Ra-226 concentrations in sampling locations AUM32 -27 and -28, were above the action level down to 1 foot bgs. AUM32 -29 had elevated levels of Ra-226 up to 3 feet bgs. AUM32 -49 located between the mine and transfer area contained 108 pCi/g of Ra-226 in surface soil and concentrations exceeding the action level down to 2 feet bgs where refusal was met using a hand auger. Except for these four sampling locations, elevated levels of Ra-226 were limited to surface soil (0 to 2 inches bgs). The southern portion of the AUM 32 Transfer Area was bounded by Ra-226 concentrations below the action level.

## 2. Current Activities

### 2.1 Operations Section

#### 2.1.1 Narrative

The EPA Emergency Response Section is conducting a CERCLA removal action of uranium mine waste from AUM Section 32 located in the Casamero Lake Chapter of the Navajo nation. EPA is removing the waste from AUM 32 former transfer area and moving it to consolidated stockpile located within AUM 32. The waste at AUM 32 will be excavated and consolidated into one stockpile. This stockpile will then be stabilized with soil tacifier and fenced.

#### 2.1.2 Response Actions to Date - 10.29.2012 - 11.04.2012

During this operational period – EPA, START and ERRS continues excavations in:
AUM32-RA-08 and AUM32-RA-09

**Areas completed**:
**AUM32-RA-01, AUM32-RA-02, AUM32-RA-03, AUM32-RA-04, AUM32-RA-05, AUM32-RA-06, AUM32-RA-07, AUM32-RA-11, AUM32-RA-12, AUM32-RA-13, AUM32-RA-14, AUM32-RA-15 and AUM32-RA-16**

The area surrounding the stockpile has been completely excavated and the mine shaft and additional deep holes have been excavated and filled back in with clean soils.
The majority of the remaining excavation is all to the depths of 1 foot, all located around the former transfer area, which should last less than 2 weeks. The local residents remain in temporary housing off site. Additional air monitoring and dust suppression activities have been implemented to support these excavations.

Areas AUM32-RA-15 and AUM32-RA-16 have been fully excavated and the contaminated soils have been stockpiled within the areas for transfer to the Stockpile within the following operational period.

**EPA**

- EPA OSC Nattis is working with EPA ERT to finalize removal restoration plans to support closure of the removal action.

**START**

- Under EPA direction, START, using VIPER, continue to verify all excavation areas determined during the assessment.
- Air monitoring - Depending on wind direction, START deploys up to four F and J high volume air samplers and one particulate monitor each day to ensure dust suppression for any fugitive air emissions. All sampling results to date have been below the Derived Air Concentration (DAC) for workers safety.

| Day | DataRAM TWA ($\mu g/m^3$) | DataRAM 10-sec Max ($\mu g/m^3$) | DataRAM Location | All Air Samples Below Action Level?[a] | Wind Direction | Wind Speed (mph) |
|---|---|---|---|---|---|---|
| 28-Oct | -- | -- | -- | -- | -- | -- |
| 29-Oct | 32.85 | 1019.33 | Upwind | Y | NNW | 7-20 |
| 30-Oct | 15.76 | 328.44 | Upwind | Y | NNW | 6-14 |
| 31-Oct | 11.43 | 246.63 | Upwind | Y | NW | 4-8 |
| 1-Nov | 43.03 | 204.22 | Upwind | Y | SSW | 10-15 |
| 2-Nov | 24.53 | 466.75 | Upwind | Y | SW | 5-10 |
| 3-Nov | 24.45 | 278.42 | Downwind (NE of repository) | Y | variable | light |

**a** Action Level is the Derived Air Concentration (DAC) for Thorium-232 = 5 E -13 picoCuries per cubic centimeter (pCi/cm3). Counts typically ar not below the DAC until the 48-hour count.

Key:
µg/m3 = Micrograms per cubic meter.
mph = Miles per hour.
NR = Not reported yet because sample has not yet at 48 hours and results are not yet below the DAC.

**ERRS**

- Under EPA Direction, ERRS has excavated approximately 23,298 cubic yards from AUM32-RA-01, AUM32-RA-02, AUM32-RA-03, AUM32-RA-04, AUM32-RA-05, AUM32-RA-06, AUM32-RA-07, AUM32-RA-11, AUM32-RA-12, AUM32-RA-13, AUM32-RA-14, AUM32-RA-15 AUM32-RA-16 and AUM32-RA-08 and AUM32-RA-09. ERRS continues to construct and maintain the temporary Stockpile with the excavated contaminated soils using compaction and water.
- ERRS has submitted and awarded a RFP for restoration rock and gravel aggregate.

ERRS also continues to:

1. Maintain and improve site access
2. Maintain and improve roads for site operations (Haul truck routes)
3. Hauling water from town of Milan for site operations and to maintain site infrastructure
4. Ensure dust suppression during the excavation, transport and stockpile of the contaminated soils

Operational maps are located: AUM 32 OSC Website
Also view AUM 32 geo-viewer for a dynamic operational view of all site activities

**2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)**

N/A

**2.1.4 Progress Metric**

| Date | Running totals of excavated soils (cu yards) | Running totals excavated area (sq feet) | Daily soils excavated (cu yards) | Total volume to be excavated (cu yards) | Total area to be excavated (sq feet) | % Complete Volume | % Complete Area |
|---|---|---|---|---|---|---|---|
| 17-Oct | 1,441 | 17,441 | | 31,467 | 679,994 | 5 | 3 |
| 18-Oct | 2,179 | 31,021 | 738 | 31,467 | 679,994 | 7 | 5 |
| 19-Oct | 3,143 | 42,032 | 965 | 31,467 | 679,994 | 10 | 6 |
| 20-Oct | 4,405 | 56,025 | 1,262 | 31,467 | 679,994 | 14 | 8 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22-Oct | 6,196 | 74,173 | 1,791 | 31,467 | 679,994 | 20 | 11 |
| 23-Oct | 7,470 | 85,970 | 1,274 | 31,467 | 679,994 | 24 | 13 |
| 24-Oct | 8,721 | 99,786 | 1,251 | 31,467 | 679,994 | 28 | 15 |
| 25-Oct | 10,467 | 117,062 | 1,746 | 31,467 | 679,994 | 33 | 17 |
| 26-Oct | 11,682 | 142,414 | 1,214 | 31,467 | 679,994 | 37 | 21 |
| 27-Oct | 12,705 | 165,589 | 1,024 | 31,467 | 679,994 | 40 | 24 |
| 29-Oct | 14,163 | 190,266 | 1,458 | 31,467 | 679,994 | 45 | 28 |
| 30-Oct | 16,040 | 224,752 | 1,877 | 31,467 | 679,994 | 51 | 33 |
| 31-Oct | 17,339 | 252,047 | 1,299 | 31,467 | 679,994 | 55 | 37 |
| 1-Nov | 19,352 | 295,908 | 2,013 | 31,467 | 679,994 | 61 | 44 |
| 2-Nov | 21,227 | 324,397 | 1,875 | 31,467 | 679,994 | 67 | 48 |
| 3-Nov | 22,168 | 349,790 | 940 | 31,467 | 679,994 | 70 | 51 |
| 5-Nov | 23,298 | 379,538 | 1,130 | 31,467 | 679,994 | 74 | 56 |

**2.2 Planning Section**

**2.2.1 Anticipated Activities**

Site activities will continue with excavation, confirmatory radiation screenings and stockpiling contaminated soils in the temporary stockpile

Maintain Temporary housing of local resident

Maintain on site security

Removal actions should last for 2 additional weeks

**On 11/14/2012** - EPA working with Indian Health Services will give a presentation about Uranium basics and provide information on the removal activities at Section 32. Also, a facilitated discussion for community members to share concerns, ideas and suggestions. For additional information, please visit:
Additional information

**On 12/03/2012** - EPA working with Indian Health Service at the Casamero Lake Chapter House will provide Health screenings from 0900 - 1600.
An information session will also take place - Topics:
Uranium 101
Traditional Navajo Perspectives on Uranium
RESEP Program for Miners and Millers
For additional information, please visit:
Additional information

**2.2.2 Issues**

Daylight and the ending of daylight savings time.
Site operations will range from 0630 - 1700

Weather (wind, rain, snow, cold - 15F, heat - 80 F)
Altitude (~7000 feet)

**2.3 Logistics Section**

OSC Nattis, ERRS and START PMs are coordinating all logistical needs.

**2.4 Finance Section**

No information available at this time.

**2.5 Other Command Staff**

### 2.5.1 Safety Officer

OSC Nattis is in charge of all site safety. The START contractor will support OSC Nattis and has implemented an extensive area air surveillance plan in place that involves the total particulate monitoring and sampling for dust contaminated with alpha radiation. A site map and HASP is available on the site website indentifying the exclusion zone and support zone as well as the decontamination areas.

Worker safety - All personnel will be scanned daily as they enter and leave the exclusion zone.

All equipment will be scanned as they enter and leave the exclusion zone.

### 2.5.2 Liaison Officer

OSC Nattis
OSC Nattis will continue to coordinate with locals, the Casemero Lake Chapter, Residents, NNEPA and USEPA

## 3. Participating Entities

NNEPA

## 4. Personnel On Site

1 OSC (OSC Nattis) - Next operational period - 1 ERT (ERT Stroud) will be on-site. OSC Nattis will be off-site due to mandtory training
2 START
11 ERRS

**Construction equipment on site:**
2 2000 gallon water trucks
1 4000 gallon water truck
1 wheel loader
1 excavator, 45k#
2 excavator, 60k#
2 dozers
1 compactor
2 30T Haul trucks
1 40T Haul truck
1 fuel service truck

## 5. Definition of Terms

CERCLA: Comprehensive Environmental Response Compensation and Liability Act of 1980
DO: Delivery Order
EPA: United States Environmental Protection Agency
ERRS: Emergency and Rapid Removal Services contractor (EQM, Inc.)
µg/hr: Micrograms per hour
µR/hr: Microroentgen per hour
NNEPA: Navajo Nation Environmental Protection Agency
OSC: On-Scene Coordinator
START: Superfund Technical Assessment and Response Team contractor (Ecology and Environment, Inc.)
TDD: Technical Direction Document
AUM: Abandon Uranium Mine
AUM 32: Abandon Uranium Mine Section 32

## 6. Additional sources of information

No information available at this time.

## 7. Situational Reference Materials

No information available at this time.