UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

SEP 27 2011

MEMORANDUM

SUBJECT: Request for a Ceiling Increase to the Removal Action (Temporary Relocation) on Operable Unit 2(b), at the Johnny M Mine Area Site, near San Mateo, McKinley County, New Mexico

FROM: Warren Zehner, On-Scene Coordinator
Removal Team (6SF-PR)

Jon Rinehart, On-Scene Coordinator
Removal Team (6SF-PR)

THRU: Ragan Broyles, Associate Director
Prevention and Response Branch (6SF-P)

TO: Samuel Coleman, P.E., Director
Superfund Division (6SF)

I. PURPOSE

This memorandum requests a ceiling increase to continue the on-going removal actions that were verbally approved by Pam Phillips, Deputy Director, Superfund Division on March 23, 2011 for a Removal Action, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq., at the Johnny M Mine Area Site (the "Site") near San Mateo, McKinley County, New Mexico. The action includes the continued relocation of the resident, and the Jackson Ranch small business located in Operable Unit 2(b) on the Site. This amendment extends the time for relocation of the homeowner and the small business for up to 6 months, not to exceed one year in total. The homeowner and the Jackson Ranch small business were relocated on April 7, 2011 and the current temporary relocation action will expire on September 30, 2011. Continued relocation is necessary to allow for the abatement of imminent and substantial threats posed by this Site.

As described in Section III of this memorandum, the factors described in Section 300.415 of the National Contingency Plan (NCP), 40 CFR § 300.415, have been considered, and, based on those factors, a determination has been made that a removal action at the Site is appropriate. This Removal Action is not expected to exceed the statutory twelve-month time limit, nor is it expected to exceed the statutory $2,000,000 cost ceiling.

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II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID:	NMN000607139
Category of Removal:	Emergency
Site ID:	A6AH
Latitude:	35.361959 N
Longitude:	-107.721956 W

A. Site Description

1. Removal Site Evaluation

In November 2010, the Environmental Protection Agency, Region 6 Prevention and Response Branch (EPA PRB) received a request for assistance in the evaluation of this Site for potential removal action from the State of New Mexico Environment Department (NMED) (*See* Attachment 2). Documentation provided by the NMED indicated that the Site was adjacent to a former underground uranium mine. This property was thought to be potentially contaminated with uranium mine waste or uranium mill tailings originating from the mining and/or mine closure operations on the former mine. Based on this information, the Superfund Technical and Response Team (START) III contractors were tasked by EPA PRB to conduct a Radiation Removal Assessment on the Site. As part of this radiological assessment a quality assurance sampling plan (QASP) was developed for the project documenting standard operating procedures (SOPs), assessment protocols, and data decisions tree consistent with current EPA guidance and other best management practices.

The elevated concentrations of several radio-isotopes and their associated progeny in uranium mine waste/uranium mill waste and soil/debris that has become contaminated with the aforementioned radioactive waste materials ("waste materials", hereafter to mean all of the waste types previously described) are contaminants of concern on this Site primarily from gamma and other forms of ionizing radiation associated with these radio-isotopes. Principally, contaminants of concern include radium-226 (^{226}Ra, hereafter to mean isotope and progeny) and radon-222 (^{222}Rn, hereafter to mean the isotope and progeny) primarily from the mill waste associated with the mining operations and the subsequent mine closure operations conducted on the Johnny M Mine (JMM). In addition to ^{226}Ra and ^{222}Rn contamination, uranium-238 (^{238}U, hereafter to mean, all the isotopes and their progeny) generated from various mining operations associated with the JMM, including surface discharge of mine process water and the transport of ore across the Site, are also contaminants of concern on this Site. These radio-isotopes have been dispersed by anthropogenic means throughout the surface, near surface soils, and groundwater present on the Site. The elevated concentrations of radio-isotopes and associated radioactivity above normal

background levels, expressed in counts per minute (CPM) and micro-roentgens per hour (μR/hr) present on the Site appear to be the direct result of the uranium mining and/or mine closure operations conducted on the JMM, which is adjacent to the northeastern quarter of the Site.

The fine and sandy/dusty texture of the waste materials on the Site makes it easy for these waste materials to adhere to humans and animals that come into direct contact with them. For humans and especially children, the wastes may be subsequently ingested during normal hand-to-mouth (or plaything-to-mouth) activity, or it may be inhaled. For animals, the waste materials may be ingested or inhaled during self-grooming behavior or during feeding/grazing. Moreover, the dry climate and sparse vegetative cover in these areas may cause the fine-grained waste materials to become wind-borne. Given the frequent dust storms taking place seasonally on the Site potential for exposure is greatly increased. These dust storms can also cause indoor contamination (the dust is so fine that it can blow through small cracks), increasing the likelihood that humans, and especially children, may be exposed. In addition, during the brief wet periods following precipitation events, contaminated mud may be tracked into residences and/or vehicles. When the mud dries and is disturbed during human activities, such as routine cleaning, the airborne fraction of the dust contributes to further inhalation exposure.

2. Physical Location

The Site is composed of approximately 260 acres of land located in a rural area of McKinley County, on New Mexico Highway 605 N, approximately 2 miles west of San Mateo, New Mexico (*See* Attachment 3). Geomorphologically, the Site is in semi-arid grassland with some mixed piñon-juniper stands. Density of vegetative cover is variable across the Site, with the areas of documented contamination having the least amount of cover vegetation. Two separate land owners have ownership of the acreage that composes the boundaries of the Site. The JMM is part of the Lee Ranch and forms the northeastern quarter of the Site (approximately 67 acres). Based on discussions with NMED personnel, this portion of the Site is not currently being utilized by the Lee Ranch for any purpose other than storage in one of the historic mining structures. The remaining 193 acres (approximately) that compose the Site are owned by Thomas Jackson Sr. and Thomas Jackson Jr. This portion of the Site is utilized as a primary residence and a small livestock breeding and training business (Jackson Ranch Small Business). The physical structures on the property are a modular home (primary residence), a travel trailer compound (secondary residence for one of owners), a large corral area, a stud horse corral, an exercise/training corral, an open sided "pole" barn and a barn/tack area (*See* Attachment 4).

Upon review of the operational history and related activities (*See* infra Section II(3) of this memorandum and the administrative record for operational history details) that occurred on

this Site, EPA concluded that the two properties are distinct operable units of the larger facility that shared, at least in part, a common operational history, the Johnny M Area Site. The surface footprint and all associated underground shafts, tunnels and other related underground infrastructure are defined as Operable Unit 1 (OU1) or the JMM. Part or all of the adjoining Jackson Property (defined above) is identified as Operable Unit 2 (OU 2). Contamination on OU 2 appears to originate from historic uses including uranium mill waste storage, construction of a haul road to connect the JMM with NM State Highway 605 to facilitate the transportation of uranium ore from the JMM to the uranium mill or uranium mill tailings from the Ambrosia Lake mill back to the JMM or surface discharges of uranium mill tailings slurry or mine process water impoundments on the JMM or other operational processes originating from the mining or closure of the JMM. For operational and current or projected future land use purposes, the EPA has elected to further divide OU 2 into (a) and (b) subunits. Subunit (a) is composed of high access areas (HAAs) that are utilized primarily for grazing or recreational activities. Subunit (b) is composed of the residential and small business infrastructure area (*See* Attachment 5, Operable Unit Map for details).

3. Site Characteristics

The EPA is still investigating the extent of contamination on the site; nonetheless, the following information is a fairly accurate historical description of Site operations based on available federal and State government regulatory records. According to historical information obtained from the New Mexico Environment Department (NMED) and/or the United States Nuclear Regulatory Commission (NRC) records, the JMM is an underground uranium mine operated by Ranchers Exploration and Development Corporation (Ranchers) from 1972 until 1982. In 1984, Ranchers merged with Hecla Mining Company. No uranium ore milling was performed on the mine property. The uranium ore was transported approximately nine miles, via a haul road across the Site, to the Kerr McGee Ambrosia Lake uranium mill for processing.

In 1977, Ranchers made an urgent request to the New Mexico Environmental Improvement Division (NMEID) to pump slurries of uranium mill tailings into the non-operational underground structures of the mine to prevent the mine from being overcome by groundwater. This action was approved by NMEID and the activities were regulated through a Radioactive Material License, NM-RED-MB-15, issued to Ranchers. As part of the regulatory approval, Ranchers was required to apply for a surface water discharge permit for the JMM. The mine produced approximately 1,000,000 gallons of water per day. The uranium mill tailings that were utilized for the slurry originated from the Kerr McGee Ambrosia Lake uranium mill (NRC Source Material License SUA-1473).[1]

By the slurry and injection process, approximately 286,000 tons of uranium mill tailings were disposed of in the JMM as part of the groundwater infiltration abatement process or the subsequent mine closure operations. The uranium mill tailings were trucked from the aforementioned uranium mill and placed into one or more staging or stockpile areas on or near the JMM, then mixed with discharge water from the mine in one or both of the surface impoundments on the JMM. This slurry was then pumped into the mine at two locations, which are designated as the north vent hole and the south vent hole. While some storage of the mill tailings did occur on the JMM, aerial photographs and sample results collected during the site assessment indicate that a significant portion of the northeast corner of the Site was also utilized for the storage of the mill waste prior to being utilized in the slurry process.

In late 1986, the NMEID relinquished its licensing authority for uranium mills back to the NRC. In 1987, the NRC issued Source Material License SUA-1482 to Hecla to complete the closure of the JMM. Closure operations were completed in 1987 and the NRC terminated Source Material License SUA-1482 in 1993. *See* Administrative Record for additional information.

To date the surface radiological surveys that have been performed on the Site have been limited to OU 2, because the property owner of OU 1 has denied voluntary access to the property. The EPA is currently coordinating with NMED and considering other means of obtaining access to OU 1 in order to evaluate the current radiological risks posed by this portion of the Site. Surface radiological surveys have been conducted utilizing a 2"x 2" gamma scintillation detector. Gamma radiation levels near the residence and Jackson Ranch Small Business infrastructure located in OU 2 are as high as 500,000 CPM, as compared to the OU 2 specific background of 10, 016 CPM. Gamma radiation exposure data collected on the Site ranged as high as 2,000 μR/hr as compared to background levels of approximately15 μR/hr. *See* Interim Status Report, Johnny M Mine Area Uranium Structures Removal Assessment, April 6, 2011 (*See* Attachment 6).

4. Release or Threatened Release Into The Environment of a Hazardous Substance, Pollutant or Contaminant

One of the principal contaminants of concern on this Site is ^{222}Rn, which has been detected in the residence on OU 2 at levels up to 19.8 pico curies per liter (pCi/L) using seven day sample detectors. In order to be consistent with the recommendations of the EPA Region 6, Regional Health Physicist/Radon Coordinator and the substantive requirements of *Protocols for Radon and Radon Decay Product Measurement in Homes* (EPA 402-R-02-003, May 1993), the more definitive 91 day sample detectors were also placed in the residence and recorded levels of ^{222}Rn up to 11 pCi/L. Seven day sample detectors were also placed in the crawl space under the residence and recorded ^{222}Rn levels up to 38 pCi/L. The *EPA Assessment of Risks from Radon in Homes* (EPA 402-R-03-003, June 2003) documents that EPA has determined that the

acceptable in home exposure level established for ^{222}Rn is 4 pCi/L on an annual average.

Uranium-238 and ^{226}Ra are also principal contaminants of concern on this Site based primarily on the gamma and other forms of ionizing radiation associated with these radio-isotopes. Radiological dose is measured in milli-rem per year (mrem/year). The *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination*, August 22, 1997 (OSWER Directive 9200.4-18) established a general, maximum acceptable radiological dose level of 15 mrem/year for non NRC licensed facilities. Further, this guidance document states that 15 mrem/year Total Effective Dose Equivalent (TEDE) represents an excess cancer risk of $3X10^{-4}$, and is considered essentially equivalent to the CERCLA presumptively protective excess cancer risk level of $1X10^{-4}$. The *Protocol for Uranium Home Site Assessment, Grants Mineral Belt Uranium Project; Cibola and McKinley Counties, New Mexico, December 2009,* documents the regulatory consistency with EPA 1997, OSWER 9200.4-18 and the process used for conducting the radiological assessment on this property. The START III Certified Health Physicists (CHPs) have evaluated the radiological data from the property collected to date, and have estimated the dose to the resident residing on OU 2 is 3,400 mrem/year using the ResRad computer model and input values determined from current site specific radiological measurements (*See* Attachment 7 for additional information). This estimated dose to the resident is more than 200 times the acceptable TEDE of 15 mrem/year, and the excess cancer risk level of $3X10^{-4}$ is exceeded by a similar factor.

In addition to the soil and air contamination discussed above, potable groundwater (well) samples from OU 2 collected by the NMED in November 2010 indicate that the drinking water maximum contaminate level (MCL) for gross alpha radiation and $^{226/228}$Ra had been exceeded. The gross alpha radiation results were 17.3 pCi/L (MCL 15 pCi/L) and the $^{226/228}$Ra results were 6.0 pCi/L (MCL 5 pCi/L). The groundwater well is the only source of drinking water for the resident and the small business on OU 2.

As previously stated, the primary contaminants of concern at the Site, ^{238}U and ^{226}Ra and their associated progeny, including ^{222}Rn are hazardous substances as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14) and 40 CFR § 302.4. The following are the known health effects associated with exposure to the aforementioned hazardous substances on the Site.

Radon-222

Radon-222 is a colorless and odorless noble gas that is produced in the decay chains of Uranium and Thorium. Radium-226 is the parent of ^{222}Rn. According to the Agency for Toxic Substance and Disease Registry (ATSDR) *ToxFAQs for Radon* (September 2008) document, ^{222}Rn is recognized by the EPA and the Department of Health and Human Services (DHHS) as a human carcinogen. The primary target organ for ^{222}Rn and its alpha ionizing radiation producing progeny are the lungs. Several health organizations have indicated that prolonged exposure to

high levels (> 4pCi/L) of ^{222}Rn is the second leading cause of lung cancer in the United States, behind only smoking.

The Exposure Pathways of Concern at the Site for ^{222}Rn Are Described Below:

- Inhalation is the primary exposure pathway at this Site for ^{222}Rn and associated alpha ionizing radiation producing progeny. As discussed above a significant amount of ^{222}Rn is present in and under the residence on this Site. Inhalation exposure is not limited to only the gaseous phase of ^{222}Rn, the alpha emitting progeny readily attach to fine surface soils and related fine particulate matter (dust). Since this Site is in a semi-arid environment and the contaminated soils tend to be fine grained and dusty, they are easily airborne after wind or mechanical disturbance and subject to inhalation by humans or livestock.

Radium-226

Radium-226 is principally a source of alpha and gamma radiation, although some beta radiation is also produced during the decay process. According to the ATSDR *ToxFAQs for Radium* (July 1999) document, exposure to ^{226}Ra can cause adverse effects to the eyes (cataracts) and blood (anemia). Radium-226 has been identified by the EPA and the National Academy of Sciences as a known human carcinogen, being specifically linked to cancers of the bone and breast, and leukemia.

The Exposure Pathways of Concern At the Site for ^{226}Ra Are Described Below:

- The predominant exposure pathway related to ^{226}Ra was determined to be external gamma radiation, contributing over 90% of the total effective dose equivalent (TEDE) in the ResRad modeled scenario with ^{222}Rn removed for OU2.

- A significant amount of the surface area of this Site is contaminated with elevated concentrations of ^{226}Ra at or near the surface. The contaminated soils are fine grained and have a high probability of adherence to skin, clothing and fur as a result of direct contact. For humans, incidental ingestion of the contaminants adhering to skin or clothing can occur through normal hand-to-mouth activities such as play or mealtime.

- Inhalation is another exposure pathway at this Site. As discussed above a significant amount of the surface soils on this Site are contaminated with ^{226}Ra. The contaminated soils tend to be fine grained and dusty, are easily airborne after wind or mechanical disturbances, and subject to inhalation by humans or livestock. Inhalation and ingestion combined for a total of approximately 5% of the TEDE estimate in the ResRad modeled scenario for OU 2.

Uranium

Uranium is a widespread mineral forming heavy metal that in nature is composed of three isotopes, ^{238}U, ^{235}U, and ^{234}U, with the ^{238}U isotope generally composing over 98% of the mixture. All of these isotopes are the same chemically, but they have different energy and decay properties. According to the ATSDR *ToxFAQs for Uranium* (October 1999) document, U is an alpha ionizing radiation emitter and in general, weakly radioactive. Exposure to excess levels of U can cause human tissue damage, primarily in the kidneys. Cancer risk from exposure to excess U levels appears to be low to none. The primary risk on this Site from U is cancer caused by exposure to the progeny generated by its decay.

5. NPL Status

This Site is not presently on the NPL. However, should the Site rank on the NPL, the current removal action will be consistent with any subsequent remedial activities that might be taken due to the fact that the proposed action would not hinder or interfere with any future remedial action.

6. Maps, Pictures and Other Graphic Presentations

Attachment 1 - Enforcement Addendum (Enforcement Confidential/FOIA Exempt)
Attachment 2 –NMED Referral Letter (verbal)
Attachment 3 - Site Location Map
Attachment 4 - Site Sketch
Attachment 5 - Operable Unit Map
Attachment 6 - Interim Status Report, Johnny M Mine Uranium Structures Removal Assessment, April 6, 2011
Attachment 7- SM9000 Estimate of Dose to Resident, March 9, 2011
Attachment 8 - Temporary Relocation Agreement
Attachment 9 – Documentation of Verbal Approval of Temporary Relocation (EPA Region 6, (March 2011).

B. Other Actions to Date

1. Previous Actions

As referenced above, the NMED requested that the PRB assess the conditions on this Site in November 2010. After notification, the EPA Region 6 On-Scene Coordinator (OSC) tasked the Region 6 Superfund Technical and Response Team (START) II contractor to review existing data from the Site collected by the NMED in order to fully characterize the actual and/or potential threats posed by this Site.

2. Current Actions

Based on the aforementioned radiological site assessment data and the health based dose calculations utilizing the ResRad model and a ration of dose to excess cancer risk assumed at 15 mrem/year per risk of $3X10^{-4}$, EPA determined that conditions in OU 2 on this Site posed an unacceptable health risk to the resident and the livestock associated with the small business on the Site. The EPA issued Task Order (TO) 0701 – 099 on March 25, 2011 to initiate the temporary relocation of the resident and the small business assets associated with the Site. The initial temporary relocation activities were completed on April 8, 2011. On April 23, 2011, the remaining temporary relocation activities were completed when a cow and calf unable to travel during the initial relocation activities were temporarily relocated from the Site. This Action Memorandum documents a ceiling increase to continue temporary relocation of the resident and small business.

C. State and Local Authorities' Roles

1. State and Local Actions to Date

The State of New Mexico, through the NMED (or its predecessor NMEID), has been involved in the previous and current activities conducted at the Site and has been conducting it's own radiological assessment of OU 1 on this Site. EPA has coordinated all site assessment activities on OU 2 with NMED.

2. Potential for Continued State/Local Response

Neither the NMED nor the New Mexico Mining and Minerals Division of the New Mexico Energy, Minerals and Natural Resources Department will be able to provide a response action to physically address the actions described in this memorandum.

III. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

A. Threats to Public Health

The factors described in Section 300.415 of the National Contingency Plan (NCP), 40 CFR § 300.415, have been considered, and, based on those factors, a determination has been made that a removal action is appropriate to address the hazardous substances present in the contaminated wastes at the Site. Any or all of these factors may be present at a site yet any one of these factors may determine the appropriateness of a removal action.

1. Actual or Potential Exposure to Nearby Human Populations, Animals, or the Food Chain from Hazardous Substances or Pollutants or Contaminants. 40 CFR § 300.415(b)(2)(i).

As discussed above, significant quantities of mine/mill wastes, radio-isotope contaminated soil/debris and associated ionizing radiation are present throughout a large portion of the Site. The mining and/or mine closure processes utilized during the operations of the JMM appear to be the source of the radiological contamination in both OUs. These conditions pose a high exposure rate to any humans or livestock inhabiting, trespassing or entering the Site.

2. Actual or Potential Contamination of Drinking Water Supplies. 40 CFR § 300.415(b)(2)(ii).

The only source of drinking water for the resident and the livestock associated with the Jackson Ranch Small Business on OU 2 of the Site is a groundwater well which, as discussed above, is contaminated with alpha radiation and $^{226/228}$Ra at levels above the established MCLs.

3. High Levels of Hazardous Substances or Pollutants or Contaminants in Soils Largely at or Near the Surface That May Migrate. 40 CFR § 300.415(b)(2)(iv).

As discussed above, the Interim Status Report, Johnny M Mine Area Uranium Structures Removal Assessment (Attachment 6) and the NMED current and historic radiological assessment data indicates high levels of radiological contamination in the surface and near surface soils (< 24 inches) in both OUs on this Site.

4. Weather Conditions That May Cause Hazardous Substances or Pollutants or Contaminants to Migrate or be Released. 40 CFR § 300.415(b)(2)(v).

As referenced above, the Site is located in north-west New Mexico. This part of the State routinely experiences severe weather of varying degrees of intensity during the Spring and Summer. Given that the referenced radiological contamination is located at or near the surface of the Site, and because the Site is located in semi-arid area, with limited vegetative cover, there is a high potential for migration of the aforementioned hazardous substances from the Site via the flash flooding rains in the Summer and/or strong wind storms that are associated with strong low pressure systems in the Spring.

5. The Availability of Other Appropriate Federal or State Response Mechanisms to Respond to the Release. 40 CFR § 300.415 (b)(2)(vii).

At this time, there are no other mechanisms available to respond with actions described in this memorandum in a timely manner so as to effectively reduce the imminent and substantial

endangerment to public health posed by the hazardous substances located on the Site. The State and local officials do not have the resources available to address the current dangerous conditions at the Site. If other mechanisms become available during the conduct of this response action, the EPA will evaluate those mechanisms as appropriate.

B. Threats to the Environment

The actions taken during this response are designed solely to address a public health threat resulting from the hazardous substances present on the Site from the historic uranium mining and/or mine closure procedures; including but not limited to the storage and disposal of uranium mill tailings on both Operable Units of this Site.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances, pollutants or contaminants from the Site, if not addressed by implementing the response action selected in this Action Memorandum, will continue to present an imminent and substantial endangerment to public health or welfare or the environment.

V. ACTIONS AND ESTIMATED COSTS

A. Actions Taken

1. Action Description

As documented in the previous action memorandum for this Site, the EPA Region 6 PRB received verbal approval from Superfund Deputy Division Director, Pam Phillips, on March 23, 2011 to immediately relocate the resident and the Jackson Ranch Small Business from OU 2 on this Site. Initial relocation procedures were implemented on March 24, 2011 and a Temporary Relocation Agreement was signed by the EPA Region 6 PRB and the affected parties on April 1, 2011 (*See* Attachment 8). The continuation of temporary relocation of the resident and the small business are necessary for the continued negotiations and potential mitigation of the imminent and substantial threats posed by this Site. Continued relocation is expected to last up to an additional six months, but will not exceed one year.

Based on the information currently available, EPA believes that the following removal measures will likely be necessary in the future, in a phased approach on OU 2:

Phase 1

1) excavation of radioactive waste materials in OU 2(b) where the annual radiation dose presents an imminent and substantial endangerment to the public health or welfare or the environment.
2) consolidation of radioactive waste materials from OU 2(b) into a secure, temporary on-site repository located on OU 2 (a) or transport to an off-site disposal facility in order to return the resident and small business to the Site in a timely manner
3) abate excess ^{222}Rn from the residence and related structures in OU 2(b) that were constructed on contaminated waste materials
4) install a water filtration system to remove excess radiological contamination present in the drinking water from a well located on OU 2(b) the Site.
5) excavate the radioactive waste materials in OU 2 (a) where the annual radiation dose presents an imminent and substantial endangerment to the public health or welfare or the environment.

Phase 2:

6) transport all excavated and/or consolidated radioactive waste materials from the OU to an off-site disposal facility.
7) evaluate cost effectiveness of permanent relocation and buy out of the resident and small business occupying OU 2 on the Site.

EPA realizes that similar actions may be necessary on OU 1, and will consider actions on that OU 1, and will consider actions on that OU once access issues are resolved and additional radiological data is obtained. Authorization for future removal measures will be documented in future Action Memoranda specifically addressing the factual basis for the future removal actions, the specific actions to be taken and associated costs.

2. Contribution to Remedial Performance

The actions described above for OU 2 will contribute to any presumed remedial cleanup alternative, given that the Phase 1 response actions to be taken during the temporary relocation will not hinder or interfere with future remedial action.

3. Description of Alternative Technologies

At this time, there are no other proven alternative technologies that could be feasibly applied at this Site. The appropriate action is to continue the temporary relocation of the resident and the small business. If an equally protective and less expensive technology is later identified, it may be considered.

4. Applicable or Relevant and Appropriate Requirements (ARARs)

The proposed removal action will be conducted to eliminate the actual or potential exposure to hazardous substances pursuant to CERCLA, in a manner consistent with the NCP. As per 40 CFR Section 300.415(j), Superfund-financed removal actions under CERCLA § 104 and § 106 shall, to the extent practicable considering the exigencies of the situation, attain the applicable or relevant and appropriate requirements (ARARs) under Federal environmental law.

5. Project Schedule

The temporary relocation actions for the emergency removal have been implemented under the March 2011 verbal approval. The proposed actions (continuation of relocation) for this emergency removal action will be implemented prior to the expiration of the expected duration of the previously discussed removal action. Actions described in this memorandum are estimated at six months and not to exceed one year in total.

B. Estimated Costs

Extramural Costs

Previous Costs-April, 2011

Removal Contractors..... $ 150,000

Subtotal, Extramural Costs ..... $ 150,000

Extramural Costs Contingency
(20%) ..... $ 30,000

Anticipated Costs September 2011

Removal Contractors..... $200,000

Subtotal, Extramural Costs $200,000

Extramural Costs Contingency
(20%)..... $ 60,000

TOTAL EXTRAMURAL COSTS..... $440,000

VI. EXPECTED CHANGE IN THE SITUATION SHOULD NO ACTION BE TAKEN OR ACTION BE DELAYED

Should the actions described in this Action Memorandum be delayed or not taken, the elevated gamma radiation dose and the elevated concentrations of Radon-222 will continue to pose a significant threat to the resident and the small business located on the OU.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues associated with this removal action.

VIII. ENFORCEMENT

After informal contacts by teleconference in March of 2011, EPA Region 6 issued a General Notice Letter to Hecla Mining Company on April 29, 2011. Active negotiations with Hecla are ongoing (*See* Enforcement Confidential Attachment #1, for additional details). The total cost to the EPA for this removal action, consisting of the continued temporary relocation of the aforementioned resident and small business is estimated to be **$770,202**

(Direct Cost) + (Other Direct) + (42.63% of Total Direct {Indirect Cost}) = Estimated EPA Cost for a Removal Action

$440,000 + $100,000 + (42.63% x $540,000) = **$770,202**

Direct costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2002. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. EPA may incur additional costs in connection with the temporary relocation response documented in this Action Memorandum. Costs of removal action to address sources of contamination in OU 2(b) will be documented in the Action Memorandum for the Phase 1 removal.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Johnny M Mine Area Site near San Mateo, McKinley County New Mexico and is developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601 et seq., and is not inconsistent with the National Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 300.415 (b) (2), 40 CFR 300.415 (b) (2), criteria for a removal. We recommend your approval of the proposed removal action request. The total estimated EPA cost for the removal is $770,202. Of this, an estimated $440,000 comes from regional funds.

APPROVED Pamela Phillips, Acting DATE 9/27/11

Samuel Coleman, P.E., Director
Superfund Division
U.S. Environmental Protection Agency, Region 6

Attachments

[1] SUA-1473 was subsequently transferred to Quivira Mining (Kerr McGee subsidiary), which sold the mill to Rio Algam in 1989, which merged with Billiton (now BHP Billiton Holdings, Ltd.) in 2000.