

Prepared for:

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**SECTION 27 MINE
SITE ASSESSMENT**

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1.0 INTRODUCTION

This Site Assessment for the former United Nuclear Corporation (UNC) Section 27 mine has been prepared in compliance with the requirements of Section 5.B of the New Mexico Mining Act. The Assessment is based on a review of available historic documents and discussions with mine personnel and was prepared using a site assessment check list provided by the Mining and Minerals Division (MMD) of the State of New Mexico Energy, Minerals and Natural Resources Department during a project meeting on March 19, 2003.

The Section 27 mine was an underground uranium mine located approximately 35 miles north of Grants, New Mexico. The location of the site is shown on Figure 1, *General Site Location*. UNC produced uranium ore during operation of the Section 27 mine from 1970 to 1977, pursuant to a mineral lease. The lease covered approximately 200 acres in the south half of Section 27. This lease was surrendered by a Release of Mineral Lease in 1988. United Nuclear does not currently retain a right of access to the mine. The mine is currently owned by Kent Schmitt. Ownership of the mineral estate is held by Hecla Mining Company.

The Section 27 site is approximately two miles east of the Ambrosia Lake Uranium mill tailings impoundment, and includes two sealed shafts, three sealed vent holes, and a small storage area for non-economical mine materials as shown on Figure 2, *Site Layout*. No perennial streams occur within the site.

Decommissioning of the nearby inactive tailings at Ambrosia Lake was conducted by the U.S. Department of Energy (DOE) pursuant to the Uranium Milling Tailings Remedial Action Program (UMTRAP). The DOE completed a site environmental assessment (EA), which included descriptions of the site geology, climate, vegetation, wildlife, groundwater and surface water. Details of the assessment are presented in the DOE document entitled "Environmental Assessment of Remedial Action at the Ambrosia Lake Uranium Mill Tailing Site, Ambrosia Lake, New Mexico, June, 1987, DOE/EA-0322". With the close proximity of the Section 27 Mine to the Ambrosia Lake site, environmental aspects of the Ambrosia Lake site presented in the assessment are applicable to the Section 27 Site.

2.0 SITE ASSESSMENT

2.1 MINE STATUS

The Section 27 mine is an inactive underground uranium mine, which meets the definition of an existing mining operation pursuant to the Act. The mineral lease was surrendered in 1988, and closure activities were completed that same year. Closure consisted of plugging the mine shafts and vent holes and removing equipment and buildings. The mine was adjudicated by the New Mexico Court of Appeals to be an existing mine subject to the New Mexico Mining Act.

2.2 PROPOSED PERMIT AREA

The Section 27 mine is located in the Ambrosia Lake District in McKinley County approximately 35 miles north of Grants, New Mexico as shown on Figure 1. The mine is located in Section 27, Township 14N, Range 9W of the New Mexico Principal Meridian, and includes two shafts, three vent holes and one small pile of non-economical mine materials and encompasses approximately 14 acres. The mine site is currently inactive, and UNC has no knowledge of any plans for future mining activities. Therefore, the ultimate design limits for each area are generally the same as the areas shown on Figure 2. Individual areas of disturbance on the site are listed in Table 2.1, *Permit Area Surface Components*.

Description	Approximate Surface Area (Acres)
Non-economical Material Storage Area	1.6
Facilities	12.4
Other	??
Total Surface Area	14

2.3 EXISTING PERMITS

The Section 27 mine was regulated under various permits during active operations. Currently the mine is inactive and there are no existing, active permits. If required by the State of New Mexico, a stormwater discharge permit will be obtained prior to implementation of the Closeout Plan.

2.4 REGULATORY REQUIREMENTS

There were no NRC or water discharge permits associated with the Section 27 mine.

2.5 SURFACE AND GROUNDWATER DESCRIPTION

The Section 27 mine is located southwest of the San Mateo Mesa in the Ambrosia Lake valley in the Grants Uranium District. Surface water at the site is characterized as intermittent, with flows generally occurring only after heavier precipitation events.

Groundwater at the site originates from the alluvium and Westwater formations at a depth of approximately 400 to 500 feet.

2.5.1 Surface Water

The site is located within the drainage basin of the Arroyo del Puerto, an ephemeral drainage located over two miles southwest of the site. Near the mine there is only one surface water drainage, which lies approximately one-half mile to the east of the site and drains into a small impoundment area known as Voght tank, primarily used as a stock watering pond.

No background surface water quality is available for any of the adjacent arroyos, largely due to the intermittent nature of the streams that only flow periodically after significant precipitation events.

2.5.2 Groundwater

There are no groundwater wells at the site and there was no groundwater discharge from the Section 27 mine operations at this site during mining operations. According to the DOE document for the Ambrosia Lake site, most of the domestic wells in the region have been abandoned.

During mining operations at Section 27 approximately 227 gpm of water, as measured at a weir in Track Drift #8, drained to the Sandstone Mine. All water from mining operations at the Sandstone mine was pumped to an ion exchange treatment system at the Phillips Mill site.

2.6 IMPACTS OF OPERATION ON SURFACE AND GROUNDWATER

2.6.1 Surface Water Impacts

The site is located immediately to the west of an ephemeral tributary to the Arroyo del Puerto, as shown on Figure 2. During operations the primary impact to surface water was minor sedimentation that may have originated from both the mine and natural areas, and occurred as a result of heavy thunderstorms. Minor sedimentation from disturbance at the site continues to be the only potential impact to surface water.

2.6.2 Groundwater Impacts

According to the DOE report, there are seven wells in the Ambrosia Lake valley within five miles of the site, most of which have been abandoned. All of the wells were completed in the Westwater Canyon or San Andres Limestone Members and range in depth from 50 to 3000 feet. There are no wells near the site that were completed in the formation in which mining took place. Impacts to site groundwater were hydraulic in nature.

2.7 SITE GEOLOGY

The Section 27 mine is located in the Ambrosia Lake District southwest of the San Mateo Mesa and northeast of the Mesa Montanosa. The geologic regime at the site includes the following strata in descending sequence: alluvium/weathered Mancos shale; the Tres Hermanos-C, -B, and -A sandstones; the Dakota formation; the Westwater Canyon Member of the Morrison formation; the Bluff Sandstone formation; and the Todilto Limestone formation. Uranium production at the site was from the Westwater Canyon Member.

2.8 SITE WASTE DESCRIPTION

Waste at the site consists of one small pile of non-economical mine materials as shown on Figure 2. The surface area of the pile is approximately 1.6 acres. The pile consists of coarse to fine grained sand and gravel-sized sandstone and bentonitic shale fragments.

2.9 IMPACT OF SITE WASTE

2.9.1 Hydrologic Balance and Drainage Impacts

The Tres Hermanos sandstone formation immediately underlying the Mancos Shale at the site was thought to have been unsaturated prior to mining. According to the DOE report, the formation had a low water yield and produced poor-quality water and was not used as a regional groundwater source. Other than the DOE report, there is no groundwater data available to characterize the impact that mining had on the hydrologic balance.

The site is located to the west of the adjacent ephemeral stream. The non-economical mine materials pile and other portions of the site are not within the floodplain of the stream, and as such do not impede the natural flow.

2.9.2 Air Quality Impacts

The non-economical material pile is comprised of rock fragments and coarse-grained soils, limiting the amount of dust that can be generated. Seeding during mine reclamation introduced vegetation, which further reduced dust generation.

2.10 SITE IMPACT TO LOCAL COMMUNITIES

The impact of the Section 27 mine on local communities was mainly economic in nature. The operation helped the local economy to prosper economically in the 1960's and 1970's, with wages of mine employees being considerably higher than those of other occupations. Currently there is no impact to local communities as the mineral lease has expired and the mine is currently closed.

2.11 WILDLIFE AND WILDLIFE HABITAT

2.11.1 Wildlife

A wildlife survey for the region surrounding the Ambrosia Lake Uranium Mill was included in the DOE Environmental Assessment. According to the wildlife survey presented in Appendix C of the DOE report, grassland and slope-cliff habitats are the principle habitats in the area.

There are no threatened and endangered (T&E) species in the vicinity of the site, however, several species may occasionally migrate through the site, including the peregrine falcon and the bald eagle. Reptiles, nesting birds and mammals observed in the Ambrosia Lake area are listed in Table 2.2, *Fauna and Signs of Fauna Observed in the Ambrosia Lake Area*.

TABLE 2.2 FAUNA AND SIGNS OF FAUNA OBSERVED IN THE AMBROSIA LAKE AREA	
Mammals	Scientific Name
Black-tailed jackrabbit	Lepus californicus
Desert cottontail	Sylvilagus auduboni
Coyote	Canis latrans
Birds	
Sharp-shinned hawk	Accipiter striatus

TABLE 2.2 FAUNA AND SIGNS OF FAUNA OBSERVED IN THE AMBROSIA LAKE AREA	
Red tailed hawk	Buteo jamaicensis
American kestrel	Falco sparverius
Mourning dove	Zenaida macroura
Northern flicker	Colaptes auratus
Western kingbird	Tyrannus verticulis
Say's phoebe	Sayornis saya
Horned lark	Eremophila alpestris
Cliff swallow	Petrochelidon pyrrhonota
Scrub Jay	Aphelocoma coerulescens
Pinyon jay	Gymnorhinus cyanocephalus
Common raven	Corvus corax
Bewick's wren	Thryomanes bewickii
Rock Wren	Salpinctes obsoletus
Mockingbird	Mimus polyglottos
Loggerhead shrike	Lanius ludovicianus
Western Meadowlark	Sturnella neglecta
Brewer's blackbird	Euphagus cyanocephalus
Lark sparrow	Chondestes grammacus
Black-throated sparrow	Amphispiza bilineata
Reptiles	
Red-spotted toad	Bufo punctatus
Side-blotched lizard	Uta stansburiana
Short-horned lizard	Phrynosoma douglasi
Plateau whiptail	Sceloporus undulatus consobrinus
Wildlife Signs Noted	
Mule deer	Odocoileus hemionus
Elk	Cervus elaphus
Note: Reported species found in the Ambrosia Lake area as reported in Table C.1.2 in the Ambrosia Lake Environmental Assessment report (DOE, 1987).	

2.11.2 Vegetation

The vegetation in the area of the site is typical of an arid desert environment in which plants are adapted to the typically dry conditions. Plant species present in the area were determined during regional studies that were performed as part of the environmental assessment for the Ambrosia Lake Uranium Mill. Species encountered during the surveys are presented in Table 2.3, *Plant Species Observed in the Ambrosia Lake Region*.

TABLE 2.3 PLANT SPECIES OBSERVED IN THE AMBROSIA LAKE REGION			
Scientific Name	Common Name	Scientific Name	Common Name
Abronia sp.	Sandverbena	Muhlenbergia torreyi	Ring muhly
Agropyron smithii	Western Wheatgrass	Oenothera albicaulis	Evening primrose
Aristida longiseta	Red Threeawn	Oenothera pallida	Pale evening primrose
Aristida purpurea	Purple Threeawn	Oryzopsis hymenoides	Indian Ricegrass
Artemisia nova	Black Sagebrush	Penstemon sp.	Penstemon
Astragalus sp.	Milkvetch	Phacelia corrugata	Scorpion weed
Aster sp.	Aster	Phlox sp.	Phlox
Atriplex canescens	Fourwing saltbrush	Plantago purshii	Plantain
Atriplex confertifolia	Shadscale	Psoralea lanceolata	Scurfpea
Atriplex obovata	Saltbush	Purshia tridentata	Antelope bitterbrush
Bromus tectorum	Cheatgrass	Rhus trilobata	Skunkbrush sumac
Chrysothamnus nauseosus	Rubber rabbitbrush	Rumex crispus	Curly dock

Chrysothamnus viscidiflorus	Green rabbitbrush	Sarcobatus vermiculatus	Greasewood
Cowania mexicana	Cliff rose	Sisymbrium altissimum	Tumble mustard
Cryptantha crassisepala	Cat's eye	Sitanion hystrix	Bottlebrush squirreltail
Dithyrea wislizenii	Spectaclepod	Sphaeralcea parvifolia	Globemallow
Ephedra torreyana	Ephedra	Sporobolus airoides	Alkali sacaton
Eriogonum sp.	Buckwheat	Sporobolus contractus	Spike dropseed
Euphorbia fendleri	Spurge	Sporobolus cryptandrus	Sand dropseed
Eurotia lanata	Winterfat	Sporobolus giganteus	Giant dropseed
Festuca octoflora	Sixweek fescue	Stipa comata	Needle and thread
Gutierrezia sarothrae	Snakeweed	Stipa neomexicana	Feathergrass
Hordeum pusillum	Little barley	Suaeda torreyana	Seepweed
Juniperus sp.	Juniper	Tridens pulchellus	Fluffgrass
Lactuca sp.	Wild lettuce	Verbesina encelioides	Golden Crownsbeard
Lappula Sp.	Stickseed	Yucca sp.	Yucca
Lycium pallidum	Pale wolfberry		
Note: reported species were found growing in the Ambrosia Lake area as reported in Table C.1.1 in the Ambrosia Lake Environmental Assessment report (DOE, 1987).			

2.12 IMPACT TO WILDLIFE AND WILDLIFE HABITAT

The impact of the mine on wildlife during active operations was primarily displacement of the wildlife from the immediate mine area. The high percentage of open land of a similar nature to that occupied by the mine means that most of the displaced wildlife probably moved to nearby areas. Currently, very little activity occurs at the mine site and tracks and droppings observed at the site indicate that various wildlife species frequent the area.

The total disturbance of the mine is very small, and therefore the overall impact to wildlife and wildlife habitat in the region is minimal.

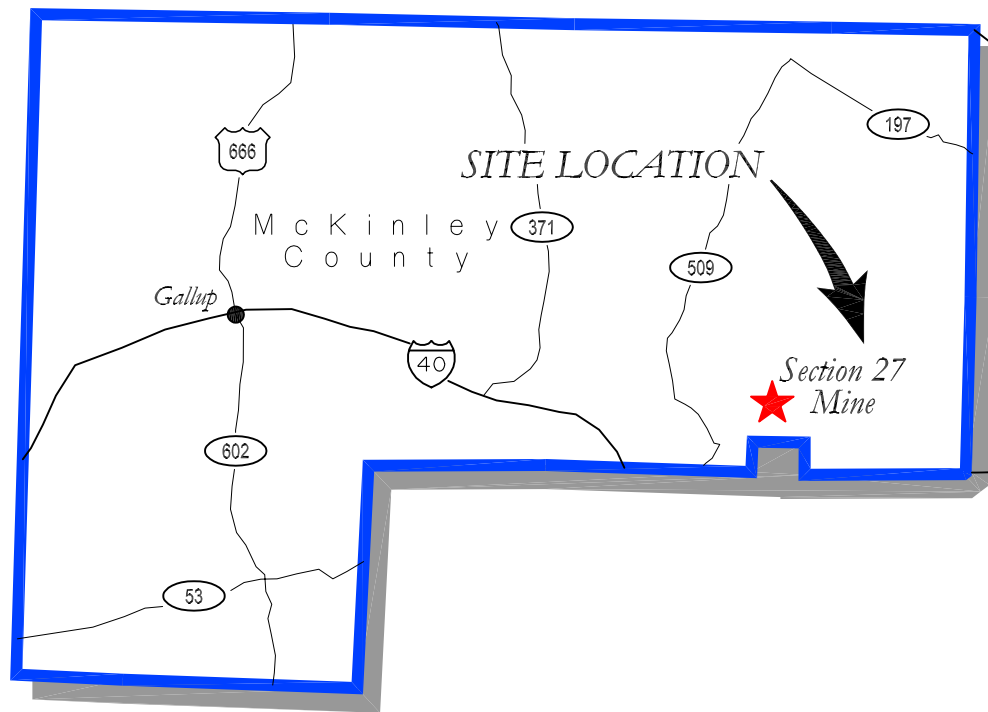
2.13 OPERATIONAL DESIGN LIMITS

Having released the mineral lease, UNC has no plans for further mining operations at the site, and as such the individual boundaries shown on Figure 2 generally represent the ultimate limits of each area.

3.0 REFERENCES

United States Department of Energy (DOE), 1987, Environmental Assessment of Remedial Action at the Ambrosia Lake Uranium Mill Tailing Site, Ambrosia Lake, New Mexico, DOE/EA-0322.

FIGURES

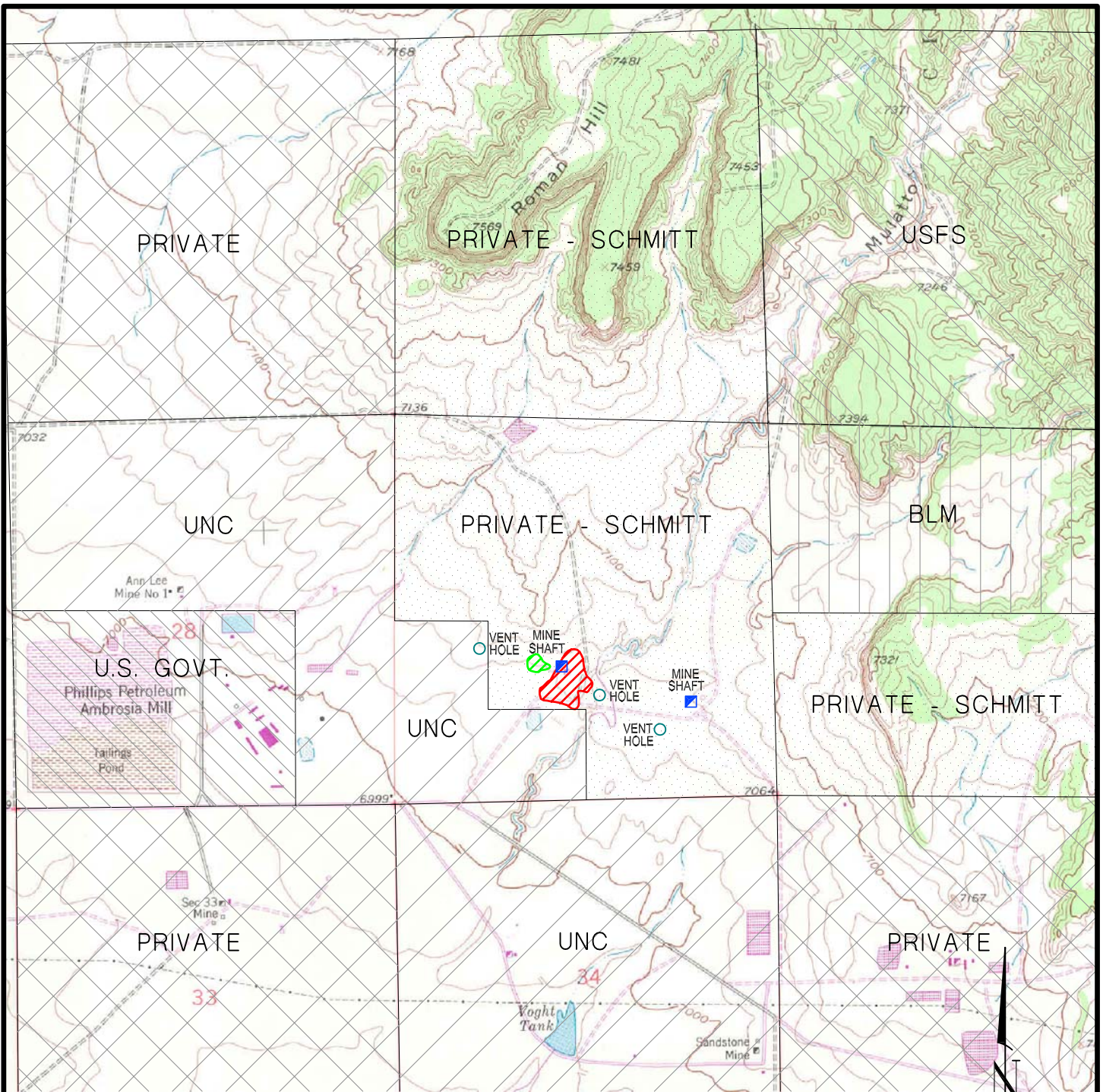


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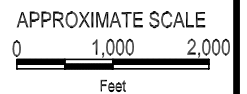
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**SECTION 27 MINE
GENERAL LOCATION MAP**



LEGEND

- MINE SHAFT
- VENT HOLE
- NON-ECONOMIC MATERIAL STORAGE AREA
- MINE FACILITY
- LAND OWNERSHIP - U.S. GOVT.
- LAND OWNERSHIP - NATIONAL FOREST
- LAND OWNERSHIP - UNC
- LAND OWNERSHIP - BLM
- LAND OWNERSHIP - PRIVATE - SCHMITT
- LAND OWNERSHIP - PRIVATE



NOTE:
FROM USGS 7.5 min. QUAD FOR AMBROSIA LAKE, NEW MEXICO, 1957

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**SECTION 27 MINE
SITE LAYOUT AND LAND OWNERSHIP**



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