Site Assessment at Old Churchrock Mine, Churchrock Chapter

Conducted by Staff of Navajo EPA-Superfund Program and SRIC

Aug. 2, 2006
following runoff in unnamed arroyo on 7/31/06 or 8/1/06

prepared by Chris Shuey, SRIC
8/21/06; rev. 9/15/06, 5/11/07
Site History

- **Location**: T16N, R16W, Sec. 17 (NE-1/4), McKinley County, NM; Church Rock Chapter, Navajo Nation
- **Land Status**: Navajo Tribal Trust surface, privately owned mineral estate; active grazing on Sec. 17
- **1959**: Surface use agreement between Santa Fe Railway and Navajo Tribe
- **1992-present**: Proposed ISL mine, Hydro Resources, Inc.
Old Churchrock Mine Site, Churchrock Chapter, Navajo Nation

Unnamed arroyo on west side of mine site

Area of mud flat after 8/1/06 flood event

Cattle Canyon

Old Church Rock Mine

SR 566
Evidence of Flood Event

Mud flat at mouth of arroyo (here, below)

Corner fence post dislodged by flood

Standing water, mud in arroyo
Differences in Sediment Characteristics

- Mine wastes, east side of arroyo (photo, upper right)
  - conglomeritic, gray-black color
  - white precipitate lenses on bank next to mine-water ponds
- Normal sediments, west bank of arroyo (photo, upper left)
  - ochre color, shaley
Presence of Mine Wastes

Mining equipment in arroyo next to mine (left side)

1 of 5 mine water ponds at OCRM site

Mine waste on east side of arroyo

Former uranium workers like Scotty Begay (left) have testified about waste disposal practices at OCRM
Radiological Survey

- Reported by NNEPA-SF, 8/17/06
- Background at mouth of arroyo: 12-15 uR/hr
- Gray-black material on eastern arroyo bank, 50-75 uR/hr
- White precipitate in layers on eastern bank, 110-460 uR/hr
- West bank of arroyo: 20-30 uR/hr
Old Churchrock Mine site assessment
August 2006
(Gamma radiation measurements made using Ludlum-19)

Shaded area above approximate shape of mud delta at mouth of arroyo after flood event

Unnamed arroyo in Sec. 8, T16N, R16W
Sec. 8

Sec. 9

Sec. 16

Sec. 17

King Grazing Permit Area
(shaded)

King Ranch (3 occupied residences)

Old Church Rock Mine Road

Occupied home

Mineral debris in arroyo: concrete, dirt, steel chute

Abandoned mine water ponds

IX building

State Route 566

Sealed mine shafts

420-460 uR/hr

70-120 uR/hr

15-30 uR/hr

Max. 350 uR/hr in ‘87

Max. 180 uR/hr in 2003

420-460 uR/hr

70-120 uR/hr

15-30 uR/hr
Mining Debris in Arroyo
Environmental Exposures

Old Church Rock Mine (shaded oval, right; aerial below) in relation to King Ranch lands and homesites in yellow shaded area (right)
Gamma rates >2x background (shown in red) indicate transport of residual mine waste from Old Church Rock Mine onto King Ranch land.
Epilogue:

Another Runoff Event, 9/6/06

Arroyo was flowing (upper R and L) following afternoon storm on Sept. 6, 2006; mud flat at mouth of arroyo (bottom L) measured about 300 m wide; 1-m wide boulder (bottom R) was deposited by early-August flood event.
Epilogue II: New Radiological Assessment

- Conducted by NNEPA-SF, March 2007 (photo)
- Navajo Nation concerned about NRC’s decision in 2006 reclassifying wastes at OCRM as “background radiation”
- Reclamation in limbo