

Appendix D

Site Summaries for Decommissioning Title II Sites

American Nuclear Corporation

1.0 Site Identification

Location: Casper, WY
License No.: SUA-667
Docket No.: 40-4492
License Status: Possession-only
Project Manager: Myron Fliegel

2.0 Site Status Summary

Reclamation oversight of the facility has been transferred to the State of Wyoming, Department of Environmental Quality (WDEQ). This transfer occurred because American Nuclear Corporation (ANC) had become insolvent in May 1994 and site reclamation was incomplete. A Confirmatory Order between the U.S. Nuclear Regulatory Commission (NRC) and the WDEQ describing the requirements for reclamation activities was agreed upon by both parties and was issued in October 1996.

The licensed site encompasses approximately 550 acres of which approximately 80 acres consist of Tailings Pile 2, and 40 acres of Tailings Pile 1. Tailings Pile 2 reclamation activities were completed and approved by NRC in February 1998. Tailings Pile 1 activities are on hold. Additionally, the site has an active groundwater recovery and corrective action program.

Reclamation activities were targeted to restart in 2005, but have not. Since the last inspection in September 2005, no site reclamation activities had been performed. After approval of the reclamation plan for Tailings Pile 1, activities will include the following: (1) windblown area clean-up activities, (2) capping with clay, (3) radon testing, and (4) placement of rip-rap rock. WDEQ's goal was to submit the final reclamation plan for Tailings Pile 1 for NRC review and approval in 2004 and complete the associated reclamation in 2005, but that has not been accomplished. The cost for decommissioning is estimated to be approximately \$3.2 million. WDEQ has approximately \$3.2 million in DOE Title 10 funds to complete reclamation of Pile 1.

3.0 Major Technical or Regulatory Issues

None.

4.0 Estimated Date For Closure

TBD

Bear Creek

1.0 Site Identification

Location: Converse County, WY
License No.: SUA-1310
Docket No.: 40-8452
License Status: Possession-only
Project Manager: Myron Fliegel

2.0 Site Status Summary

The decommissioning and reclamation of the Bear Creek Uranium Mill, including the mill tailings impoundment, was completed in November 1999. The tailings impoundment contains 4.7 million tons of uranium ore tailings and covers an area of approximately 101 acres. The staff performed a final "closeout" inspection of the completed reclamation construction activities in July 2000. The staff completed its review of the Bear Creek Tailings Reclamation Construction Report in July 2001, with the conclusion that reclamation of the Bear Creek tailings impoundment was completed in accordance the requirements of 10 CFR Part 40, Appendix A, and the licensee's approved Tailings Reclamation Plan. At the Bear Creek site, the State of Wyoming owns both the surface estate (where the tailings impoundment is located) and the subsurface estate with the contained mineral rights. The licensee purchased the surface estate from the State in January 2003 and is currently negotiating with the State to acquire the subsurface estate. Following the successful acquisition of the subsurface estate, the licensee can prepare the necessary papers to turn over ownership of the site to the U.S Department of Energy (DOE) for long-term custody and subsequent termination of its NRC license. The cost for decommissioning is estimated to be approximately \$900,000.

3.0 Major Technical or Regulatory Issues

There is one major regulatory issue at the Bear Creek site that must be addressed as part of the license termination process. That issue relates to the current State ownership of the subsurface estate at the site. If the State does not divest itself of ownership of the subsurface estate, the State will become the long-term custodian for those interests. However, the State has previously expressed its disinterest in becoming the long-term custodian for any Title II (Uranium Mill Tailings Radiation Control Act [UMTRCA] of 1978, as amended) site in Wyoming. Accordingly, licensee and State representatives are currently negotiating an exchange of mineral interests (the subsurface estate) so that the licensee can acquire ownership of the entire Bear Creek site, including the subsurface interests. License termination depends on: (a) a successful exchange of mineral estates between the licensee and the State; (b) transfer of the Bear Creek site property by the licensee to the DOE; (c) payment of the long-term surveillance fee by the licensee; and (d) NRC approval of the Long-term surveillance plan (LTSP) currently being prepared by the DOE.

4.0 Estimated Date For Closure

2007

Cogema Mining, Inc.

1.0 Site Identification

Location: Mills, WY
License No.: SUA-1341
Docket No.: 40-8502
License Status: Possession-only
Project Manager: Ron Linton

2.0 Site Status Summary

This site includes the Irigaray and Christensen Ranch in situ leach mines in one license, NRC License SUA-1341. The area of these two in-situ leach (ISL) sites (7 miles apart) disturbed by well fields or facilities is approximately 687 acres. COGEMA's license was changed to a possession-only license in 2001 after active in-situ leach mining ceased and groundwater restoration commenced. Groundwater restoration is complete at Irigaray and nearly complete at Christensen Ranch. COGEMA submitted a restoration report for Irigaray Mine units 1 through 9 to NRC staff in November 2005, as well as to WDEQ for approval of ground water restoration at the Mine. NRC staff concurred with WDEQ's approval that the ground water had been restored to pre-mining class of use. Surface decommissioning began in 2002 (plan approved December 31, 2001), and there are minor amounts of soil contamination. Equipment and building components that cannot be decontaminated will be shipped with the contaminated soil to the Pathfinder - Shirley Basin tailings impoundment for disposal. The cost for decommissioning is estimated to be approximately \$12.1 million.

3.0 Major Technical or Regulatory Issues

None.

4.0 Estimated Date For Closure

TBD

Exxonmobil Highlands

1.0 Site Identification

Location: Converse County, WY
License No.: SUA-1139
Docket No.: 40-8102
License Status: Possession-only
Project Manager: Myron Fliegel

2.0 Site Status Summary

The Highland uranium recovery facility included a conventional surface uranium mine with an associated mill. The site also included ore storage pads, four mine pits (two of which have been backfilled), several waste rock piles, one tailings impoundment and an environmental laboratory. Surface mining, solution mining and underground mining were used to recover the uranium ore. The first ore was processed at the Highland mill using an acid leach circuit between 1972 and the end of operations in mid-1984.

The uranium mill area, including the ore storage pads and the laboratory, has been cleaned up and the tailings buried are under a radon barrier, eliminating nearly all potential for radiation exposures to workers or members of the general public from these sources. However, Exxon Mobil reclamation operations may result in minimal exposure of workers to radioactive materials. All windblown material has been reclaimed to unrestricted release standards. The byproduct material exposure is limited to the groundwater pathway. However, there is no current use of groundwater.

3.0 Major Technical or Regulatory Issues

None.

4.0 Estimated Date For Closure

2008

Homestake

1.0 Site Identification

Location: Grants, NM
License No.: SUA-1471
Docket No.: 40-8903
License Status: Possession-only
Project Manager: Ron Linton

2.0 Site Status Summary

The facility is a conventional uranium mill site under reclamation. Uranium processing started in the late 1950's and continued until 1990. Tailings generated from the milling operation were placed on two piles, a large pile and a small pile. The facility has a tailings area of 170 acres with a weight of 22 million tons. Currently there are several evaporation ponds and an ion exchange treatment building for groundwater remediation, and several administrative and maintenance buildings. Seepage from the tailings piles was noted in 1975.

The current effort is a major groundwater corrective action plan which is also under the oversight of the U.S. Environmental Protection Agency (EPA) through Superfund. A memorandum of understanding (MOU) has been executed between NRC and EPA for this site regarding groundwater remediation. Staff has recently completed a license amendment to revise groundwater compliance standards. In accordance with the MOU, staff is consulting with EPA and the State of New Mexico to review this action. The cost for decommissioning is estimated to be approximately \$55.5 million and is expected to be completed by 2017.

3.0 Major Technical or Regulatory Issues

None.

4.0 Estimated Date For Closure

2017

Pathfinder - Lucky MC

1.0 Site Identification

Location: Gas Hills Mining District, WY
License No.: SUA-672
Docket No.: 40-2259
License Status: Possession-only
Project Manager: Steve Cohen

2.0 Site Status Summary

The Lucky Mc site is located in west central Wyoming in the Gas Hills region. Uranium milling began at this site in 1958 and continued through 1988 with a total of 12 million tons of ore processed. The mill utilized a conventional acid leach process. The mill was demolished and placed in the out-slope of the No. 2 Tailings Dam, with a clay-radon barrier placed over the material. The mill area includes approximately 56 acres. The site has three solid tailings impoundments and three tailings solution ponds. The post-reclamation tailings piles cover approximately 241 acres.

Ground water pumping operations at the facility have been ongoing since 1980. The corrective action consists of ground water pumping to evaporation ponds and the injection of fresh water to remove contamination and impede the flow of contaminated ground water in the aquifer. A total of 197 million gallons of contaminated water has been collected and 193 million gallons of fresh water injected as part of the remedial effort and approximately 217 million gallons of water have been pumped from the tailings by the end of 2001. On December 20, 2002, alternate concentration limits (ACLs) were approved for the Lucky Mc site, and all active correction actions ceased, such as pumping and injection. The mill tailings site reclamation was completed on December 14, 2004. The Construction Completion Report was submitted to the NRC on April 21, 2005. Staff review of the document is estimated to be completed by 2006. The cost for decommissioning is estimated to be approximately \$1.0 million.

3.0 Major Technical or Regulatory Issues

None.

4.0 Estimated Date For Closure

2007

Pathfinder - Shirley Basin

1.0 Site Identification

Location: Shirley Basin, WY
License No.: SUA-442
Docket No.: 40-6622
License Status: Active
Project Manager: Steve Cohen

2.0 Site Status Summary

The Shirley Basin site is located in eastern Wyoming. The former uranium mill and mine site is located approximately 5 miles northeast of the former Shirley Basin town site. Uranium milling began on the site in 1971, and continued through 1992, when the last ore was processed. The site has two solid tailings impoundments, the largest covering approximately 158 acres, and the smaller 135 acres. A solution pond, which is also the disposal location for 11e.2 byproduct material from ISL mines, covers about 30 acres. The mill has been decommissioned in accordance with the decommissioning plan (DP) submitted to NRC in 1992. Pathfinder has reclaimed approximately 80 percent of the tailings and has discontinued groundwater reclamation, due to staff's approval of the proposed ACLs. Pathfinder intends to operate its ISL disposal area for the foreseeable future.

3.0 Major Technical or Regulatory Issues

Staff issued the license amendment for ACLs in October 2005. To address concerns regarding sudden pollutant loads to Spring Creek, a license amendment was added requiring Pathfinder to maintain its ground water remediation system until the staff determines that it is no longer needed.

4.0 Estimated Date For Closure

TBD

Rio Algom - Ambrosia Lake

1.0 Site Identification

Location: Grants, NM
License No.: SUA-1473
Docket No.: 40-8905
License Status: Possession-only
Project Manager: Robert Lukes

2.0 Site Status Summary

This is a uranium mill tailings site in the Ambrosia Lake uranium district of New Mexico. It is located approximately 25 miles north of Grants, New Mexico. The tailings impoundment contains 33 million tons of uranium ore and covers an area of approximately 370 acres.

The site status changed from standby to reclamation in August 2003 to reflect the licensee's intent to begin full demolition and reclamation of the site leading to termination of the specific license. The mill was demolished and disposed of in the tailings impoundment in late 2003. The demolition was completed in accordance with a mill demolition plan approved by NRC in October 2003.

The staff issued a license amendment for ACLs in February 2006. Consequently, all groundwater corrective actions have been discontinued, and Rio Algom is finalizing the site tailings reclamation. A portion of the tailings impoundment is still open for disposal of Atomic Energy Act, Section 11e.(2) byproduct material. A final soil DP entitled, Closure Plan - Lined Evaporation Ponds (Relocation Plan) was submitted to the NRC in November of 2004, and partially approved. A portion of the report, pertinent to the "Section 4" and Pond 9 evaporation pond sediment material is still under review. It is estimated that that portion of the review will be completed by 2006.

The cost for decommissioning is estimated to be approximately \$18 million.

3.0 Major Technical or Regulatory Issues

None.

4.0 Estimated Date For Closure

2009

Sequoyah Fuels Corporation

1.0 Site Identification

Location: Gore, OK
License No.: SUB-1010
Docket No.: 04008027
License Status: Possession-Only
Project Manager: Myron Fliegel

2.0 Site Status Summary

Uranium and thorium contamination of the soils and subsoils has been identified at the site. In addition, the groundwater is contaminated with uranium, thorium and metals. In March 1999, Sequoyah Fuels Corporation (SFC) submitted a DP to remediate the site and terminate the license in accordance with the License Termination Rule (LTR)(10 CFR 20.1403 for restricted conditions). In order for NRC to approve the DP, a long-term custodian to assume responsibility for institutional controls would have to be identified. However, several potentially acceptable custodians declined, and SFC was unable to get a commitment from DOE. In January 2001, SFC requested that some of the waste at the site be classified as 11e.(2) byproduct material and thus subject to Appendix A of Part 40. In July 2002, the NRC approved SFC's request that some of the wastes be classified as 11e.(2). In December 2002, the license was amended to permit possession of 11e.(2) and require site remediation in accordance with Appendix A of Part 40. After remediation and license termination, DOE will be required to assume responsibility, as the long-term custodian, if the State of Oklahoma chooses not to. SFC submitted a reclamation plan in January 2003. The staff is currently reviewing the plan and developing an associated EIS. In June 2003, SFC submitted a ground water monitoring plan and a ground water corrective action plan. In August 2005 the staff approved the ground water monitoring plan. The staff is currently reviewing the ground water corrective action plan.

3.0 Major Technical or Regulatory Issues

There is significant groundwater contamination at this site which the groundwater monitoring and corrective action plan are intended to address. Staff also has concerns with the placement and design of the waste impoundment. Financial assurance issues are summarized in SECY-03-0198 dated November 12, 2003. A hearing was granted to the State of Oklahoma and the Cherokee Nation on issues related to the reclamation plan proposed by SFC.

4.0 Estimated Date For Closure

TBD

Umetco Minerals Corporation

1.0 Site Identification

Location: Gas Hills, WY
License No.: SUA-648
Docket No.: 40-0299
License Status: Possession-only
Project Manager: Robert Lukes

2.0 Site Status Summary

The site is located in the Gas Hills uranium district of the Wind River Basin. The restricted area, including the tailings disposal and heap leach areas, consists of approximately 542 acres, of which Umetco Minerals Corporation (Umetco) owns 280 acres.

Mill operation ended in 1984 and the mill was decommissioned in 1990. The final status survey (FSS) report is under NRC review, but one building in the restricted area and a small portion of the haul road have yet to be remediated. The windblown tailings remediated area is 111 acres, and 4,950 cubic yards of soil were removed (soil DP approved April 2001). An additional 6,700 cubic yards of material were removed because of contamination released when the tailings dam was breached, and 30,000 cubic yards were removed from a former evaporation pond.

The covers on two disposal areas are complete, and the cover is nearly complete on the A-9 Repository (former uranium mining pit). The area of Pond 2 will be covered next year, if enough water evaporates (cover design approved November 10, 2003), and the C-18 uranium mining pit will be backfilled. The total disposal area is approximately 300 acres. Before license termination, DOE must arrange for transfer of land that is within the long-term care boundary from the Bureau of Land Management. The cost for decommissioning is estimated to be approximately \$14.8 million.

3.0 Major Technical or Regulatory Issues

None.

4.0 Estimated Date For Closure

2010

United Nuclear Corporation

1.0 Site Identification

Location: Churchrock, NM
License No.: SUA-1475
Docket No.: 40-8907
License Status: Possession-only
Project Manager: Paul Michalak

2.0 Site Status Summary

The facility is a conventional uranium mill site under reclamation. United Nuclear Corporation (UNC) operated the site as a uranium mill facility from 1977 to 1982. The site includes a former ore processing mill and tailings disposal area, which cover about 25 and 100 acres, respectively. The mill, designed to process 4,000 tons of ore per day, extracted uranium using conventional crushing, grinding, and acid-leach solvent extraction methods. Uranium ore processed at the site came from the Northeast Church Rock and the Old Church Rock mines. The average ore grade processed was approximately 0.12 percent uranium oxide. The milling of uranium ore produced an acidic slurry of ground waste rock and fluid (tailings) that was pumped to the tailings disposal area. Uranium milling and tailings disposal were conducted and an estimated 3.5 million tons of tailings were disposed in the tailings impoundments. The tailings disposal area is subdivided by dikes into three cells identified as the South Cell, Central Cell, and North Cell. Surface reclamation is complete, except for the area of the south tailings cell covered by two evaporation ponds, which are part of the ground water corrective action plan. The current effort is a groundwater corrective action plan which is also under oversight of the EPA through Superfund. A MOU has been executed between NRC and EPA for this site.

UNC is developing a Site-wide Supplemental Feasibility Study (SWSFS) as directed by EPA on June 24, 2005. The SWSFS is scheduled to be submitted for review by November 30, 2006. The cost for decommissioning is estimated to be approximately \$3.7 million.

3.0 Major Technical or Regulatory Issues

Ground water corrective action at the UNC Church Rock site involves three saturated units; the Southwest Alluvium, Zone 1 and Zone 2. For the Southwest Alluvium, the corrective action system has been temporarily shut down while UNC assesses the effectiveness of natural attenuation as a ground water remedial solution. Quarterly ground water quality monitoring is ongoing in the Southwest Alluvium. For Zone 1, the corrective action system, which was initiated in 1984, was decommissioned in July 1999 with the approval of the NRC, EPA, and NMED. A monitored natural attenuation approach has been proposed for Zone 1. Currently, monitoring of the natural system's ability to stabilize seepage impacts into Zone 3 is continuing.

Recently, UNC conducted an extended pilot investigation to evaluate the suitability of hydrofracturing to enhance the remedy for cutoff and containment of the migrating seepage-impacted Zone 3 water. Additionally, EPA has approved a supplemental pilot study for testing in-situ alkalinity stabilization to stop further migration of the seepage-impacted Zone 3 water.

Given stakeholder interest in the Church Rock site, significant coordination with various interest groups will be necessary. The Navajo Nation has had a major interest in the site.

Sedimentation issues in the diversion channel have been communicated to the licensee as they relate to license termination.

4.0 Estimated Date For Closure

TBD

Western Nuclear, Inc. - Split Rock

1.0 Site Identification

Location: Jeffrey City, WY
License No.: SUA-56
Docket No.: 40-1162
License Status: Possession-only
Project Manager: Steve Cohen

2.0 Site Status Summary

This site is a uranium mill tailings site located approximately 2 miles west of Jeffrey City, WY. The site consists of three reclaimed tailings impoundments occupying approximately 180 acres and other reclaimed disposal areas.

Mill operations commenced in 1958 and continued until 1981. Uranium ore processed at the mill was extracted in mines south of the facility. The mill operations consisted of physical and chemical including sulfuric acid leaching. Decommissioning of the mill was completed on September 15, 1988. Surface reclamation has been completed for the tailings impoundments. Two evaporation ponds were in use to support groundwater corrective action. However, ACLs were approved on September 28, 2006; therefore, Western Nuclear will discontinue groundwater corrective actions and will reclaim the two evaporation ponds.

3.0 Major Technical or Regulatory Issues

Staff issued the license amendment for ACLs with institutional controls (ICs). ICs will serve to prevent human exposures to contaminated groundwater within the long-term surveillance boundary. The NRC approved the use of ICs in December 2002, and the last IC was obtained in January 2006.

4.0 Estimated Date For Closure

2008