



TEXAS DEPARTMENT OF STATE HEALTH SERVICES

EDUARDO J. SANCHEZ, M.D., M.P.H.  
COMMISSIONER

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September 27, 2005

U. S. Nuclear Regulatory Commission  
Attn: Paul H. Lohaus, Director  
Office of State and Tribal Programs  
One White Flint North, 3<sup>rd</sup> Floor  
11555 Rockville Pike  
Rockville, MD 20852

Dear Mr. Lohaus:

In accordance with Part A of Section IV and Part B of Section V of SA-900 (Termination of Uranium Mill licenses in Agreement States), we are requesting your determination of concurrence that the West Cole Project (Site No. 000 on Texas Radioactive Material License No. L03024) meets the criteria for release to unrestricted use and may be released to unrestricted use, and the license amended to so indicate. In support of our request, please find enclosed a Completion Review Report (CRR) for the West Cole Project.

If you have any questions regarding this request or the information provided, please advise. I can be contacted by telephone at (512) 834-6689 or by e-mail at [ruth.mcburney@dshs.state.tx.us](mailto:ruth.mcburney@dshs.state.tx.us).

Sincerely,

Ruth E. McBurney, CHP, Manager  
Radiation Safety Licensing Branch

Enclosure

CC: David Benavides, COGEMA

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STP-006 *Completed*  
RIDS: SPD8

*SISP Review Complete*

## COMPLETION REVIEW REPORT

Date: September 20, 2005

Licensee: COGEMA Mining, Inc.

License Number: L03024

Facility Name: West Cole Project

Location: Bruni, Texas

Licensed Area Being Terminated: Approximately 620 acres

Manager: Gary L. Smith, Ph.D., Manager, Technical Assessments Group

Technical Reviewer: Philip Shaver, M.P.H., Chief, Uranium Licensing Program

### I. SUMMARY

COGEMA Mining, Inc.'s West Cole Project is an *in situ* leach uranium mining and processing site which has been decommissioned and reclaimed under Texas' Agreement State authority, derived from Title II of the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). The Department of State Health Services (DSHS) is the agency of the State of Texas currently granted jurisdictional authority for regulation of source material recovery licensees, under the provisions of Chapter 401 of the Texas Health and Safety Code. UMTRCA requires that prior to termination of the license, the U.S. Nuclear Regulatory Commission (NRC) shall make a determination that the licensee has complied with the applicable standards and requirements. Further, the NRC has reserved the right to provide concurrence on release to unrestricted use of licensed sites prior to license termination, under the provisions of Title 10 of the Code of Federal Regulations, Section 150.15a. Under the Agreement State program, the State of Texas via its agency, the DSHS, is responsible for approval of the remediation plans for COGEMA and for site inspections to ensure that the actual remedial actions have been completed pursuant to the approved plans and complies with the applicable criteria.

This report documents the DSHS's basis for its conclusion that decommissioning and reclamation have been acceptably completed at the West Cole Project site. The NRC STP Procedure SA-900 entitled, "Termination of Uranium Milling Licenses in Agreement States," was used to prepare this report. The primary applicable standards for uranium mill reclamation in Texas is Title 25 of the Texas Administrative Code (25 TAC), Section (§) 289.260, entitled "Licensing of Uranium Recovery and Byproduct Material Disposal Facilities." This state rule is consistent with and compatible with NRC regulations, as required by the state's Agreement State status with the NRC.

The applicable standards and requirements, with appropriate references to related sections of this completion review report (CRR), are identified in Table 1 of this CRR. In response to the licensee's request for release to unrestricted use of the West Cole Project site on Radioactive Material License No. L03024 (COGEMA 2005A) the DSHS has performed a review of the West Cole Project site for compliance with all applicable standards and requirements for release to unrestricted use. As part of that review, the DSHS has prepared a Review Sheet (Log No. 2004-12-0708) to document the DSHS's review of the licensee's request to release the West Cole Project site to unrestricted use and so amend the license to reflect that status. This CRR is a part of the Review Sheet, however, additional information recorded on the Review Sheet may provide reference to more detailed evaluations made by the DSHS and to COGEMA's documents submitted for DSHS review during the site's reclamation period. The DSHS's reviews of licensee submittals were conducted using guidance from NRC's NUREG-1569.

I. Summary (continued)

Table 1 Applicable Standards and Requirements Related to Topics Discussed in the CRR

Applicable Standards/Requirements				CRR Sections
State Rule: Title 30 of the Texas Administrative Code Section 331.107  Aquifer Restoration				Sections II.2 and II.3
State Rule: Title 30 of the Texas Administrative Code Section 331.46  Plugging and abandonment of wells				Section 2 and 3
State Rule: Title 25 of the Texas Administrative Code Section 289.202(eee)(1) and 289.202(ggg)(6)  Release of equipment and materials.  Criteria for release of equipment, facilities and materials (i.e., discrete solid objects) for unrestricted use.				Section 4
Nuclide	Average	Maximum	Removable	
U-nat	5,000 dpm alpha/100 cm <sup>2</sup>	15,000 dpm alpha/cm <sup>2</sup>	1,000 dpm alpha/cm <sup>2</sup>	
Ra-226, Ra-228, Th-nat,	1,000 dpm/100 cm <sup>2</sup>	3,000 dpm/100 cm <sup>2</sup>	200 dpm/100 cm <sup>2</sup>	
Beta-gamma emitters	5,000 dpm beta, gamma/100 cm <sup>2</sup>	15,000 dpm beta, gamma/100 cm <sup>2</sup>	1,000 dpm beta, gamma/100 cm <sup>2</sup>	
State Rule: 25 TAC §289.202(eee)(4) and (6); and §289.260(h)(6)(A) and (C)  Release of open areas with soil  Criteria for release to unrestricted use of soils (i.e., land) are the following limits averaged over 100 square meters:  Radium-226 or -228 - (A) 5 pCi/g averaged over the first 15 cm of soil below the surface; and (B) 15 pCi/g, averaged over 15 cm thick layers of soil more than 15 cm below the surface.  natural uranium - (A) 30 pCi/g, averaged over the top 15 cm of soil below the surface; and (B) 150 pCi/g, average concentration at depths greater than 15 centimeters below the surface so that no individual member of the public will receive an effective dose equivalent in excess of 100 mrem per year.				Section 4

**I. Summary (continued)**

In conclusion, the DSHS considers COGEMA's West Cole Project site to have met the applicable standards and requirements for release to unrestricted use. Upon receipt of a determination by the NRC, as required by Section 274c.(4) of the Atomic Energy Act, that the applicable standards and requirements have been met, the licensee will be notified and Radioactive Material License No. L03024 will be amended to signify that Site No. 000 (West Cole Project) may be released to unrestricted use.

**II. DOCUMENTATION OF BASES FOR CONCLUSION**

The following are the DSHS's review results for items specified in STP Procedure SA-900 "Termination of Uranium Milling Licenses in Agreement States."

**1. Description of licensee's activities associated with decommissioning and license termination**

The West Cole Project is an *in situ* leach uranium mine located near Bruni, Texas. The West Cole Project's uranium leases cover approximately 620.31 contiguous acres of land. Of that acreage, 78 acres comprise the production area divided among three (3) wellfields. In addition to the wellfields, the site also has a plant facility consisting of portable buildings (main office/laboratory building, shop building, electrical building, lunch/dressing room building, geological office, foreman's office, two (2) storage buildings), a processing pad (consisting of ion exchange/elution tanks (4), a precipitation tank, pregnant lixiviant tanks (3), sand filters (3), eluant tanks (2), chemical storage/makeup tanks (4), a filter press, and a yellowcake slurry storage tank); a curbed pad for storage of byproduct materials, two (2) hypalon-lined waste storage ponds; three (3) septic tanks, two (2) non-radioactive trash pits, and a deep disposal well (TDH 1986, TDH 1988).

Surface activities at the site are licensed by the Department of State Health Services (DSHS), formerly the Texas Department of Health (TDH), an agency of the State of Texas, under Radioactive Material License No. L03024. Subsurface activities were permitted by the Texas Water Commission (TWC), subsequently renamed the Texas Natural Resource Conservation Commission (TNRCC), now currently named the Texas Commission on Environmental Quality (TCEQ), under TWC Permit No. URO2463 for injection wells, and Underground Injection Control Permit WDW-195 for a waste disposal well.

The West Cole Project site was operated from July 7, 1981 to November 30, 1989 when production operations were ceased, and groundwater restoration began (TDH 1998).

## II. Documentation of Bases for Conclusion (continued)

Active groundwater restoration was begun in December 1989 under the jurisdiction of the TWC. The TNRCC (successor to the TWC) authorized cessation of groundwater restoration and plugging and abandonment of all uranium recovery related wells in 2002 (TNRCC 1997, TNRCC 2000, TNRCC 2002B). Following the plugging and abandonment of the wells, full-scale surface reclamation and decommissioning could proceed.

The licensee initiated decommissioning of the wellfields by removal of wellheads and related piping. These items were either transferred to another of the licensee's sites on License No. L03024 or transferred to Pathfinder Mines (a sister company of the licensee) at Shirley Basin, Wyoming for disposal in the tailings impoundment at that site.

The licensee decommissioned the plant site by either decontamination of structures (e.g., office building) and transferring them to other persons for unrestricted use, or by transferring contaminated structures and equipment (e.g., buildings, tankage, pipe, etc.) to other persons licensed to possess such material (e.g., other uranium licensees) or to another COGEMA facility (i.e., the process plant at the Holiday/El Mesquite Projects site) licensed under L03024. Items no longer of value or use were dismantled and transferred to the Pathfinder Mines facility for disposal. The two (2) byproduct material waste ponds were decommissioned and the liners removed. The liners and the rubble from the concrete pads were transferred to the Pathfinder Mines facility for disposal.

Following the removal of structures, equipment and features from the site, the licensee initiated a survey program to identify areas where the soil was contaminated.

### 2. Information which demonstrates that the groundwater has been restored to meet applicable standards and requirements.

Injection authorization associated with the mining of uranium and restoration of the groundwater in the mining zones was the jurisdiction of, initially the Texas Water Commission (TWC) and subsequently, the Texas Natural Resource Conservation Commission (TNRCC) during mining activities at the West Cole Project. Thus, all data pertaining to the restoration of the groundwater would have been sent to the TWC/TNRCC and reviewed by that agency. Consequently, no data or information pertaining to groundwater restoration were reviewed by the DSHS. Instead, the DSHS has relied on the TNRCC to determine that the data pertaining to groundwater restoration was acceptable and that the groundwater has been restored to meet applicable standards and requirements. Copies of documents from the TNRCC demonstrate that the groundwater has been restored to meet applicable standards and requirements. (TNRCC 1997, TNRCC 2000, TNRCC 2002B)

II. Documentation of Bases for Conclusion (continued)

3. Documentation that the production, injection and monitoring wells have been closed and plugged in accordance with applicable standards and requirements

The TWC, and subsequently the TNRCC, had sole jurisdiction over the production, injection and monitoring wells at uranium recovery operations. Consequently, no data or information pertaining to such wells were reviewed by the DSHS. Instead, the DSHS relied on the TNRCC to determine that the wells had been plugged and abandoned in accordance with the applicable standards and requirements. Copies of documents from the TNRCC demonstrate that the wells associated with the mining of uranium at the West Cole Project have been plugged and abandoned in accordance with applicable standards and requirements. (TNRCC 2003A, TNRCC 2003B)

In addition to the wells associated with the mining of uranium, COGEMA was also permitted by the TNRCC for a waste disposal well at the West Cole Project. A copy of a document from the TNRCC demonstrates that the waste disposal well was closed in accordance with applicable standards and requirements having been met (TNRCC 2002A)

4. Decommissioning information which documents that all radiologically contaminated materials have been properly disposed of, transferred to licensees authorized to possess such materials, or meet applicable standards and requirements for release.

Agency inspectors periodically (at least once every 12 months) observed aspects and effects of licensee decommissioning efforts and reviewed licensee's records to ascertain disposition of contaminated materials. As documented in agency inspection reports, under the section of the report titled "Scope of Operations", the licensee was noted to ship contaminated materials to COGEMA's Pathfinder operation at Shirley Basin, Wyoming for disposal. The authorization for Pathfinder to receive this material was verified by a review of the Pathfinder license (Amendment 34 dated 3/19/93). This was documented under the section of the inspection report titled "License Conditions", specifically Condition 24.A. (TDH 2004B)

Agency inspectors verified the removal of the plant pad and the decommissioning and reclamation of waste water ponds, and document such in an inspection report (TDH 2004A). Agency inspectors also verified that equipment and materials released from the site for unrestricted use met the surface contamination levels specified at 25 TAC §289.202(ggg)(6), and documented such in inspection reports. (TDH 2003, TDH 2000, TDH 1999).

Transfers of material for disposal from January 1998 to May 1999 and from May 1999 to October of 2000 were reviewed by agency inspection staff. (TDH 1999, TDH 2000)

Inspection reports also note the transfer of materials at the West Cole Project site to the licensee's other project sites authorized on License No. L03024, or to other persons. The licensee provides additional documentation as to the disposition of materials at the West Cole Project site (COGEMA 2005B).

## II. Documentation of Bases for Conclusion (continued)

The agency's inspections reports and the documentation provided by the licensee confirm the use of the surface contamination limits referenced at 25 TAC §289.202(eee)(4) and as specified at 25 TAC §289.202(ggg)(6) (compatible with NRC Regulatory Guide 1.86) and appropriate survey and radiation detection instrumentation for determining the release of material from the West Cole Project site to unrestricted use; and confirms the licensee's proper transfer of contaminated material to an appropriate facility for disposal or to other appropriately licensed persons or facilities.

### 5. Discussion of the results of radiation surveys and soil sample analyses which confirm that the licensed site meets applicable standards and requirements for release.

The licensee submitted a document titled "Closure Report for the West Cole Site" dated December 2004. That report described the licensee's efforts to demonstrate that the site meets the criteria for release to unrestricted use. Those efforts include the following:

- A. Description of method for and establishment of background gamma levels.
- B. Description of method for development of a correlation between radium-226 concentrations in soil and the gross gamma rate obtained in the surveys.
- C. Description of the survey methodology employed for the initial survey and provides the data obtained from the survey.
- D. Description of the cleanup criteria used, which is the same as the limits specified in the DSHS rules, 25 TAC §289.202(eee)(4) and (6).
- E. Description of the methodology used for identifying and delineating the areas for soil removal, the method for removing the soil, and the disposition of the removed soil.
- F. Description of the final verification survey methodology and the data obtained from the survey.
- G. Description of the methodology used to select areas for collection of soil samples, the criteria for collection of soil samples, the methodology used to collect the soil samples, the analytical service provider used to analyze the soil samples, and the analytical service provider's methodology for analyzing the soils, and the results of the soil sample analysis.
- H. A description of the deviations from the approved site survey protocol, and the rationale for the deviation. (COGEMA 2004)

## II. Documentation of Bases for Conclusion (continued)

The methodology described and used by the licensee appears to be appropriate for the conditions at the West Cole Project site, including the rationales for deviations from the approved survey plan.

### 6. Discussion of results of the state's site closure inspection.

In February of 2005, DSHS staff performed a survey of COGEMA's West Cole Project site. The surveys were performed using one-by-one sodium iodide probes and two-by-two-sodium iodide probes. The purpose of the survey was to confirm the results of the survey data submitted by COGEMA (COGEMA 2004) to the DSHS and to determine if the site met the criteria for release to unrestricted use. Using two times background as an allowable limit, the confirmatory surveys were performed by walking 10 meters apart moving across the site area. Background readings ranged from 1,800 to 3,000 counts per minute (cpm) for the one-by-one NaI probed instruments and 5,000 to 6,000 cpm for the two-by-two probed instrument.

Several areas were identified that exceeded two times background. These areas were immediately cleaned up by COGEMA. A post-cleanup survey indicated no readings exceeding two times background. Soil samples were collected at the areas that exceeded two times background and several other areas that did not exceed two times background. Analysis of these samples confirmed that the areas do not exceed the criteria for release to unrestricted use. (DSHS 2005)

On-site disposal of radioactive material, including byproduct material, was not authorized at the West Cole Project site, thus, there is no land to be transferred to the state or the Federal Government. As a result of these findings, the DSHS is proposing to authorize COGEMA to release the West Cole Project site to unrestricted use and remove the site from the license.

II. Documentation of Bases for Conclusion (continued)

7. Documentation that release of a portion of the site will not negatively impact the remainder of the site to be closed at a later date.

The DSHS has determined that the release for unrestricted use and removal of the West Cole Project site from the license will not negatively impact the remainder of the sites associated with the license, which will be released for unrestricted use and moved from the license at a later date. The DSHS based its decision on the following: The site being removed from the license is not contiguous with any other site associated with licensed activities that may lead to recontamination of the released site; and removal of the West Cole Project site from the license will not in any way prevent or hinder the licensee's ability to complete decommissioning of the remainder of the licensed areas.

### III. REFERENCES

- COGEMA 2004 – Closure Report for the West Cole Site dated December 2004.
- COGEMA 2005A – Letter dated May 27, 2005 from David Benavides to Gary Smith
- COGEMA 2005B – Letter dated August 23, 2005 from David Benavides to Phil Shaver
- DSHS 2005 - Interoffice Memorandum dated May 23, 2005 from Ruben Cortez to Gary Smith, Subject: Confirmation Survey of Cogema West Cole Project (RML# L03024-000)
- TDH 1986 - TRCB EA-6-S: “Environmental Assessment Related to Expansion and License Renewal of the Tenneco Uranium, Inc. West Cole Project” dated July 18, 1986
- TDH 2004A - Texas Department of Health Inspection Report dated 1/9/04 of the COGEMA Mining, Inc. West Cole, O’Hern, and Holiday/El Mesquite Projects performed by Bob Burkhart
- TDH 2004B - Texas Department of Health Inspection Report dated 2004-04-08 of the COGEMA Mining, Inc. West Cole, O’Hern, and Holiday/El Mesquite Projects performed by Bob Burkhart
- TDH 2003 - Texas Department of Health report of inspection conducted on January 22-23, 2003 of the COGEMA Mining, Inc. West Cole, O’Hern, and Holiday/El Mesquite Projects performed by Martin Utley.
- TDH 2000 - TDH Facility Inspection (Report) dated October 25, 2000 by Martin Utley
- TDH 1999 - TDH Facility Inspection (Report) dated May 4-5, 1999 by Martin Utley
- TDH 1998 - TDH Inspection Report dated April 23, 1998 by Rick Muñoz.
- TNRCC 1997 – TNRCC letter dated July 8, 1997 from Ben Knape to Donna Wichers of COGEMA Mining, Inc.
- TNRCC 2000 – TNRCC letter dated February 8, 2000 from Ben Knape to David G. Benavides of COGEMA Mining, Inc.
- TNRCC 2002A – TNRCC letter dated January 8, 2002 from Katherine Nelson to David Benavides of COGEMA Mining, Inc.
- TNRCC 2002B – TNRCC letter dated March 14, 2002 from Ben Knape to David Benavides of COGEMA Mining, Inc.
- TNRCC 2003A – Revocation of Underground Injection Control Permit UR02463-001, dated January 24, 2003
- TNRCC 2003B - TNRCC letter dated February 4, 2003 from Katherine Nelson to David Benavides of COGEMA

The licensee submitted a report titled "Closure Report for the West Cole Site" dated December 2004, under cover of a letter dated December 10, 2004, and requested agency confirmation that the site meet the criteria for release to unrestricted use. That report detailed the method used to derive background gamma levels for the project site, the survey instruments used, the survey methodology, the reduction of the survey data to determine a survey threshold to identify areas of interest at the 95% confidence interval, that is, areas which might potentially exceed the release criteria, the soil sampling methodology, the analytical service provider for the analysis of the soil samples, and the survey data and the soil sample analysis data for both radium and uranium concentrations in the soil.