

December 11, 2001

MEMORANDUM TO: Docket File 40-8502

FROM: Elaine Brummett, Project Manager  
Fuel Cycle Licensing Branch  
Division of Fuel Cycle Safety and Safeguards  
Office of Nuclear Material Safety and Safeguards

SUBJECT: ENVIRONMENTAL ASSESSMENT REGARDING THE SURFACE  
DECOMMISSIONING PLAN FOR COGEMA MINING, INCORPORATED,  
IN SITU LEACH FACILITIES IN WYOMING

COGEMA Mining, Incorporated (COGEMA) submitted a surface (structures and land) decommissioning plan on December 19, 2000. The Nuclear Regulatory Commission (NRC) staff completed review of the document and forwarded a request for additional information to COGEMA on March 8, 2001. COGEMA's response and page changes for the Plan were provided June 15 and June 18, 2001, with additional information provided August 31, 2001. In accordance with 10 CFR 51.21, the NRC staff determined that an environmental assessment (EA) was required to document its review of COGEMA's request.

The draft EA was sent to interested parties and agencies on September 28, 2001, with a request for comments within 30 days. No comments have been received to date. The EA prepared by the staff is provided as an attachment to this memorandum to be placed in the licensee's docket file.

License No. SUA-1341

Attachment: Environmental Assessment for Surface Decommissioning

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Attachment: Environmental Assessment for Surface Decommissioning

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<b>DATE</b>	12/05/01		12/11/01		12/11/01	

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**ENVIRONMENTAL ASSESSMENT FOR  
SURFACE DECOMMISSIONING PLAN  
SOURCE MATERIAL LICENSE NO. SUA-1341**

**COGEMA MINING, INC.  
IRIGARAY AND CHRISTENSEN RANCH PROJECTS  
WYOMING**

**DECEMBER 2001**

**DOCKET NO. 040-8502**

**U.S. Nuclear Regulatory Commission  
Office of Nuclear Material Safety and Safeguards  
Division of Fuel Cycle Safety and Safeguards**

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# Environmental Assessment For the Surface Decommissioning Plan Irigaray and Christensen Ranch Projects

## 1.0 INTRODUCTION

Under Part 40.42(g) of Title 10 of the Code of Federal Regulations (CFR), (Domestic Licensing of Source Material), a Nuclear Regulatory Commission (NRC)-approved final decommissioning plan is required for the proposed cleanup of byproduct material. As defined in 10 CFR 40.4, "byproduct material" means the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes.

COGEMA Mining, Inc. (COGEMA) submitted a revised Decommissioning Plan for the soil and structures at the Irigaray and Christensen Ranch In Situ Leach (ISL) Facilities, by letter of December 19, 2000. The NRC staff completed review of the document and forwarded a request for additional information to COGEMA on March 8, 2001. COGEMA's response and page changes for the Plan were provided June 15 and June 18, 2001, with additional information provided August 31 and September 12, 2001.

The COGEMA letter of September 7, 2000, stated that the last operating wellfield at Christensen Ranch was shut-down on June 23, 2000, and that well field operations at Irigaray ended in 1994. COGEMA obtained a possession only license in March 2001, and is

no longer authorized to use lixiviant to extract uranium from the underground ore body. COGEMA is limited by license condition to a maximum recovery of 22,679 kg (50,000 pounds) of yellowcake per year only from restoration fluid (ground water pumped and treated to restore the aquifer). The impacts from the facility operation and general decommissioning were addressed in the 1998 environmental assessment (EA) for the license renewal and bound most of the impacts expected from decommissioning. The groundwater restoration plan was approved with the 1998 license renewal and is not addressed in this document.

The information in this EA is based principally on information contained in the 1996-97 license renewal application, the June 1998 EA for the license renewal, the June 2001 revised Decommissioning Plan, and correspondence from COGEMA.

#### Purpose and Need for the Action

Removal of soil contaminated with byproduct material and removal of byproduct material from structures to remain on site are necessary for the site to meet the residual byproduct material limits in 10 CFR 40, Appendix A, Criterion 6(6)<sup>1</sup> and allow for termination of the license.

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<sup>1</sup> A concentration of radium in land, averaged over areas of 100 square meters, which, as a result of byproduct material does not exceed the background level by more than: (i) 5 picocuries per gram (pCi/g) of radium-226, averaged over the first 15 centimeters (cm) below the surface, and (ii) 15 pCi/g of radium-226, averaged over 15-cm thick layers more than 15 cm below the surface.



## 1.1 Proposed Action

The Plan provided the site characterization data, decommissioning criteria (radiological and non-radiological) for structures and soil, and the final status survey plan for the Irigaray and Christensen Ranch facilities. COGEMA proposes to decontaminate buildings and equipment, if possible. Otherwise, the materials will be transferred to an appropriate licensee for use or disposal. Some buildings may remain in place if the land owner wants them. The Irigaray facility consists of the process plant, annex building, and a wellfield restoration building. The Christensen Ranch facility contains an ion-exchange plant, a modular office-lab, and two shop buildings. There are also several wellfield buildings (20 x 20 ft) that will go to the landfill or be moved for reuse elsewhere.

The underground pipes will be flushed and left in place if residual radioactivity limits are met. The evaporation ponds will be allowed to dry and the contaminated residue and liners will be disposed, along with soil and piping contaminated above the limits, at a site licensed for byproduct material disposal. The estimated volume of soil to be disposed, including the ponds residues, is 3,350 cubic yards. The total volume for building components, piping, and equipment disposal could be as high as 3,910 cubic yards (COGEMA August 31 and September 12, 2001). The completion of facility and land decommissioning is expected in 2006, after groundwater restoration has been approved.

As stated in Section 1.0, the purpose and need for the proposed action is because the land and structures must meet cleanup criteria in order for the licensee to terminate its license and return the two sites to the land owners. The soil decommissioning effort would consist of evaluation of elevated gamma radiation areas to verify the presence of contamination as opposed to areas of localized mineralization. The thin contaminated soil surface will be removed to a depth of approximately 3 inches (7.5 cm). After measurements confirm that the land meets the requirements of Criterion 6(6), the surface will be re-graded and back-filled. Because the areas to be disturbed are part of a Wyoming mining permit, the land will be re-vegetated according to the restoration plan approved by the Wyoming Department of Environmental Quality, Land Quality Division (WDEQ/LQD), with concurrence of the land owners. Structures and equipment to be released for unrestricted use also will be remediated to meet NRC requirements.

## 1.2 Review Scope

This EA has been prepared to document the assessment of the proposed licensing action in accordance with 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions. Part 51 implements the NRC environmental protection program under the National Environmental Policy Act (NEPA) of 1969, as amended. In accordance with 10 CFR Part 51, an EA serves to (i) briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS), or a finding of no significant impact (FONSI); (ii) facilitate creation of an EIS when one is necessary; and (iii) aid the NRC compliance with NEPA when an EIS is not necessary.

In conducting this assessment, the staff considered the following:

- Environmental information submitted to the NRC by the applicant dated January 5, 1996, September 3, 1997, June 15, 2001, and August 31, 2001;
- Information derived from NRC regulations and regulatory guides;
- Environmental and restoration information submitted by COGEMA for previous and current work at the Irigaray and Christensen Ranch sites; and
- Observations during site visits and inspections.

The NRC staff is also preparing a technical evaluation report to document the technical review of the Plan. The NRC intends to issue a FONSI, and amend License Condition 12.5 to require site surface decommissioning according to the approved Plan.

## 2.0 SITE DESCRIPTION

### 2.1 Background

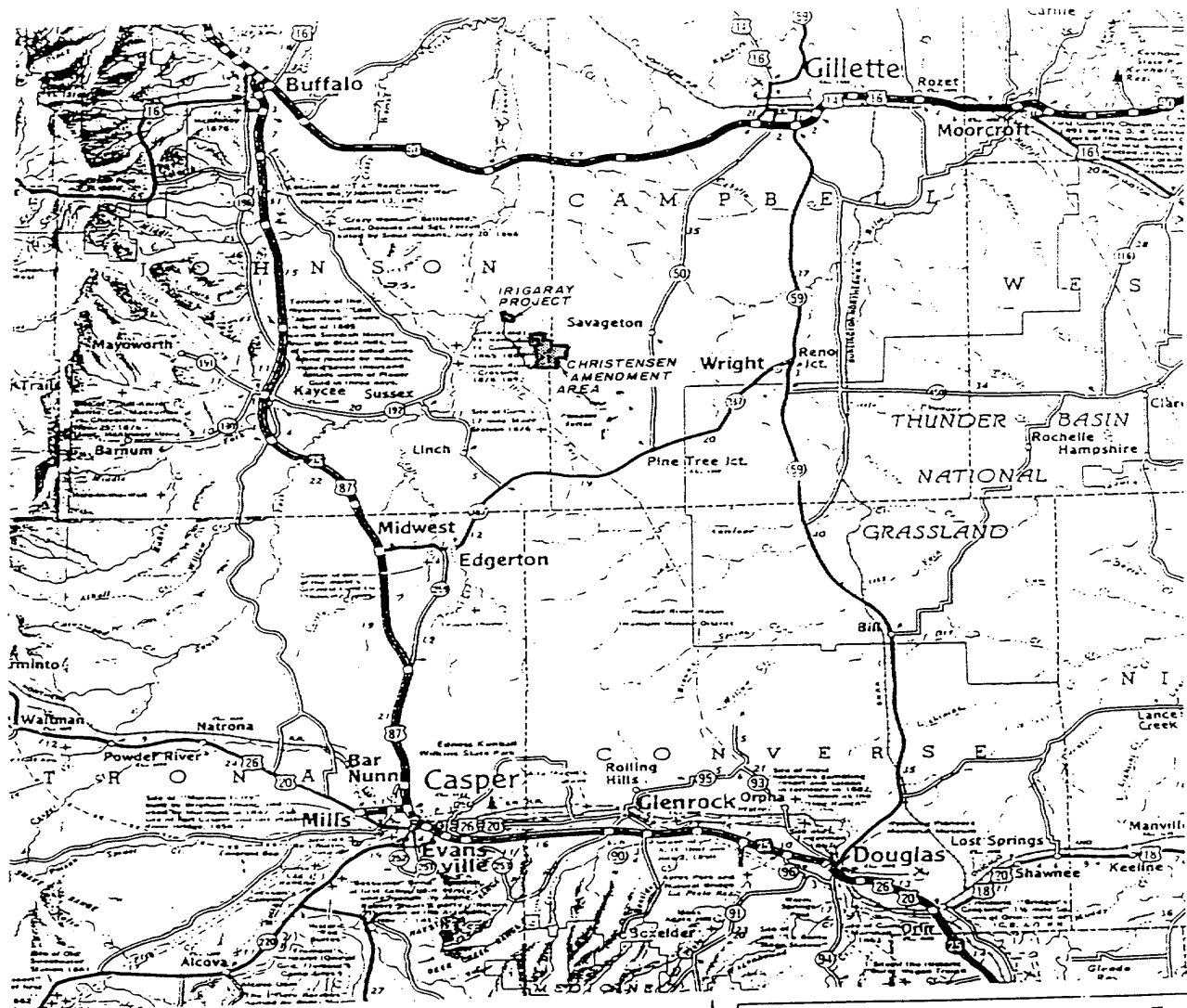
The two sites are in the west-central portion of the Powder River Basin. This is a semi-arid region with approximately 12 inches (30.5 cm) of precipitation per year and temperatures vary from -40 to 100 degrees F. Vegetation is typical of northern plains short grass prairie forage. Additional site details are in the COGEMA license renewal application.

The Irigaray Project was licensed for commercial operation in August 1978, under ownership of Westinghouse Electric Corporation. In 1982, operations ceased at the Irigaray plant and well fields, and the facility was placed on standby status pending improvements in the uranium market. In 1987, Malapai Resources Company purchased the Irigaray site and resumed operations. In 1988, Malapai was granted an amendment to the SUA-1341 Irigaray license to include the Christensen Ranch satellite ion exchange plant and associated mine units (MUs). In February 1990, operations ceased again, and in September of 1990, Malapai was sold to Electricite de France, a French nuclear utility. In April 1993, COGEMA acquired ownership of the Irigaray and Christensen Ranch Uranium Projects.

Although COGEMA has approximately 21,100 acres of leases and federal unpatented lode mining claims located in the Irigaray area, only 1,000 acres are under the Wyoming mining permit and the NRC license. The ownership of this licensed surface area and

associated mineral rights is indicated in Table 1.1. Land and mineral rights ownership for the approximately 14,000 acres in the licensed Christensen Ranch facility are as indicated in Table 1.2.

<b>Table 1.1 Irigaray Land Ownership</b>	
<b>Surface Ownership</b>	<b>Mineral Ownership</b>
L. Brubaker, et al.	Irigaray and BLM
Bureau of Land Management (BLM)	BLM
State of Wyoming	State of Wyoming



0 5 10 25 50  
Scale in Miles



**COGEMA Mining, Inc.**

**Irigaray and  
Christensen Ranch Area  
General Location Map**

REVISED: 2/1/95

SCALE: As Noted

FIGURE:

DRAWN BY: PAS

DATE: 9/1/87

2.1

<p><b>Table 1.2</b> <b>Christensen Ranch Land Ownership</b></p>	
<b>Surface Ownership</b>	<b>Mineral Ownership</b>
BLM	BLM
State of Wyoming	State of Wyoming
John O. Christensen	John O. Christensen, et al. and BLM

A large land exchange is in progress, as John Christensen is acquiring surface ownership of approximately 11,000 acres of federal BLM land where he presently holds grazing leases on the Christensen Ranch. COGEMA also leases some of this BLM land (Table 1.2). The Washington D.C. office of BLM has approved a feasibility analysis for a comprehensive land exchange to accomplish this. In April, the BLM Buffalo Field Office prepared an EA and FONSI for this land exchange (COGEMA August 31, 2001).

## 2.2 Location and Land Use

The Irigaray facility is located in southeastern Johnson County, Wyoming, approximately 10 miles (16 km) northeast of Sussex and 43 miles (69 km) southeast of Buffalo (Figure 2.1). The land has historically been used for livestock grazing and only a small fraction of this land has been disturbed by uranium ISL activities. The various Research and Development (R&D) phases at the Irigaray facility occupied approximately 10 acres. Commercial well field operations have been limited to approximately 30 acres. The nearest residence is 4 miles (6.4 km) away.

The Christensen Ranch facility is 13 road miles (21 km) and 7 air miles (11 km) from the Irigaray processing plant. The Christensen Ranch project area is located along the Campbell-Johnson County boundary about 30 miles (48.3 km) north-northeast of the town of Midwest, Wyoming, and 50 miles southwest of Gillette, Wyoming. The well field operations have disturbed about 233 acres. The primary use of land within the project area is livestock and wildlife grazing and there were 17 producing oil wells in the site vicinity in 1998. The nearest residence is 3 miles (4.8 km) away.

Within 20 miles of the sites, there were approximately 290 residents in 1995. At the termination of proposed decommissioning and restoration activities, all areas affected by ISL operation will be reclaimed, recontoured, and returned to their original use as livestock and wildlife grazing lands.

## 2.3 Water Resources

Willow Creek, an intermittent stream, crosses the Irigaray permit boundary to the north and is the only surface water feature in the immediate vicinity of the permit area. Willow Creek flows northwesterly from the permit area about 2 miles (3.2 km) before its confluence with the Powder River. Within the Christensen Ranch permit area, 18 separate watersheds provide surface drainage within the Willow Creek drainage basin. These drainages are ephemeral, and intermittent surface water occurs only in the far northwest portion of the permit/licensed area. Ground water will not be impacted by surface decommissioning and is not addressed here.

## 2.4 Process Description

Descriptions of the uranium extraction and recovery processes and waste management are provided to indicate the types and probable locations of byproduct material. These topics were presented in more detail in the 1998 EA.

### Uranium Extraction

The process of *in situ* leaching of uranium involves an oxidant- and carbonate-charged lixiviant is pumped through buried pipelines and injected into the mineralized (ore) zone aquifer through the injection wells. In the subsurface, the lixiviant oxidizes and dissolves the uranium. Other trace metals such as arsenic, selenium, vanadium, iron, and manganese are also mobilized during this leaching process. The uranium-rich lixiviant is recovered through the production well, pumped to the well house, and sent by buried (4-6 ft deep) trunk lines to ion exchange (IX) columns in the plant. Uranium extraction is no longer performed or authorized at either facility.

### Uranium Recovery

In the IX columns, the uranium and, to a lesser extent, other metals, are adsorbed to resin beads. The solution exiting the IX columns is depleted in uranium and has diminished lixiviant strength. Therefore, additional oxidizing and complexing agents are added to the stream prior to re-injection into the ore zone for additional uranium recovery. Once the resin in an IX column becomes sufficiently saturated with uranium, the column is taken off line and stripped (eluted) of uranium. In the elution process, the uranium-carbonate complex is removed from the resin beads with a concentrated chloride solution. It is then acidified to break down the

uranyl carbonate complex ion that has been created, agitated to remove the resulting carbon dioxide, and hydrogen peroxide is added to precipitate the uranium. The precipitated uranium oxide mixture is pH-adjusted and allowed to settle. The remaining clear solution is decanted and disposed in either a deep injection well (Christensen Ranch), or evaporation ponds. The product is either shipped as a slurry, processed slightly more to a wet cake, or dried for packaging and shipment as yellowcake (predominantly  $U_3O_8$ ). The Christensen Ranch plant does not contain the uranium elution circuit. For this reason, resin from the Christensen Ranch processing plant is transferred via truck to the Irigaray facility for elution and concentration into yellowcake. The eluted resin is then returned to the Christensen Ranch plant for reuse.

The Irigaray processing plant building is divided into two main areas: the dry/pack area, which has controlled access, and the general process area. The section of the plant termed "main plant" has not been used since 1982, with the exception of the calcium clarifiers which are now used for yellowcake slurry storage prior to drying. This lack of use is a result of no active uranium extraction within the Irigaray permit area. Only the elution circuit and dry/pack area are necessary to process resin from the Christensen Ranch site groundwater restoration. The old portion of the plant is also used for storage of byproduct material.

## 2.5 Waste Management

### During ISL Operations

Any accidental overflow of liquids from the various process tanks at both sites can be controlled via floor drains and process sumps, and either returned to the process circuit or disposed in the solar evaporation ponds. In the drying/package area of the Irigaray plant, to limit emissions of volatilized solution residuals and uranium fines, the dryer off-gas system is equipped with a venturi scrubber that removes particulates down to micron size.

Two liquid effluent streams were produced during ISL operations. The first is the 1 percent bleed from the plant process to control lixiviant migration by extracting more fluid than is injected. The second is process waste water that consists of sand filter backwash solutions, resin transfer wash water, and plant wash down water. The various sources of process waste water were diverted to either a lined solar evaporation pond or to the deep disposal well.

There are 13 lined evaporation ponds within the permit areas: 11 within the Irigaray permit boundary, and two at the Christensen Ranch site. The 11 Irigaray ponds include five lined evaporation ponds, two lined restoration ponds, and four lined evaporation ponds at the 517 R&D site. All lined evaporation ponds are equipped with leak detection systems that are checked weekly. They are operated in a manner such that, should a leak occur, the contents in any one pond can be safely transferred to nearby ponds. Additionally, enough freeboard is required in each pond to prevent the overtopping of waves caused by high winds.

There is currently one permeate storage pond at the Christensen Ranch site, with plans to build a second pond on an as-needed basis. These earthen-lined ponds are designed to store high quality permeate that meets National Pollutant Discharge Elimination System (NPDES) water quality standards, so there is no need for a synthetic liner. The stored permeate can be utilized during well field restoration or, if approved, for surface discharge. COGEMA will not divert any effluent stream that does not meet NPDES or NRC water quality standards for surface discharge.

### During Decommissioning

Solid residues in evaporation ponds that result from the process effluent stream will be disposed with other contaminated materials at a licensed waste disposal site or licensed mill tailings facility. Soil and building material contaminated due to spills, leaks, or airborne radioactive contamination have been identified and will be decontaminated or removed and disposed. Solid wastes and trash that are not contaminated are to be disposed in an offsite industrial land fill.



COGEMA is authorized to dispose of byproduct material in the Pathfinder Mines Corporation (PMC) Shirley Basin uranium mill tailings facility. COGEMA's agreement with PMC constitutes an approved waste disposal plan, and the licensee is required by license condition to maintain copies of this agreement onsite. In the event the agreement expires or is terminated, COGEMA must notify NRC within 7 days of the expiration date.

Contaminated waste that has salvage value may be decontaminated to unrestricted release limits. This type of waste may include piping, valves, instrumentation, equipment, and any other item that can be decontaminated. Decontaminated materials must have radiation levels lower than those specified in NRC Branch Technical Position "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material" (NRC, 1984). All decontaminated wastes are inspected and surveyed by the radiation safety officer or health physics technician prior to their release from the site, to ensure that appropriate procedures and limits have been observed.

### 3.0 SURFACE DECOMMISSIONING

#### 3.1 Planned Activities

1. Perform radiological surveys of all facilities, process equipment, and materials onsite to identify contaminated equipment and the potential for personnel exposure during decommissioning.
2. Remove contaminated equipment, including pond liners and pipes buried less than 2 feet (0.6 m) deep, to an approved licensed facility for disposal or reuse.
3. Decontaminate items to be released for unrestricted use and structures to remain on site, to levels consistent with NRC-approved guidelines and regulations. This includes the practice of removing contamination to as low as reasonably achievable.
4. Survey excavated areas for soil contamination and remove contaminated soil and pond sludge to a licensed disposal facility.
5. Perform final site radiation verification surveys, including swipes and soil sample analysis.
6. Backfill and recontour all disturbed areas.

7. Establish permanent vegetation in all disturbed areas.

### 3.2 Environmental Monitoring

COGEMA has a program to inspect the lined evaporation ponds on a weekly basis during operations. Visual inspection of the pond embankments, fences, liners, and the measurement of pond freeboard are performed at the same frequency.

COGEMA performs periodic monitoring for airborne uranium particulates, radon, and external radiation. Sampling locations and frequencies for each element of the environmental monitoring program are detailed in the Plan. COGEMA is currently required by license condition to monitor all effluent streams and the potentially affected environment. Additionally, COGEMA is required by license condition to submit these monitoring results to NRC.

### 3.3 Surface Restoration

The total surface area expected to be disturbed by soil decommissioning activities is 5 acres. The licensee has committed to reclaim all lands disturbed by COGEMA's activities to their historical pre-mining land use which is primarily domestic livestock grazing of cattle and sheep with incidental use by wildlife (COGEMA, 1996). Final surface reclamation will blend affected areas with adjacent undisturbed lands to re-establish original slope and topography to present a natural appearance. Landowner input regarding the reclamation will be given consideration.

According to estimates, there is enough stockpiled topsoil to cover disturbed areas with a minimum of 12 inches. The replaced topsoil will be protected from erosion and the prepared seed beds will be covered with hay or straw mulch. Seed mixes have been adjusted per the individual landowners requests. The basis for the evaluation of reclamation success are the goals defined in the WDEQ, Land Quality Division, Rules and Regulations. A post-seeding monitoring program will be conducted on reclaimed areas for two years to insure acceptable re-vegetation (COGEMA, 1996).

## 4.0 EVALUATION OF POTENTIAL ENVIRONMENTAL IMPACTS

The environmental effects of surface decommissioning activities at the two sites will involve only a small portion of the areas used during production. An even smaller area than the estimated 5 acres will be disturbed if the buried pipelines do not have to be removed. Most of the impacts discussed below, as well as others such as noise, socioeconomics, radiological exposures, and natural resources are bounded by the 1998 EA performed for renewal of the license for operation.

### 4.1 Air Quality

Air quality impacts from decommissioning at the Irigaray and Christensen Ranch sites should be minimal, and certainly less than during ISL operations (see Section 4.5). Fugitive dust from access road traffic was the main source of non-radiologic particulate emissions during operations and will be during decommissioning. Efforts to reduce fugitive dust are made by applying water to the access roads.

Uranium fines released during drying and packaging of yellowcake are limited by a stack scrubber and filtration system, and routine monitoring is conducted for airborne uranium particulates. Control of such particulates to well within required limits was achieved during production. Since the dryer will only operate 2 to 3 weeks a year during groundwater restoration, no significant impact to site air quality is expected from this operation. Radioactive particulates created by cleaning the surface of equipment and buildings, by demolition, or by soil excavation, will be monitored and controlled within the required limits.

## 4.2 Water Quality

The surface decommissioning will not impact ground water. The activities that could potentially impact surface water in the permit areas include decommissioning of the well fields, pipelines, process lines, access roads, and soil. These activities could increase siltation in the ephemeral waterways on the site for a short period of time, therefore, the licensee indicated that silt fences will be used as necessary. Due to the limited size of soil disturbance, the impact will not be significant.

The process plants are equipped with a spillage containment system. The curbed plant foundation and pumpable sumps ensure that leaks and spills within the plant do not leave the plant area. Monitoring of evaporation ponds ensures that they are not overfilled and that leaks, eroded areas, liner damage, or other potential problems are detected. There are no transport mechanisms that are likely to bring process solutions into contact with surface water. Willow Creek and its tributaries, the only surface water in the immediate permit areas, are ephemeral and not likely to be affected by site decommissioning. Because the dry soils in the region have a high specific retention capacity, any accidental spills are rapidly absorbed and usually do not enter the drainages.

## 4.3 Cultural Resources and Future Land Use

The 1998 EA summarized the archeological clearances and inquiries concerning cultural resources for the sites. Since only areas that have been previously impacted by operation will be disturbed during decommissioning, no additional studies are considered necessary. However, COGEMA is required by License Condition 9.9 to administer a cultural resource inventory before engaging in any developmental activity not previously assessed by the NRC. Also, to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of cultural artifacts shall cease until artifacts are evaluated and resumption of work is approved.

The primary impact on land use has been loss of grazing capacity during the life of the project, and this impact has been minimal. For example, a total of seven animal unit-months has been removed from use at Irigaray—an amount that would support approximately five cows per year. After decommissioning, the land should be restored to its original grazing capacity. These impacts are temporary and reversible, and are not considered to be significant environmental impacts.

All surface land owners were provided copies of the mine permit applications (prior to permit approval) and were asked to review the mine and reclamation plans. Each landowner then signed a “Surface Landowner Consent Form,” thereby agreeing with the terms and conditions of the ISL operation and reclamation plans. Decommissioning and re-vegetation (seed mixes) were a large part of the reclamation plan. Surface owner consents were received for the Irigaray permit in 1978, and the Christensen permit in 1988.

Prior to planting the permanent seed mix, COGEMA agreed to consultation with the landowners in order to insure the landowner's agreement, due to the large amount of time passed since permit approval.

#### 4.4 Plants and Animals

##### Threatened or Endangered Species

Information from the U.S. Fish and Wildlife Service (FWS) (August 3, 2001) indicated concern that several threatened and endangered or candidate species might be in the project areas; these species are discussed below. No threatened or endangered plant species were identified at the Irigaray or Christensen Ranch sites by COGEMA. The threatened plant, Ute-Ladies Tresses, should not be encountered because its habitat is not in the area under consideration. The endangered Black-footed Ferret is unlikely to be present because of the small population of prairie dogs on the site (local colony occupies about 1 acre while ferret surveys are recommended if prairie dog colonies are greater than 79 acres in size), but the licensee's staff will be instructed to look for and avoid the animals during work in the well fields (COGEMA August 31, 2001).

##### Candidate Species

The Mountain Plover and the Black-tailed Prairie Dog are candidates for the Endangered Species Act. COGEMA has received and reviewed the guidelines for conducting surveys for Mountain Plover from the FWS. Based on the licensee's conversations with staff of the FWS and USDA Wildlife Services, there is a high probability that Mountain Plovers are not even present in the areas to be decommissioned due to the lack of appropriate habitat. Therefore, a formal survey for the birds is not planned but COGEMA will educate employees on Mountain Plover identification and how to report sightings, prior to the start of decommissioning. If evidence of the Mountain Plover is found, COGEMA will consult with the FWS as mentioned in Section 9.3 of the Decommissioning Plan.

A small prairie dog town exists near Mine Unit 8 at the Christensen Ranch Project. Although Mine Unit 8 was never constructed, a small amount of reclamation work associated with development drilling is scheduled for the fall of 2001. COGEMA will determine if the prairie dogs are Black-tailed Prairie Dogs. Any confirmed locations of these prairie dogs will be avoided as much as possible during the reclamation activity and the FWS will be consulted.

##### Other Wildlife and Vegetation

COGEMA conducted an annual wildlife monitoring study to evaluate potential impacts from activities on wildlife in the area until 2000. The study included: a wintering big game aerial survey, sage grouse strutting ground census, nesting raptor surveys, and

searches for new nests. To date, no impacts on wildlife have been attributed to the ISL operations and none are anticipated during decommissioning.

The only potential impact on a migratory bird or raptor identified in the region was to the nesting site of a Golden Eagle pair near the Christensen Ranch facility. A study (COGEMA, 1987) was conducted which determined that it is unlikely that there will be significant impacts on these species since there is no significant reduction in suitable prey, and no critical habitat for these birds in the project area. In fact, the nest continued to be used by the eagles during facility operation.

Because the effluents of the facility are monitored to protect human health and safety, no adverse radiological impact is expected for resident animals. Fencing prevents most large domestic and wild animals from entering the areas of the evaporation ponds and the plant facilities.

Vegetation will be affected only by the minor amount of excavation required by the Plan. However, these disturbances will be temporary in nature and small relative to the size of the area disturbed by ISL operations. Mitigative measures taken to minimize impacts on soil and vegetation include stockpiling of soil removed during construction and stabilization of disturbed areas with an interim seed mix. Reclamation and re-seeding of the property will occur after cessation of decommissioning and groundwater restoration.

#### 4.5 Other Potential Impacts

Transportation of all material to the disposal facility will be managed in accordance with U.S. Department of Transportation (DOT) (49 CFR 173.389) and NRC (10 CFR Part 71) regulations.

The environmental impact of an accident involving a truck carrying contaminated material to the disposal site would include the salvage of soil impacted by the spill, and the subsequent restoration to the topsoil and vegetation. Compared to routine ISL operations, the decommissioning traffic will be minimal. In fact, the tables provided by the licensee (August 31, 2001) show that routine ISL operations contributed 87 percent more traffic than expected during decommissioning.

Impacts from the non-radioactive hazardous components have been considered by the licensee and selenium, in particular, was investigated. Background selenium is known to be high in the surface soils of the area (Powder River Basin). COGEMA indicated that cleanup of radiologically contaminated soil would remove most of the heavy metal contamination associated with the spills or leaks of process fluids.

#### 4.6 Cumulative Impacts

Little, if any, impact from the proposed action, beyond the 1 or 2 years during re-vegetation, is expected due to the limited areas of surface decommissioning. The only other regional current impacts are from animal grazing and oil exploration, which are minimal. One exploratory well for coal-bed methane has been installed in the region this year. Since in the foreseeable future, regional activities are unlikely to change, the staff has found no activities that could result in cumulative impacts.

## 5.0 ALTERNATIVES

The action under consideration is the approval of the surface Decommissioning Plan for Source Material License SUA-1341, the Irigaray and Christensen Ranch ISL Projects, as requested by COGEMA Mining, Inc. The alternatives available to NRC are to:

- (1) Approve the Decommissioning Plan with such conditions as are considered necessary or appropriate to protect the public health and safety and the environment, or
- (2) Deny the license amendment request.

The selection of either alternative is based on a consideration of a number of factors related to protection of health, safety, and the environment. It was determined that to deny the amendment request (the no action alternative) is not acceptable because contamination exceeds allowable public, unrestricted use, limits. Therefore, the residual contamination could result in more potential long-term harm than the decommissioning operations.

Pursuant to 10 CFR Part 51, this EA has been prepared to determine if an environmental impact statement is required or if a finding of no significant impact can be made. A finding of no significant impact has been made. The minor and temporary impacts are acceptable after weighing the environmental, economic, technical, and other benefits against environmental costs, and considering available alternatives, and the action called for is the issuance of the proposed amendment.

In the TER prepared for this action, the staff has reviewed the licensee's proposed action with respect to the criteria specified in 10 CFR 40.42 and Part 40, Appendix A, and has no basis for denial of the proposed action, although additional conditions could be required. Moreover, the environmental impacts described in this EA are within the range of impacts anticipated in previous EAs for the project (NRC, 1987a, 1988a, 1998), and do not warrant denial of the application.

## 6.0 CONCLUSIONS

Based on this EA, the staff finds that the amendment of Source Material License SUA-1341 for decommissioning of the Irigaray and Christensen Ranch sites according to the proposed Plan will not have a significant impact on human health or the environment. The specific reasons for drawing this conclusion are:

- The proposed activities will be of short duration in small areas and will be monitored to limit environmental impacts;
- Radiological releases from the surface decommissioning will be very small compared to operational activities that have resulted in worker exposures and potential public exposures well below regulatory limits (COGEMA Semi-annual Reports, 1999 and 2000). Releases will be closely monitored to detect any unexpected problems;
- All radioactive wastes will be disposed of at an existing NRC licensed uranium mill tailings disposal site; and
- The disturbed areas will be restored to pre-operational (background) condition to the extent reasonably possible, and to at least permit grazing.

The final finding is further supported by the previous EAs (NRC, 1987a; 1988a, 1998) for granting the initial and the renewed commercial license at the Irigaray and the Christensen Ranch sites. Based on the finding of no significant impact, the NRC staff recommends that the license be amended as requested.

## 7.0 CONSULTATIONS

In preparing this EA, the NRC staff has held discussions or corresponded with representatives of the Wyoming SHPO, WDEQ Land Quality Division and Solid & Hazardous Waste Division, Wyoming Fish and Game Department, F&WS, and the BLM (Buffalo, Wyoming office), as documented below.

The draft EA was sent in September 2001, to the above agencies and to the Wyoming Outdoor Council to solicit comments. The primary sources of information for the EA were the licensee, NRC staff, and the agency personnel that were consulted, as documented below.

Telephone conversation with Gerald Queen, BLM, Buffalo, WY Office, July 17, 2001.

Telephone conversation with Mary Jennings, U.S. Fish and Wildlife Service, Cheyenne Office, July 24, 2001, and fax to the NRC dated August 3, 2001, regarding species of concern.

Telephone conversation with Karen Kempton, Wyoming State Historic Preservation Office, July 24, 2001.



## 8.0 REFERENCES

COGEMA Mining Inc., License Renewal Application, January 5, 1996 and September 3, 1997.

COGEMA Mining, Inc., Semi-annual 40.65 Reports, August 1999 and August 2000.

COGEMA Mining Inc., Decommissioning Plan for Irigaray and Christensen Ranch Projects, December 19, 2000, June 15 and 18 and August 31, 2001.

NRC, "Final Environmental Statement, Related to Operation of Irigaray Uranium Solution Mining Project." NUREG-0481, September 1978.

NRC, "Guidelines for Decommissioning of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials." Uranium Recovery Field Office, Region IV, Denver, CO. September 1984.

NRC, "Environmental Assessment for Westinghouse Electric Company Irigaray Site." Docket No. 40-8502. February 3, 1987a.

NRC, "Environmental Assessment for Malapai Resources, Inc., Christensen Ranch Amendment." NRC Docket No. 40-8502. May 4, 1988a.

NRC, "Environmental Assessment for Christensen Ranch Amendment to Source Material License SUA 1341." NRC Docket No. 40-8502. May 4, 1988b.

NRC, "Environmental Assessment for the Renewal of Source Material License SUA 1341." NRC Docket No. 40-8502. June 18, 1998.