



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

November 17, 1999

MEMORANDUM TO: Docket File 40-0299

FROM: Elaine Brummett, Project Manager
Uranium Recovery
and Low-Level Waste Branch
Division of Waste Management, NMSS

A handwritten signature in black ink, appearing to read "E. Brummett", written over the typed name.

SUBJECT: ENVIRONMENTAL ASSESSMENT REGARDING THE A-9
REPOSITORY ENHANCED RECLAMATION DESIGN FOR THE
UMETCO MINERALS CORPORATION'S EAST GAS HILLS URANIUM
MILL SITE IN WYOMING

Umetco Minerals Corporation (Umetco), in its submittal dated October 27, 1998, requested that the U.S. Nuclear Regulatory Commission (NRC) amend Source Material License SUA-648, authorizing execution of the enhanced reclamation plan for the A-9 Repository (former surface uranium mine used as tailings disposal cell). The plan also includes reclamation of the C-18 Pit, as well as the site grading plan, at its uranium mill site in the East Gas Hills area, Natrona County, Wyoming. Information related to the potential environmental impact of the proposed construction was submitted by letters dated April 1, April 21, September 5, and November 5, 1998, as well as April 14, 1999. In accordance with 10 CFR 51.21, the NRC staff determined that an environmental assessment (EA) was required to document its review of Umetco's request. 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-648

Attachment: As stated

ENVIRONMENTAL ASSESSMENT
FOR
UMETCO MINERALS CORPORATION'S URANIUM MILL SITE
EAST GAS HILLS, NATRONA COUNTY, WYOMING

IN CONSIDERATION OF AN AMENDMENT TO
SOURCE MATERIAL LICENSE SUA-648 FOR THE
A-9 REPOSITORY ENHANCED RECLAMATION PLAN

PREPARED BY

THE U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF WASTE MANAGEMENT
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

ENVIRONMENTAL ASSESSMENT FOR THE
A-9 REPOSITORY ENHANCED RECLAMATION PLAN
UMETCO MINERALS CORPORATION'S EAST GAS HILLS URANIUM MILL SITE
IN NATRONA COUNTY, WYOMING

1.0 INTRODUCTION

1.1 Background

The Umetco Minerals Corporation's (Umetco) uranium mill site is located in western Natrona County, in the East Gas Hills area of central Wyoming. The Umetco site is licensed by the U.S. Nuclear Regulatory Commission (NRC) under Materials License SUA-648 to possess byproduct material in the form of uranium tailings, as well as other radioactive wastes generated by past milling operations. The mill operated from 1960 to 1979 and has been dismantled. Current site activities include completion of reclamation of three disposal areas and continuation of the ground-water corrective action program.

The A-9 repository (cell) is a former surface uranium mine pit that was used for tailings disposal. In the NRC-approved 1987 reclamation design for the A-9 cell, the cover consisted of a 1-foot (30.5 cm)-thick interim cover, 1-foot (30.5 cm) clay radon barrier, 1-foot (30.5 cm) filter layer, 6.5-foot (76.2 cm) frost protection/spoil layer, and a 6-inch (15.2 cm) topsoil layer. An interim cover from 1 to 5 feet (30.5 to 152 cm) thick was placed over the entire A-9 area in 1988 and 1989. The final cover has not been constructed as additional waste, and fill will be placed in the cell.

Umetco submitted the enhanced reclamation plan by letter dated October 27, 1998, and requested a license amendment to allow Umetco to modify the A-9 cover design. Additional information and revised pages to the plan were submitted December 10, 1998, and March 29, 1999.

1.2 Proposed Action

1. Reduce the planned frost protection soil layer to 4.5 feet (1.37 m) and increase the clay radon barrier to 1.5 feet (45 cm) for a total soil cover thickness of 7 feet (1.8 m) (previously 10 feet (3 m)) for the A-9 cell
2. Change the vegetative cover to 6 to 12 inches (15 to 30 cm) of riprap (rock)
3. Grade the site for proper drainage, include east and west diversion ditches
4. Reclaim the north and south evaporation ponds
5. Reclaim the C-18 pit

The 35-acre A-9 cell will need up to 23 feet (7 m) of fill in some areas to bring the surface to the proposed increased grade. The enhanced design increases the cell capacity and its

footprint by approximately 16 acres. The change to a rock cover improves the long-term erosion protection for the cover.

The site-wide grading plan: (1) uses contours approved with the reclamation plans for the heap leach and above-grade impoundments; (2) diverts an existing drainage channel to minimize potential erosion of the above-grade impoundment cover; (3) raises the final elevation of the A-9 cell by approximately 10 feet (3 m) to accommodate additional material; (4) grades the east side of the A-9 cell to a 3:1 or less slope; (5) provides diversion ditches on the east and west side of the A-9 cell to direct runoff away from the cover; (6) grades the area of the north and south evaporation ponds to 5:1 or less slope; and (7) provides positive drainage for other areas on the site.

The north and south ponds, covering 22 acres, were constructed in 1979 over mine overburden. In 1993, the ponds were dry, and the upper portion of the clay liner was excavated and placed in the A-9 cell. The enhanced plan indicates that the remaining clay liner also will be excavated and placed in the A-9 cell. Umetco provided data indicating that residual byproduct material was not detectable in the rocky material under the pond liners (Design Report Part 1, Section 6) so a cover for this area is not required.

The C-18 former uranium surface mining pit is approximately 80 feet (24.4 m) deep and 500 feet (152.4 m) wide at the surface (covers 5.3 acres). The pit may have some byproduct material at the bottom from site drainage, therefore, Umetco has proposed to treat this pit as a repository with the required engineered cover.

The cover design of the A-9 cell and the other aspects of the enhanced design have been evaluated by staff. This review will be documented in a technical evaluation report that will accompany the license amendment. The review determined that the designs are adequate to meet the applicable 10 CFR Part 40, Appendix A criteria.

1.3 Review Scope

In accordance with 10 CFR Part 51, this Environmental Assessment (EA) serves to: (1) present information and analysis for determining whether to issue a Finding of No Significant Impact or to prepare an Environmental Impact Statement (EIS); (2) fulfill the NRC's compliance with the National Environmental Policy Act when no EIS is necessary; and (3) facilitate preparation of an EIS when one is necessary. Should the NRC issue a finding of no significant impact, no EIS would be prepared.

Much of the environmental review for this licensing action was performed in conjunction with the license amendment for the enhanced reclamation plan for the above-grade impoundment. The EA for the above-grade plan was placed in the docket file on May 18, 1999, and the Finding of No Significant Impact (FONSI) for the above-grade plan was published in the Federal Register on May 25, 1999.

2.0 SITE CHARACTERISTICS

The Gas Hills region of Wyoming has been extensively mined for uranium and explored for oil and gas. The climate at the Umetco East Gas Hills site is semi-arid (average annual

precipitation of 9 inches (23 cm)) with wide seasonal variation of temperatures. The vegetation is sparse, consisting mainly of sagebrush and native grasses. The site is within the Wind River Basin of central Wyoming. West Canyon Creek is an intermittent stream west of the former north and south evaporation ponds and the A-9 cell. With the exception of two evaporation ponds, there are no perennial surface water bodies in the area of the East Gas Hills mining district. The mill site is in the surface drainage area of East Canyon Creek, which is ephemeral in the site area. The ecology of the region has not materially changed from that presented in the Final Environmental Statement (FES) for the mill operation (NRC, 1980), as confirmed by reports of annual inspection by the Wyoming Department of Environmental Quality (WDEQ) and the U.S. Bureau of Land Management (BLM).

The licensed facility comprises 546 acres and is located approximately 50 miles (80 km) southeast of Riverton in Natrona County, Wyoming. According to the FES, the Supplement to the Environmental Report (Umetco, 1995), and the 1998 annual land use report, the nearest residence is located approximately 5 miles (8 km) northeast of the site. Within a 50-mile (80-km) radius, the 1990 population was 4,407. Within 5 miles (8 km) of the site, approximately 78 percent of the land is under the BLM jurisdiction. Current usages of land and water adjacent to the site remain as reviewed by the NRC staff and documented in its original FES for the East Gas Hills Uranium Project, although an *in situ* leach facility is planned for the property south of the Umetco site. Within 30 miles (48 km) of the site, there are three other uranium mill sites and several former uranium mining sites. Also, the Wyoming abandoned mine land reclamation program has reclaimed uranium mine pits and overburden piles adjacent to the site. Umetco also has several surface mine pits on the site to reclaim according to state regulations. Umetco has completed work on the covers for the heap leach and above-grade impoundments (disposal cells) except for the rock layer.

3.0 OPERATIONS

The A-9 pit was lined with 3 feet (0.9 m) of compacted clay, an underdrain system was installed draining to a collection sump, and the pit was used for mill tailings disposal from 1979 until 1984. The original design report, "Environmental Assessment of Below-Grade Uranium Tailings Disposal in the A-9 Open Pit," was submitted to the NRC in 1979, modified, and approved by license condition. Additional tailings and mill waste disposed since 1984 has brought the total volume of waste to approximately 3.5 million cubic yards (cyd) and up to 0.5 million cyd of additional material may be placed during final decommissioning activities.

4.0 ENVIRONMENTAL EFFECTS

Hydrology

The Umetco Gas Hills site is within the Wind River Basin of central Wyoming and is situated on the Wind River Formation. The Wind River Formation is characterized as a sequence of alternating discontinuous layers of sandstone, siltstone, claystone, and conglomerate. The uppermost occurrence of groundwater beneath the site is within the Wind River aquifer. Some tailings leachate did enter this aquifer and Umetco pumped ground water from wells along the southern toe of the A-9 pit to an evaporation pond from 1983 to 1989. The Umetco ground water corrective action program became operational in December 1990, and continues to address ground-water cleanup for the entire site, as required under License Condition 35. In

February 1999, Umetco submitted an application to allow alternate concentration limits and adjustments to background levels for certain ground-water constituents. The concern expressed is that continuation of the pump and evaporate program (corrective action) is importing constituents related to near-by natural deposits and mining activities. Also, a contamination plume associated with seepage of tailings leachate is difficult to delineate because of the numerous uranium mine pits and deposits on and near the site. The application regarding ground-water corrective action currently is being handled by NRC staff as a separate action. The groundwater situation from past operations is not to be addressed by this action, which is to assess the impacts strictly from reclamation of the A-9 pit disposal area.

The A-9 pit is a former open pit uranium mine, the bottom of which was graded to a 3 percent slope toward the south and lined with 3 feet of compacted clay. A drain system of perforated pipe on top of a sand pad was placed on the clay liner and connected to a solid pipe that carries tailings leachate to a gravel collection sump at the south end of the pit. Fluid in the sump was originally pumped to the north and south ponds for evaporation and is now pumped to the Gas Hills Pond (GHP) No. 2.

The A-9 pit was backfilled with tailings, off-site byproduct material, mill waste, and mill building debris. The top of the pre-mining water table is 45 feet below the bottom of the pit. Tailings consolidation is essentially complete, and additional leachate will not be generated without the introduction of new water into the pit. Materials in the pit are oxidized, which allows constituents such as uranium (and other heavy metals) to dissolve easily. Therefore, to continue to protect ground water in the vicinity surrounding the A-9 pit, water must be prevented from entering the pit for the long-term. The completed cover, as designed, should provide this protection.

The A-9 approved cover design has been changed to increase the thickness of compacted clay cover, reduce the total thickness of the cover, and place rock rather than vegetation as the top cover material. The permeability of the clay cover will still be 1×10^{-7} , which is sufficient to prevent significant infiltration of rainwater into the pit. The increase in thickness of the clay cover will ensure a more uniform coverage of the tailings surface. A change to rock from vegetation cover enhances the durability of the cover; as the rock cover is not subject to degradation by environmental pressures that would kill vegetation. Additionally, the chance of roots penetrating the compacted clay cover is decreased with the rock as a final cover.

The change in cover thickness and composition is more protective of ground water in the long-term than the currently approved plan. Also, the site grading plan reconfigures the surface so that water drains away from the A-9 cell to ensure that the cover remains intact and thus maintain protection of the ground water.

Monitoring

Environmental monitoring of the Umetco site is required by License Condition 34, and results indicate applicable standards are being met to control air-borne and fluid releases from the site. No off-site releases of byproduct material, other than permitted fluxes of radon-222, are anticipated. Localized releases, if any, will be characterized and controlled through the site's "as low as is reasonably achievable" (ALARA) program. Procedures are in place to control dust created by construction activities and to protect workers.

Cultural Resources

The cultural and historical (archaeological) resources data for the site were recently updated (Umetco, February 1998 and April 1999). No potential resource area was found in close proximity to the A-9 cell, C-18 pit, or the north and South evaporation ponds. The licensee has committed to doing further exploration, retrieval of cultural data, and other actions, as needed, to meet the requirements of the National Historic Preservation Act. These findings and Umetco's commitments have been reviewed by the Wyoming State Historic Preservation Office (January 14, 1999) and discussed with NRC staff on May 11, 1999. Umetco also committed to have an archaeologist monitor construction activities in undisturbed areas and to halt construction if cultural deposits are found.

Threatened and Endangered Species

The potential impact to threatened and endangered species on or near the site has been addressed by the U.S. Fish and Wildlife Service (FWS) (March 14, 1998, and February 24, 1999), and Umetco (April 1, 1998 and April 14, 1999). The A-9 cell is within the mill site's restricted area, which has been under continuous disturbance since 1960. Because the ground is barren and has remained un-vegetated, the existence of wildlife within the restricted area is minimal. There have been no observed prairie dog colonies within the restricted area, so the endangered black-footed ferret is not likely to be in the site area. To address concerns of the FWS, Umetco committed to perform a site survey for the Mountain Plover prior to beginning construction activities outside of the restricted area, and to consult the FWS if work will be necessary within the buffer zone around the two red-tailed hawk nests that were identified by the Umetco survey.

Accidents

The environmental effects of accidents during the proposed work would be minimal, as only low levels of byproduct material (e.g., windblown tailings) are to be moved a short distance to the A-9 cell. The local environmental effects of traffic or accidents involving trucks or other earth-moving equipment is no more likely than other construction projects and any effects should be minor considering the remote semi-arid location.

Conclusions

The planned scope of activity for the A-9 cell and C-18 pit is not different than past construction activities on this site, and fewer personnel and less equipment are on site than when the mill was in operation. The staff considers that any additional environmental effects at the site, as a result of the requested activity, will be insignificant considering all the mitigation efforts that Umetco will perform.

The impact of the site grading plan on the environment will be negligible. Umetco will regrade the areas affected by past operations and will restore drainage patterns to their pre-construction condition with only minor modifications to protect disposal cells from erosion. The drainage basins involved are small, and low volumes of runoff from the site can be expected, even during storm events. As a result, there will be no impact to regional water flow.

For the cover materials to be used, the clay borrow area, in Fremont County, and the frost protection (overburden/B spoils) borrow area in Natrona County are on BLM land and permitted by the WDEQ. Evaluation of threatened and endangered species and a cultural survey were addressed in the EA, done by BLM as part of the permitting process that allows use of the property. One possible source of rock for the disposal cell cover is the Rattlesnake Hills Quarry. Preliminary evaluation has been done at this site, and Umetco has committed to providing the final documentation to NRC, indicating that the requirements of the National Environmental Policy Act have been met, before Umetco uses the rock borrow site (Umetco, April 1998).

5.0 ALTERNATIVES

The action that the NRC is considering is approval of an amendment request to a source material license issued pursuant to 10 CFR Part 40. The alternatives available to the NRC are:

1. Approve the license amendment request as submitted; or
2. Amend the license with such additional conditions as are considered necessary or appropriate to protect public health and safety and the environment; or
3. Deny the request.

Based on its review, the NRC staff has concluded that the environmental impacts associated with the proposed action do not warrant either the limiting of Umetco's future operations or the denial of the license amendment. The NRC staff has concluded that there are no significant environmental impacts associated with the proposed action. Therefore, alternatives with equal or greater impacts need not be evaluated. Additionally, in the Technical Evaluation Report being prepared for this action, the staff has reviewed the licensee's proposed action with respect to the criteria for reclamation, specified in 10 CFR Part 40, Appendix A, and has no basis for denial of the proposed action. Therefore, the staff considers that Alternative 1 is the appropriate alternative for selection.

6.0 SUMMARY AND CONCLUSIONS

Based on an evaluation of the environmental impacts of the Umetco amendment request, the NRC has determined that the proper action is to issue a FONSI in the Federal Register. The following statements support the FONSI and summarize the conclusions resulting from the EA.

1. An acceptable environmental and effluent monitoring program is in place to monitor effluent releases and to detect if applicable regulatory limits are exceeded. Radiological effluents from site operations have been, and are expected to continue to remain below the regulatory limits. Also, an annual audit of the ALARA program will be performed by the licensee and the audit report will be provided to the NRC.
2. Present and future potential risks were assessed. Given the remote location, limited activities requested, the small areas of impact, the commitments by the licensee, and the past activities on the site, the staff has determined that the risk factors for health and environmental hazards are insignificant.

3. Because the staff has determined that there will be no significant impacts associated with approval of the enhanced reclamation plan amendment, there can be no disproportionately high and adverse effects or impacts on minority and low-income populations. Consequently, further evaluation of "Environmental Justice" concerns, as outlined in Executive Order 12898 and NRC's Office of Nuclear Material Safety and Safeguards Policy and Procedures Letter 1-50, Rev. 1, is not warranted.

7.0 FINANCIAL SURETY

The licensee provided detailed cost estimates for the A-9 enhanced reclamation plan and associated work on November 20, 1998. The estimates were made in accordance with good engineering practice. The staff will document its review of this cost estimate (\$7,296,861) for the A-9 enhanced design with the Umetco site annual surety update review. The updated surety amount for the entire site (currently under review) that the licensee will provide after NRC approval, should be adequate to complete reclamation and decommissioning of the site according to the approved plans, by a third party if necessary.

8.0 CONSULTATION AND SOURCE INFORMATION

In completing this licensing action for the A-9 pit, as well as the similar action for the above-grade impoundment, the NRC staff held discussions or corresponded with representatives of the Wyoming State Historic Preservation Office, WDEQ, Wyoming Fish and Game Department, U.S. Fish and Wildlife, and the BLM (Wyoming offices), as documented below. Any concerns that were expressed have been addressed.

9.0 REFERENCES

Submittals, Correspondence, and Telephone Conversations (by date):

Umetco, "Environmental Assessment of Below-Grade Uranium Tailings Disposal in the A-9 Open Pit," Dames and Moore, submitted to the NRC February 28, 1979.

Umetco, Supplement to the Existing Environmental Report, January 11, 1993.

Umetco, Supplement to Applicant's Environmental Report, January 23, 1995.

Letter From Judy Wolff, State Historic Preservation Office, to M. Karbs, BLM (cc: E. Brummett, NRC), comments on Umetco's cultural survey report, January 23, 1998.

Letter (with enclosure) from T. Gieck, Umetco, to J. Holonich, NRC, transmitting the "Class III Cultural Resources Inventory", February 4, 1998.

Letter from J. Holonich, NRC, to Field Supervisor, U.S. Fish and Wildlife Service, requests information on protected plant and animals in the vicinity of Umetco site, February 13, 1998.

Letter from Michael M. Long, U.S. Fish and Wildlife Service, to J. Holonich, NRC, suggesting precautions to protect candidate species, raptors, and migratory birds, March 14, 1998.

Letter from T. Gieck, Umetco, to J. Holonich, NRC, response to comment on potential environmental impacts to borrow areas, clean-up areas, and East Canyon Creek drainage, April 1, 1998.

Telephone conversation with Fred Georgesen, BLM, and Elaine Brummett, NRC, concerning the environmental assessment for the clay borrow area, April 14, 1998.

Letter from T. Gieck, Umetco, to J. Holonich, NRC, response i.e., updating environmental assessment and information on borrow sites, April 21, 1998.

Letter from Don Whyde, BLM, to Elaine Brummett, NRC, concerning the cultural resource work completed for Umetco's rock borrow area, May 1, 1998.

Letter from Don Whyde, BLM, to Elaine Brummett, NRC, concerning completed assessment of mitigation needs for cultural resources at the Umetco site, October 23, 1998.

Umetco, Design for Enhancement of the Previously Approved Reclamation Plan for the A-9 Repository, October 27, 1998.

Umetco, response to NRC comments and plan page changes, December 10, 1998.

Letter from N.K. Stablein, NRC, to J. D. Wolf, State Historic Preservation Office, concerning areas to be protected and areas needing mitigation, January 4, 1999.

Memorandum from T. Gieck, Umetco, to E. Brummett, NRC, transmitting drawing showing boundaries of threatened and endangered species survey, January 5, 1999.

Letter from Judy K. Wolf, Deputy State Historic Preservation Officer, to N. King Stablein, NRC, stating no objection to the reclamation project, conditional to appropriate mitigation of cultural resources, January 14, 1999.

Letter (with enclosures) from N.K. Stablein, NRC, to Field Supervisor, U.S. Fish and Wildlife Service, requesting information on protected plants and animal species in the site area, including area to be cleaned; and enclosing 1998 Umetco species survey, January 26, 1999.

Letter from Michael M. Long, U.S. Fish and Wildlife Service, to J. Holonich, NRC, suggesting precautions for the mountain plover, raptors, and wetlands/riparian areas, February 24, 1999.

Telephone conversation with Alan Stanfill, Advisory Council on Historic Preservation, and Elaine Brummett, NRC, concerning requirements of Section 106 of the National Historic Preservation Act, February 1, 1999.

Letter (with enclosures) from NRC to Wyoming Game and Fish Department, providing Umetco's threatened and endangered species survey, February 1, 1999.

Umetco, response to NRC comments and plan page changes, March 29, 1999.

Letter (with enclosures) from T. Gieck, Umetco, to N.K. Stablein, NRC, regarding cultural sites, wildlife, and wetlands, April 14, 1999.

Telephone conversation with Steve Platt, Land Quality, Wyoming Department of Environmental Quality, October 15, 1999. The State has not approved the grading/drainage plan for the State permit area, but significant problems are not anticipated.

Telephone conversation with Roberta Hoy, Land Quality, Wyoming Department of Environmental Quality, October 15, 1999. No concerns.

Document:

U.S. Nuclear Regulatory Commission, "Final Environmental Statement for the Gas Hills Uranium Project," NUREG-0702, July 1980.

November 17, 1999

MEMORANDUM TO: Docket File 40-0299

FROM: Elaine Brummett, Project Manager Original signed by
Uranium Recovery and Low Level Waste Branch
Division of Waste Management, NMSS

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License No. SUA-648

Attachment: Environmental Assessment

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w/o attach.: JHolonich MLayton

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