

Mr. Thomas E. Gieck
Remediation Leader
Umetco Minerals Corporation
P.O. Box 1029
Grand Junction, CO 81502

SUBJECT: UMETCO - GAS HILLS - MATERIALS LICENSE NO. SUA-648 -
ENVIRONMENTAL ASSESSMENT OF ALTERNATE CONCENTRATION LIMIT
(TAC LU0100)

Dear Mr. Gieck:

The U.S. Nuclear Regulatory Commission (NRC) has completed its review of the environmental aspects of Umetco Minerals Corporation's (Umetco's) proposed alternate concentration limit (ACL) revision for lead-210 for the East Gas Hills, Wyoming site. We have reviewed your June 2005 submittal and have prepared an Environmental Assessment (enclosed) that resulted in a finding of no significant impact.

We will publish our findings in the *Federal Register*, after which we will act upon your license amendment request. If you have any questions concerning this letter please contact me at (301) 415-7612 or via e-mail to pxm2@nrc.gov.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

Paul Michalak, Project Manager
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 40-0299
License No.: SUA-648

Enclosure: Environmental Assessment

cc: Richard Chancellor, WDEQ
Kevin Frederick, WDEQ
Roberta Hoy, WDEQ

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

IN CONSIDERATION OF AN AMENDMENT TO
SOURCE MATERIAL LICENSE SUA-648 FOR
AN ALTERNATE CONCENTRATION LIMIT
FOR GROUND WATER

PREPARED BY

THE U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE SAFETY AND SAFEGUARDS
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

January 2006

ENVIRONMENTAL ASSESSMENT FOR
AN ALTERNATE CONCENTRATION LIMIT FOR GROUND WATER AT
UMETCO MINERALS CORPORATION'S URANIUM MILL SITE
EAST GAS HILLS, WYOMING

1.0 INTRODUCTION

The following Environmental Assessment (EA) is largely based on two EA's conducted by the U.S. Nuclear Regulatory Commission (NRC) as part of two recent license amendment proposals from Umetco Minerals Corporation's (Umetco). These include a February 23, 2001 EA (NRC 2001a) conducted in response to Umetco's revised soil decommissioning plan and proposed License Condition 30B amendment to Source Materials License SUA-648, and a March 24, 2002 EA (NRC 2002a) conducted in response to Umetco's application for alternate concentration limits (ACLs) for ground water standards in License Condition 35 to Source Materials License SUA-648 (Umetco 2001a, 2001b, and 2001c). In both cases, the proposed amendments were approved, and a Finding of No Significant Impact (FONSI) was issued and published in the *Federal Register* (NRC 2001b and 2002b). Information from both EA's was used in developing the present document, particularly NRC (2002a) which addresses virtually the same proposed action (i.e., an ACL for a ground water standard in License Condition 35).

1.1 Background

The Umetco uranium mill site (Umetco site) is located in western Natrona and eastern Fremont Counties, in the East Gas Hills area of central Wyoming (see Figure 1 - Location Map). The Umetco site is licensed by the NRC under Materials License SUA-648 to possess byproduct material in the form of uranium tailings and other wastes generated by past milling operations. The mill operated from 1960 to 1984. Mill decommissioning was initiated in 1987 and completed in 1993. A key feature of the milling operation was the A-9 Repository, a former surface uranium mine pit that was used for tailings disposal (see Figure 2 - Monitoring Locations Map). Umetco's "Final Status Survey Report", which documented the site's final radiological status, was approved on September 27, 2004 (Umetco 2004). Addendum 2 to the Final Status Survey report (Umetco 2005a), which documented the A-9 repository exposure survey was recently approved by the (NRC 2005a).

Umetco's ground water corrective action activities began in 1983. They consisted of ground water extraction and evaporation. In 2002, the corrective action program was terminated upon NRC's approval of Umetco's previous ACL proposal (NRC 2002a). Ground water monitoring in accordance with Umetco's Groundwater Monitoring Plan, Appendix M, is on-going (Umetco 2002a, 2002b, and 2004).

1.2 Review Scope

In accordance with 10 CFR Part 51, this EA serves to: (1) present information and analysis for determining whether to issue a FONSI 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 FONSI, no EIS would be prepared. Since this action relates to ground water, most of

the focus on potential environmental impacts relates to ground water.

2.0 THE PROPOSED ACTION

Umetco is requesting a license amendment to License Condition 35 (ACLs for ground water compliance monitoring), to Materials License SUA-648, for Umetco's Gas Hills uranium mill site (Umetco 2005b). The purpose of this amendment is to increase the lead-210 (Pb-210) ACL from 46.7 pCi/L (current value) to 189 pCi/L (proposed value) in the Southwestern Flow Regime (SWFR). The proposed value is the highest value detected from a monitor well in the SWFR (189 pCi/L, GW3, March 24, 1987).

3.0 NEED FOR THE PROPOSED ACTION

Per Umetco's Ground Water Monitoring Plan (Umetco 2002a), two monitoring wells located down gradient of the A-9 Repository (GW7 and GW8) were designated as Point of Compliance (POC) wells for the SWFR (see Figure 2 - Monitoring Locations Map). Following the NRC's approval of Umetco's initial ACL proposal (NRC 2002a), ground water quality results from POC well GW7 have, on two occasions, exceeded the Pb-210 ACL of 46.7 pCi/L (Umetco 2005b). Approval of the proposed ACL would bring GW7 and the SWFR back into compliance with respect to Pb-210.

4.0 POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

4.1 Hydrogeology

The Umetco 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 ground water beneath the site is within the Wind River aquifer.

Two flow regimes, or hydrostratigraphic units, are present at the Gas Hills site: the SWFR which includes the upper portion of the Wind River Formation and is present beneath the A-9 Repository, and the Western Flow Regime which includes the lower portion of the Wind River Formation. Of particular interest in this proposed license amendment is the SWFR. The SWFR is characterized as a shallow unconfined system with a southwesterly flow direction and a saturated thickness of typically less than 6 m (20 feet) (see attached Monitoring Locations Map). This shallow unit generally occurs within 30.5 to 46 m (100 to 150 feet) of the ground surface. The SWFR is absent beneath the Above-Grade Tailings Impoundment (AGTI) and west of the site. The SWFR, where present, is separated from the Western Flow Regime by a mudstone unit. The mudstone is an aquitard that acts as a confining unit between the two flow regimes.

4.2 Ground Water Quality

Historical milling activities have degraded ground water quality in the SWFR at the Umetco site. Ground water contaminants associated with these activities include arsenic, beryllium, Pb-210, nickel, radium-226 and -228, selenium, thorium-230, and natural uranium. Although these constituents are found at the Umetco site at elevated concentrations (i.e., at designated POC wells), they are at or below background levels at points of exposure. Moreover, uranium has

been mined from open pits in the Wind River Formation up gradient, cross-gradient, and down gradient of the Umetco site (NRC 2002c). This mining activity, which has occurred over a 50 year period, has affected the ground water by increasing the level of many of the same constituents that were increased by milling and tailings disposal at the Umetco site. Particularly, mining has resulted in the degradation of ground water quality in areas up gradient of the Umetco site. Other mining impacts have been documented in ground water monitoring data down gradient of the Rim Pit approximately 1,524 m (5,000 feet) west of the site (NRC 2002a).

4.3 Water Resource Uses

4.3.1 Current Uses

There are no perennial surface water sources and ground water use in the vicinity of the site is limited. No residential ground water use occurs within a 8-km (5-mile) radius of the site and no current irrigation use has been identified down gradient of the site as discussed below (NRC 2002a). The nearest down gradient year-round residence is approximately 32 km (20 miles) from the site. The water rights search by Umetco yielded 178 distinct water uses, the majority of which (59 percent) are permitted for monitoring purposes, within 5 km (3 miles) of the site (Umetco 2001a). The remaining uses are classified as miscellaneous (14 percent), industrial (13 percent), stock watering (12 percent), and irrigation (3 percent).

Of particular relevance to this assessment is the fact that all irrigation and stock water uses correspond to surface water sources, not ground water via wells. The five irrigation uses are located up gradient to the north/northeast of the Gas Hills site. Livestock and wildlife do use the Rattlesnake springs/ditches located east (up gradient) of the site and several springs located west of the site (e.g., Iron Spring, see figure at end of this EA) that are derived from the Wind River aquifer. These springs have not been impacted by site activities, nor are any site related water quality impacts expected in the future (NRC 2002a, Umetco 2001a).

The Wyoming Department of Environmental Quality (WDEQ) Water Quality Division classification of ground water compared to ambient quality is provided in Umetco (2001b, Table 2.12). The Wyoming classification is first done by use of the water on a well by well basis and secondly, on constituent concentration. Umetco stated that comparison of ambient levels of constituents with WDEQ ground water quality standards could yield a Class IV (industrial) designation, based on concentration. However, based on use, the springs west of the site that are fed by ground water, should represent Class III (livestock watering).

4.3.2 Future Ground Water Uses

The sparse population that characterizes the Gas Hills area is expected to remain stable. This prediction is based on 1997 census projections as well as other factors, including the harsh climate, lack of arable land, and the lack of a foreseeable economic base (Umetco 2001a). Therefore, ground water uses in the area (within 5 miles) of the Umetco site are not expected to change in the future, but to remain for mining and livestock and wildlife watering (NRC 2002a).

Based on ground water fate and transport modeling conducted by Umetco, mill related ground water contamination is not expected to degrade ground water use. This is due to the attenuation (absorption and precipitation) of chemical constituents in the ground water plume as

the plume migrates through the aquifer over time and distance. Geochemical processes account for the majority of the reduction in chemical concentrations. The concentration of each licensed constituent including Pb-210 has been calculated to be within the range of background at the POE for 1,000 years (Umetco 2001a, 2001b, 2001c, and 2005b).

4.4 Health and Safety

Umetco's previous ACL application (Umetco 2001a, 2001b, and 2001c) contained an exposure assessment. Based on the geochemical modeling results, combined with the evaluation of ambient ground water quality, Umetco stated that the modeled hazardous constituent concentrations at the POE, for 1,000 years, are not distinguishable from ambient conditions when the concentrations at the POC wells are at or below the proposed ACL. Umetco's current proposal contains revised geochemical modeling results using the proposed Pb-210 ACL (189 pCi/L) as the initial POC concentration (Umetco 2005b). These results indicate that Pb-210 concentrations at the POE, for 1,000 years, are indistinguishable from ambient levels of Pb-210.

Consistent with NRC staff's previous conclusion (NRC 2002a), mill-related ground water contamination at the Umetco site will pose no incremental risks to human health or the environment. Moreover, the potential for environmental exposures in the vicinity of the Gas Hills site is expected to be limited due to the lack of permanent surface water bodies, and the poor soil quality precluding use of ground water for irrigation purposes.

4.5 Other Potential Effects

NRC staff have concluded that since the proposed action is associated only with ground water conditions, there would be no effect to the following resources: visual resources, vegetation and soils, ambient air quality, and transportation. It has also been concluded that cattle and sheep grazing would be compatible with the long-term surveillance plan that the Department of Energy (DOE) will develop for the Umetco site (NRC 2002a).

4.6 Potential Cumulative Impacts

A proposed action may have limited effects when considered individually and significant effects when considered cumulatively in space or time. The NRC's previous ACL related EA (NRC 2002a) considered the incremental direct and indirect impacts of the project in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. The cumulative effects review included activities both on and off the site. No significant cumulative impacts were identified by staff (NRC 2002a).

As previously noted in NRC (2002a), the WDEQ expressed concerns about the preliminary ACL application to the NRC and Umetco concerning the impact on a proposed ISL operation near the Umetco site (WDEQ 2000). Umetco responded that the proposed action will not impact the effectiveness of the Long-Term Care Area since the only restriction will be that shallow ground water may not be used for domestic or agricultural purposes (Umetco 2001b). Also, there is a fault between the Umetco site and the proposed ISL mine unit that would deflect ground water movement from the tailings area away from the proposed ISL operation. Thus, the ISL operation should not impact, or be impacted by, conditions at the Umetco Gas Hills site (NRC 2002a).

4.7 Cultural, Ecological, and Historical Resources

NRC staff have determined that the proposed action will not affect listed species or critical habitat. Therefore, no further consultation is required under Section 7 of the Endangered Species Act. The cultural and historical (archaeological) resources data for the site were previously addressed by Umetco (NRC 2001a and 2002a). No potential or identified resource area would be impacted by the approval of the requested ACL. Consequently, NRC staff have determined that the proposed action is not the type of activity that has the potential to cause effects on cultural or historic resources. Therefore, no further consultation is required under Section 106 of the National Historic Preservation Act.

5.0 ALTERNATIVES TO THE PROPOSED ACTION

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the "no-action alternative"). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar since Umetco ground water flow and transport modeling indicates that both alternatives result in virtually the same Pb-210 ground water concentrations at the Point of Exposure (Umetco 2001a, 2001b, 2001c, and 2005b).

6.0 CONSULTATION AND SOURCE INFORMATION

Most of the information for this document was obtained from the licensee's ACL application (Umetco 2005b) and from previous EAs for Umetco site activities related to their revised soil decommissioning plan (NRC 2001a) and an application for several ACLs (NRC 2002a). The draft EA was sent to Richard Chancellor, WDEQ Land Quality Division (LDQ) (NRC 2005b), and Kevin Frederick, WDEQ, Water Quality Division (NRC 2005c) to solicit comments. The WDEQ LDQ provided comments to the NRC that were addressed by letter (WDEQ 2006) and in this final EA.

7.0 CONCLUSION

The NRC staff have prepared this EA in support of the proposed action to amend License Condition 35 of License SUA-648 by increasing the current Pb-210 ACL from 46.7 pCi/L (current value) to 189 pCi/L (proposed value) in the SWFR. On the basis of this EA, NRC has concluded that there are no significant environmental impacts and the license amendment does not warrant the preparation of an Environmental Impact Statement. Accordingly, it has been determined that a FONSI is appropriate and will be published in the *Federal Register*.

8.0 SOURCES USED

Umetco Minerals Corporation (2001a) Volume I, Final Application for Alternate Concentration Limits for Gas Hills, Wyoming. May 31, 2001 [Adams Accession No. ML011450405]

Umetco (2001b) Volume II, Final Application for Alternate Concentration Limits for Gas Hills, Wyoming. May 31, 2001 [Adams Accession Nos. ML011450325 and ML021200261]

Umetco (2001c) Correspondence from Curtis Sealy to Melvyn Leach, NRC, containing ACL

Application Revisions December 3, 2001 [Adams Accession Nos. ML0200020133, ML020020229]

Umetco (2002a) Correspondence from Curtis Sealy to Melvyn Leach, NRC, revised Groundwater Monitoring Plan, Appendix M. March 4, 2002 [Adams Accession No. ML020670552]

Umetco (2002b) Correspondence from Curtis Sealy to Dan Gillen, NRC, License Amendment Request. October 2, 2002 [Adams Accession No. ML022890267]

Umetco (2004) Correspondence from Thomas Gieck to Gary Janosko, NRC, License Amendment Request. January 5, 2004 [Adams Accession No. ML040140057]

Umetco (2005a) Correspondence from Thomas Gieck to Richard Weller, Project Manager, NRC concerning Final Status Survey Report, Addendum 2, May 11, 2005 [Adams Accession No. ML051330483]

Umetco (2005b) Correspondence from Thomas Gieck to Richard Weller, Project Manager, NRC concerning License Amendment Request. June 17, 2005 [Accession No. ML051780369]

U. S. Nuclear Regulatory Commission (2001a) Environmental Assessment for Umetco Minerals Corporation's, Gas Hills Uranium Mill Site, East Gas Hills, Natrona County, Wyoming. February 23, 2001 [Adams Accession No. ML010460319]

U.S. NRC (2001b) Finding of No Significant Impact in Federal Register concerning Approval of Amendment to Source Material License SUA-648 for Soil Decommissioning. February 23, 2001 [Adams Accession No. ML010580211]

U.S. NRC (2002a) Correspondence from Melvyn Leach to Curtis O. Sealy, General Manager, Umetco Minerals Corporation. Subject: Environmental Assessment of the Application of Alternate Concentration Limits to Ground Water at the Umetco Minerals Corporation, Gas Hills Uranium Mill Site. March 24, 2002 [Adams Accession No. ML020840234]

U.S. NRC (2002b) Finding of No Significant Impact in Federal Register concerning Approval of Amendment to Source Material License SUA-648 for Ground Water Alternate Concentration Limits. March 24, 2002 [Adams Accession No. ML020840623]

U.S. NRC (2002c) Correspondence from Melvyn Leach to Curtis O. Sealy, General Manager, Umetco Minerals Corporation. Subject: Amendment 48, License SUA-648, Umetco Minerals Corporation, Gas Hills Uranium Mill Site. March 29, 2002 [Adams Accession No. ML021070805]

U.S. NRC (2004) Correspondence from Gary Janosko to Thomas Gieck, Remediation Manager, Umetco Minerals Corporation. Subject: Umetco Mineral Corporation's Final Status Report for the Gas Hills Uranium Mill Site. September 27, 2004 [Adams Accession No. ML042720594]

U.S. NRC (2005a) Correspondence from Gary Janosko to Thomas Gieck, Remediation Manager, Umetco Minerals Corporation. Subject: Addendum 2 to Umetco Mineral Corporation's

Final Status Report for the Gas Hills Uranium Mill Site. September 1, 2005 [Adams Accession No. ML052430628]

U.S. NRC (2005b) Correspondence from Paul Michalak to Richard Chancellor, WDEQ Land Quality Division . Subject: Draft Environmental Assessment. December 13, 2005 [Adams Accession No. ML053360004]

U.S. NRC (2005c) Correspondence from Paul Michalak to Kevin Frederick, WDEQ Water Quality Division . Subject: Draft Environmental Assessment. December 13, 2005 [Adams Accession No. ML053360007]

Wyoming Department of Environmental Quality (2000) Correspondence from Richard Chancellor to Curtis Sealy, Umetco and Elaine Brummett, NRC concerning Review of Umetco's ACL Application. April 25, 2000. [Adams Accession No. ML003706789]

WDEQ (2006) Correspondence from Roberta Hoy, LQD to Paul Michalak, NRC. Subject: proposal to Raise the Alternate Concentration Limit (ACL) for Lead-210 in Well GW-7 Umetco Minerals Corporation. January 10, 2006. [Adams Accession No. ML060190686]