

November 21, 2014

MEMORANDUM TO: Docket File 040-38367

THROUGH: Michael A. Norato, Ph.D., Branch Chief
Materials Decommissioning Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

FROM: Kenneth L. Kalman, Project Manager **/RA/**
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Region IV

SUBJECT: SITE VISIT AND PRE-LICENSE APPLICATION AUDIT AT BEAR
LODGE PROJECT, SUNDANCE, WYOMING

On October 29-31, 2014, the U.S. Nuclear Regulatory Commission (NRC) staff conducted a site visit and pre-license application audit at the Bear Lodge Project near Sundance, Wyoming. Rare Element Resources, Inc. plans to construct and operate a rare earth elements extraction mine and mill at two separate properties. During the audit, the NRC staff conducted detailed discussions with Rare Element Resources staff about the company's proposed source material license. Enclosed with this memorandum is the NRC's trip report for this site visit. In summary, the NRC staff did not identify any significant regulatory issues or safety concerns during the site visit.

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Enclosure: NRC Trip Report

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 040-38367

License: None

Applicant: Rare Element Resources, Inc.

Facility: Bear Lodge Project

Location: Crook and Weston Counties, Wyoming

Main Office: 225 Union Blvd., Suite 250
Lakewood, CO 80228

Dates: October 29-31, 2014

Inspector: Robert J. Evans, Ph.D., C.H.P., P.E., Senior Health Physicist
Repository and Spent Fuel Safety Branch

Accompanied by: Kenneth L. Kalman, Project Manager
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Approved by: Michael A. Norato, Chief
Materials Decommissioning Branch
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Attachment: Photographs Taken at the Bear Lodge Project

Enclosure

NRC Trip Report

1 Background

On July 30, 2014, The U.S. Nuclear Regulatory Commission (NRC) staff held a public meeting with Rare Element Resources, Inc. (RER) where RER discussed its intent to apply for a source material license under the provisions of 10 CFR Part 40. The company plans to conduct mining and ore processing operations for rare earth elements. These elements include neodymium, praseodymium, and europium. The proposed ore processing operations will result in possession of licensable quantities of source material. The company plans to conduct operations at two sites, collectively known as the Bear Lodge Project.

The company plans to conduct mining and limited processing operations at the Bull Hill Mine approximately 12 miles north of Sundance, Wyoming. The Bull Hill Mine site will include an open mine pit, waste rock facility, physical upgrade plant (PUG), truck shop, and access roads. The processing operations at the PUG will include crushing of ore removed from the open pit mine.

The remainder of ore processing will occur at RER's plant to be constructed near Upton, Wyoming, approximately 26 miles south of Sundance. The company will transport the crushed ore by truck from the PUG to the proposed hydrometallurgical (Hydromet) plant. At the Hydromet plant, the crushed ore will undergo chemical processing.

The company expects to possess source material, in concentrations greater than 0.05-percent, at various stages of the process. The material with the greatest concentration of source material will be the thorium hydroxide sludge. This material will be collected and temporarily stored at the Hydromet plant and may contain up to about 42-percent thorium. The licensee plans to dispose of this material at an offsite radioactive waste disposal site. The company also plans to apply for a disposal permit from Wyoming Department of Environmental Quality (WDEQ), Land Quality Division, for disposal of the remainder of the rare earth elements process tailings in a tailings storage facility to be located at the Upton plant site.

2 Site Status

At the time of the site visit, RER continued to collect meteorological data at both sites. The company also continued to collect background measurements of radioactive air particulates, radon gas, and ambient gamma radiation at various locations around each site. The company has not started construction work at either site, with the exception of installation of groundwater monitoring wells around the sites.

The U.S. Forest Service has started its environmental impact assessment process for the Bull Hill Mine site. The project area consists of 8,750 acres which includes National Forest Service lands in the Black Hills National Forest, Bearlodge Ranger District, and private land. The Forest Service issued a public scoping letter on March 20, 2014, and the agency held public meetings in April 2014. A summary report was issued in July 2014 and can be found at <http://www.fs.usda.gov/blackhills>. The agency also issued a Notice Of Intent To Prepare An Environmental Impact Statement in the *Federal Register* (79 FRN 17497) on March 28, 2014. At the time of the NRC site visit, the Forest Service continued to develop the draft environmental impact statement.

3 Site Observations and Findings

The NRC staff toured the proposed Bear Lodge Project sites. The staff toured the proposed mine site and location of the PUG facility in Crook County, Wyoming. The staff for RER commented that it's proposed location of the PUG may be moved to minimize the footprint of the Bull Hill Mine site. In addition, RER may have to re-grade and reroute the access roads to the site to support future ore transportation activities. The NRC staff observed the meteorological monitoring station and groundwater wells near the mine site.

The NRC staff also toured the Upton plant site, the proposed location of the Hydromet facility and tailings storage facility, in Weston County, Wyoming. The NRC staff noted that the Uptown site was strategically located near rail lines and public highways, and that RER staff had established designated routes between the two sites. Electrical power lines and a substation were located adjacent to the site. The NRC staff observed the remains of past bentonite mining activities adjacent to the proposed Uptown site, although no bentonite mines were observed on site property.

The NRC staff visited one environmental monitoring sampling station in Upton, Wyoming. The company was collecting background radioactivity samples at this, and other, locations. These samples included airborne particulates, radon gas, and ambient gamma radiation levels.

4 Conclusions

The NRC staff did not observe any regulatory or safety concerns during the site tour. The proposed applicant continued to collect meteorological data and environmental samples. The U.S. Forest Service continued to conduct an environmental impact analysis of the proposed Bull Hill Mine site.

5 Pre-license Application Audit Summary

During the pre-license application audit at RER's office, representatives of RER discussed the proposed 10 CFR Part 40 license application with NRC staff. The NRC staff conducted a broad-based review of the proposed application and explained the types of additional information that the applicant would have to provide including radiological controls and environmental monitoring program requirements. The NRC staff discussed such topics as purposes for which licensed material will be used, site characteristics, description of proposed facility, management control, training requirements, radiation safety program requirements, effluent control, waste management, recordkeeping, and financial assurance. The NRC staff also discussed the information needed for the NRC's future environmental review of the proposed project.

In a separate meeting at the U.S. Forest Service office in Sundance, WY, the NRC staff discussed the NRC's environmental assessment process with Forest Service staff. The NRC staff discussed the potential consultation process for the Upton plant site in addition to possible NRC expertise support for the Forest Service's Bull Mill Site environmental review process. Areas of concern or areas requiring additional review may include cultural resources, tribal consultation, public safety due to transportation activities, and social-economic impacts.

6 Persons Contacted

Applicant

P. Bergstrom, Director, Environmental Health and Safety
R. Larsen, Engineering Manager, RER
J. Pickarts, Chief Operating Officer, RER
A. Van Rythoven, Mineralogist, RER
M. Schierman, Radiation Safety Officer

U.S. Forest Service

S. Kozel, District Ranger
J. Timm, Forester



Figure 1: Future location of Bull Hill Mine site, Crook County, Wyoming



Figure 2: Future location of physical upgrade plant (PUG) adjacent to Bull Hill Mine site, Crook County, Wyoming



Figure 3: Proposed location of hydrometallurgical plant (Hydromet) and Tailings Storage Facility near city of Upton, Weston County, Wyoming



Figure 4: Environmental monitoring sample station in Upton, Wyoming



Figure 5: Core samples in storage at warehouse in Sundance, Wyoming



Figure 6: Mine site core samples on display at warehouse in Sundance, Wyoming