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October 1, 2007

Chief, Rulemaking, Directives and Editing Branch
Mail Stop T-6D59
US Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Uranium Recovery Generic Environmental Impact Statement (GEIS); NMGF Project No. 11670

Dear NRC:

The New Mexico Department of Game & Fish (NMGF) has reviewed the your revised Notice of Intent dated August 31, 2007 (FR Vol. 72, No. 169), regarding the above referenced project. The proposed GEIS will assess the potential environmental impacts associated with uranium recovery at milling facilities employing the in-situ leach (ISL) process. It may also assess the potential environmental impacts of alternative methods of uranium recovery, including the conventional milling process.

1. Uranium recovery using the ISL process generates less greenhouses gases, consumes less process water, and involves far less surface disturbance than conventional uranium mining and milling. The predominant environmental impacts associated with ISL are the difficulty of groundwater restoration to pre-mining condition, and possibly surface contamination from spills or leaks. The processes are sufficiently different that NMGF questions the advisability of addressing both in one EIS. An unwieldy document, in which large portions of text are irrelevant to one type of project or the other, will not serve the ends of the agency, the industry or the public. We recommend that conventional uranium recovery be addressed instead through update and revision of the existing 1980 Final GEIS on Uranium Milling, NUREG-0706.
2. Environmental impact of ISL projects is subject to site-specific considerations, due to the uniqueness of subsurface hydrogeologic and geochemical conditions. Special status species and cumulative impact are other issues that may vary considerably between projects. NMGF recommends that the GEIS should state clearly in the description of the proposed action, what level and form of site-specific analysis and opportunities for public involvement will take place for individual projects tiered under the new document.
3. NMGF is particularly concerned that wildlife be isolated from contact with potentially harmful concentrations of uranium and other metals that may be mobilized by the ISL process. Any form of open water will attract wildlife in an arid environment. All pits, ponds, tanks and lagoons containing elevated contaminants must be covered, fenced and/or netted to exclude terrestrial and flying wildlife. Even impoundments containing only water or other non-hazardous materials may become a trapping hazard. Such impoundments, if not covered or netted, should be provided with escape ramps to allow egress of trapped animals at any water level.
4. Ancillary facilities such as fencing, roads, overhead powerlines, and trenched piping should be constructed so as to minimize adverse wildlife impacts. We have enclosed NMGF guideline documents that address these

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topics. Please incorporate as much of the guidelines as is feasible as standard mitigation practices for uranium recovery. Mitigation practices should also include reclamation of disturbed surface, including a bonded evaluation period, topsoil specifications, and revegetation success standards.

Thank you for the opportunity to comment on this Notice of Intent. If there are any questions, please contact Rachel Jankowitz at 505-476-8159, or rjankowitz@state.nm.us.

Sincerely,

Matthew Wunder, Ph.D.
Chief, Conservation Services Division

cc: Ecological Services Field Supervisor, USFWS
Mark Olson, NW Area Habitat Specialist, NMGF

TRENCHING GUIDELINES

NEW MEXICO DEPARTMENT OF GAME AND FISH

September 2003

Open trenches and ditches can trap small mammals, amphibians and reptiles and can cause injury to large mammals. Periods of highest activity for many of these species include nighttime, summer months and wet weather. Implementing the following recommendations can minimize loss of wildlife.

- Keep trenching and back-filling crews close together, to minimize the amount of open trenches at any given time.

- Trench during the cooler months (October – March). However, there may be exceptions (e.g., critical wintering areas) that need to be assessed on a site-specific basis.

- Avoid leaving trenches open overnight. Where trenches cannot be back-filled immediately, escape ramps should be constructed at least every 90 meters. Escape ramps can be short lateral trenches or wooden planks sloping to the surface. The slope should be less than 45 degrees (1:1). Trenches that have been left open overnight should be inspected and animals removed prior to backfilling, especially where endangered species occur.

On a statewide basis there are numerous threatened, endangered or sensitive species potentially at risk by trenching operations. Project initiators should seek county species list to evaluate potential impact of projects. Risk to these species depends upon a wide variety of conditions at the trenching site, such as trench depth, side slope, soil characteristics, season, and precipitation events.

POWERLINE PROJECT GUIDELINES

NEW MEXICO DEPARTMENT OF GAME AND FISH

Updated February 2007

1) TRANSMISSION LINE STRUCTURAL DESIGN All hawks, owls and vultures are protected under New Mexico state law (New Mexico Statutes Annotated, 1978, 17-2-14, as amended). Bald and golden eagles are protected under federal law. Transmission lines must be designed to prevent or minimize risk of electrocution of raptors. A variety of alternatives were originally set forth in Olendorff et al. 1981 in *Suggested Practice for Raptor Protection on Power Lines: The State of the Art in 1981* (Raptor Research Report No.4, Raptor Research Foundation, Inc., St. Paul, Minnesota, 111 pages). This report was updated by the Avian Power Line Interaction Committee (APLIC) in 2006 as *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006.* A copy of this report may be purchased from APLIC at http://www.aplic.org.

2) LOCATION Existing roads, trails, and rights-of-way should be followed where possible. Roads and rights-of-way should avoid critical wildlife habitat, saddles, ridge tops, riparian areas, meadows and edges of meadows, and big game migration routes. Construction using helicopters should be considered in remote critical wildlife areas where construction of new roads would otherwise be necessary.

3) CLEARING Rights-of –way clearing should be selective, leaving shrubs and brush undisturbed where possible. Clearing should be avoided in riparian areas and on steep slopes. Brush and limbs should be piled at intervals to enhance wildlife habitat.

4) STRUCTURES Bridges and culverts should be designed such that fish passage is not impeded. Hydrology and stream course should remain unchanged. Special techniques and structures should be employed as necessary to minimize erosion and sedimentation to riparian areas (e.g., catch basins, raised culverts for roads runoff, or water bars).

5) CLOSURES Roads and rights-of-way which provide access to critical wildlife area should be designed for easy and effective closure. Gates should be installed at onset of construction and closed immediately after completion of the project. Temporary roads should be obliterated and revegetated immediately after construction.

6) SCHEDULING Winter construction is preferred on critical big game summer range. Summer construction is preferred on big game winter range. No construction should be conducted in winter range from December 15-April 15. No construction should occur in elk calving areas from May 1-June 30. No construction should occur in deer fawning areas from June 1-August 31 (northern New Mexico) or July 1-September 31 (southern New Mexico). No construction should occur in turkey nesting areas from April 15-June 30. Construction in big game migration areas should be restricted during migration.

7) SPECIAL CONSIDERATION FEATURES (Areas such as seeps, springs, wet meadows, marshes, wallows, salt licks and water development areas). Protect these features from damage during construction. No roads within 200 feet of feature. Remove debris from wildlife trails. Protect rock talus areas from disturbance by heavy equipment.

8) RIPARIAN AREAS AND FISHERIES Develop site specific measures where appropriate. Maintain at least 100-foot buffer along streams. Debris left in streams and drainages may be detrimental or beneficial and should be assessed on a site specific basis. Prevent siltation to streams. Fine sediment (less than 0.85 mm diameter) should remain at $< 20\%$ of spawning gravel in trout streams. In streams: maintain $\geq 80\%$ natural shade over water; maintain $\geq 80\%$ natural bank protection; composition of sand, silt, and clay should remain within 20% of natural levels.

9) FENCES Provide jumps or top rails on fences, or lay-down fences, within areas of high wildlife use (e.g., travel corridors). Bottom wire should be barbless and at least 18" above ground in antelope or deer habitat. Maximum fence height should be 42". Minimum spacing between top two wires should be 10". Do not use woven wire fencing

10) REVEGETATION AND RESTORATION Revegetation should utilize native grasses, forbs, and shrubs beneficial to wildlife. Incremental revegetation is preferred in areas where work is conducted during spring and summer. Sections of right-of-way should be rehabilitated as construction is completed. Revegetated areas which have not become established by the end of the growing season should be treated to prevent erosion and site degradation (e.g., mulching, contouring, water bars).

SPECIES-SPECIFIC RECOMMENDATIONS

1) THREATENED AND ENDANGERED SPECIES. Determine which state and/or federally listed species could occur in the project area. Sources of information include:

New Mexico Department of Game and Fish
PO Box 25112
Santa Fe, New Mexico 87504
(505) 476-8101 [State-listed wildlife]

New Mexico Department of Energy, Minerals and Natural Resources
Forestry Division
1220 St. Francis Dr.
Santa Fe, New Mexico 87505
(505) 476-3200 [State-listed plants]

U.S. Fish and Wildlife Service
New Mexico Ecological Services State Office
2105 Osuna, NE
Albuquerque, New Mexico 87113
(505) 346-2525 [Federally-listed plants and animals]

Contact the above agencies for assistance in determining presence or absence of threatened and endangered species and development of protective measures.

2) DEER AND ELK Protect browse and forage plants.

3) TURKEY Identify and protect roost tree groups (winter roost trees are most critical). Roost tree groups can be described as:

- Large open topped trees ($\geq$ 13" dbh, > 40' tall, especially ponderosa pine)
- Canopy cover > 55%;
- Basal area > 100 ft^2/ac.
- Accessible from clearing directly up slope, not isolated from stand.
- Provide nesting habitat in ponderosa pine or mixed conifer where practical by creating slash piles (10' diameter x 3' high) or leaving unlopped tree tops. Nesting habitat should be within ½ mile of dependable water.

4) RAPTORS Protect known nest tree groups. Protect perch and roost trees adjacent to cliffs, major ridges and openings.

5) BEAR Protect mast (oak & juniper) and forage plants. Leave large diameter dead or down trees for insect forage.

6) TREE SQUIRRELS Protect stands with high squirrel activity (e.g., nest trees, large middens). Protect trees with existing cavities.

7) NON-GAME BIRDS When abandoning or realigning old electric lines, leave 10% to 30% of the abandoned poles standing for perching and cavity nesting birds, especially in areas lacking natural snags. Numbers and location of poles to be left standing should be coordinated with the U.S Fish and Wildlife Service and New Mexico Department of Game and Fish. The taller the poles the better, but under existing lines, leaving four to ten feet of the old pole standing will provide useful habitat. If poles are still sound, artificial nesting cavities can be created. Heavily creosoted, potentially toxic poles should be cut at ground level and removed. This recommendation may be retracted if the abandoned poles are within grassland ecosystems.

NEW MEXICO DEPARTMENT OF GAME AND FISH

Recommendations for Constructing Wire Fences for Livestock in Big Game Habitats July 2003

Recommendations for wire fencing will vary with the purpose of the fence, the kinds of livestock and big game present, and any clear or implied legal requirements for fence design. Fences may be intended to restrict both livestock and wildlife, or to restrict livestock while allowing for passage of wildlife. Fencing needs may vary between interior and exterior fences in livestock pastures. Fences may be used for protection along highways, or to protect wildlife areas or habitat improvements from livestock entry. The ability of livestock or big game to negotiate a type of fence will vary with the species or breed, and sex/age of the animals. Further, regional variation in the behavior of pronghorn and desert bighorn in reaction to fences (Bear 1969:270, Elenowitz 1983:37) suggests that learned behavior may create additional variation in animal responses to fence designs. Landowners increase their legal protection against trespass livestock by having fences that are at least equal to the 4-strand fence described in 77-16-4 NMSA as a "legal fence" (Appendix A). The State Highway Department and county commissions are required by 30-8-13 NMSA to construct and maintain fences along certain roads in order to prevent livestock entry (Appendix B). However, a 1991 opinion of the Interior Department Solicitor's Office (Appendix C) indicates that federal mandates to protect wildlife on the federal lands may take precedence over state requirements for fencing of highways. Considering such variation in fence purposes, kinds of animals present, and legal constraints, a variety of types of fences should be available for recommended use, according to each local situation.

Published recommendations for fence designs (Kie et al. 1994, Kindschy 1996, and standard designs of the U.S. Forest Service and the Bureau of land Management) are based largely upon field experiences. There has been little experimental research to test the abilities of various kinds of animals to negotiate various types of fences. Experiments have been conducted by Bear 1969, Helvie 1971, Gross et al. 1983 and Howard 1991).

The Bureau of Land management (BLM) and the New Mexico Department of Transportation (NMDOT) have a 1990 Memorandum of Understanding in which fence standards are described (Appendix D). This attachment states that right-of-way fence specifications in areas of big game habitat will be developed through coordination between BLM and the Department of Game and Fish. Further, the attachment describes a 4-strand fence to be used along rights-of-way through pronghorn habitat. Ten other fence designs are recommended in the BLM manual (Appendix E). Each of these fences is recommended for a specific combination of big game species and type of livestock.

The U.S. Forest Service and the NMDOT modified their Memorandum of Understanding in 1982, to address right-of-way fencing in wildlife areas. The agreed-upon 4-strand fence is shown in Exhibit 9 of the MOU (Appendix F).

The Department of Game and Fish has recommended at least four fence designs during the 1980's and 1990's. Variation in Department recommendations reflects the lack of experimental

research with fence designs. Lacking a basis in research, recommendations were based upon opinions and influenced by experiences of various biologists. Both 3-strand and 4-strand fences have been recommended. Separate fence designs have been proposed for bighorn sheep habitats. Recommended fences have ranged from 34 to 42 inches high, with bottom strands varying between 12 and 20 inches above ground.

Livestock fences may prohibit or inhibit big game movements and may cause injury or death to animals that unsuccessfully negotiate fences. Big game traverse wire fences by crawling under the bottom strand, by penetrating between strands, and by jumping over fences. The propensities for using these 3 strategies vary among big game species, and among age/sex classes of animals. Further, there are regional differences in the propensities of some big game species to use certain strategies (Bear 1969:270, Elenowitz 1983:37), indicating that there are learned adaptations for crossing fences in some populations.

Crawling animals may sustain cuts by a low bottom wire. Pronghorn, javelina, and young of other species are most apt to use this strategy. Most published recommendations for fences in pronghorn habitat suggest a smooth bottom wire at least 16 inches above ground, although a bottom wire at 10 inches above ground is suggested when holding domestic sheep is necessary.

Penetrating animals may be cut by barbed wires. Worse, they may pass horns or antlers through the fence, be unable to penetrate with their entire bodies, and have horns or antlers entangled between wires with 6-8 inch spacings. They then "fight" the fence, risking cuts to the head and neck and potentially death. Most publications recommend wire spacings of 10 to 15 inches to accommodate penetrating big game. However, closer spacings are needed to hold domestic sheep, or where extreme restriction of livestock movements is needed.

Jumping animals may be cut by a barbed top wire; may entangle legs between the two top wires; or may become hung up with front and back legs on opposite sides of the fence. Adult deer and elk are most prone to jump fences. However bighorn in Southwest New Mexico (Elenowitz 1983) and some pronghorn jump fences. The lowest possible fence presents the least hazard. Published recommendations are for fences between 32 and 40 inches high, depending largely upon whether domestic sheep or domestic cattle are being held. A smooth top strand, or covering the top strand with white 1-inch PVC pipe, is recommended in areas of abundant big-game use, where trails cross fence lines, and in fence corners within big game habitats. Entanglement between the top two wires usually involves a hind leg, and presumably occurs as an animal attempts to jump with the hind legs "tucked" under the body. A leg going under the top wire may kick back into the second wire, entangling the animal. As the animal falls, a hind leg pivoting over the top wire may twist the second wire upward, producing a tight bind around the leg. This is most apt to occur if the top wires are closely spaced and not strung tightly. To avoid this problem, most published recommendations are that the top strands be 10 to 12 inches apart, and that frequent stays be used to inhibit twisting of the top wires.

Kie et al. (1994) and BLM guidelines recommend a fence with only 4 inches between the two top wires for use in bighorn sheep habitats. The recommendations appear to be based upon the research of Helvie (1971) who worked with bighorn that used a penetrating strategy, but did not jump fences. The Department of Game and Fish does not recommend this fence because bighorn

frequently jump fences in southwest New Mexico and because deer, which frequently jump fences, are present in most bighorn areas.

In wildlife habitat, where it is intended to minimize restriction of big game, fence construction must be a compromise between minimizing the risks to wildlife and holding livestock. Net wire fences are strongly discouraged. If necessary, they should be no more than 36 inches high, preferably less. A preferred net wire fence has 24 inches of woven wire with two strands of barbed wire at 2 and 10 inches above the net wire. For big game, an ideal strung-wire fence has few, tight, mostly smooth wires, widely spaced for penetration; with a high bottom strand for crawling animals and a low top strand for jumping animals. A preferred 3-strand fence is described in Fig. 1. However, this fence will not hold domestic sheep and may not hold cattle at pressure points.

In practice, 4-strand fences almost always have equally spaced wires. Their abilities to hold livestock have been demonstrated by experience. Such fences may be designed to allow crawling and jumping strategies, but equally spaced wires are expected to deter penetration, or to injure penetrating animals. Accepting this limitation, a 4-strand fence with nearly equal wire spacings is recommended in Fig. 2.

Four-strand fences with unequally spaced wires have not been tested for their abilities to hold livestock or to allow big game passage. Having unequally spaced wires could allow for big game penetration, as well as for crawling and safe jumping. Two 4-strand fences (Fig.3) are recommended for testing of their ability to hold cattle. These fences should be tested – perhaps as short segments in areas of abundant big game use – on Department lands, and on other lands where restriction of livestock is not critical.

In any wire fence, probability of entanglement between wires is diminished by taut wire with posts and stays 10 feet apart.

In extremely steep terrain, fences may be unnecessary to hold livestock. Such areas should be unfenced to allow free movement of big game. In critical areas and migration seasons, when livestock are not present, lay-down panels are requested to allow movements of big game.

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