Case File No. 07-9505

UNITED STATES COURT OF APPEALS FOR THE 10th CIRCUIT

Eastern Navajo Diné Against Uranium Mining, Southwest Research and Information Center, Marilyn Morris and Grace Sam	)
Petitioners,	)
v.	)
United States Nuclear Regulatory Commission and the United States,	)
Respondents,	)
Hydro Resources, Inc.,	)
Intervenors.	)

Petition for Review of Final Order of the United States Nuclear Regulatory Commission

Petitioners' Revised Opening Brief (Including Joint Appendix Citations)

Oral Argument Requested

Eric D. Jantz
New Mexico Environmental Law Center
1405 Luisa Street, Suite 5
Santa Fe, New Mexico 87505
Telephone: (505) 989-9022
Facsimile: (505) 989-3769
Email: ejantz@nmelc.org

Diane Curran
Harmon, Curran, Spielberg & Eisenberg, L.L.P.
1726 M Street N.W. Suite 600
Washington, D.C. 20036
Telephone: (202) 328-3500
Facsimile: (202) 328-6918
e-mail: dcurran@harmoncurran.com

Attorneys for Petitioners ENDAUM and SRIC

Zackeree Kelin
DNA-People's Legal Services, Inc.
PO Box 306
Window Rock, Arizona 86515
Telephone: (928) 871-5621
Facsimile: (928) 871-5036
email: zkelin@dnalegalservices.org

Attorneys for Grace Sam and Marilyn Morris

CORPORATE DISCLOSURE STATEMENT

Eastern Navajo Diné Against Uranium Mining ("ENDAUM") is a 501(c)(3) non-profit corporation incorporated under the laws of the Navajo Nation. ENDAUM does not have a parent corporation and does not issue stock.

Southwest Research and Information Center ("SRIC") is a 501(c)(3) non-profit corporation incorporated under the laws of New Mexico. SRIC does not have a parent corporation and does not issue stock.

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Cases

Statutes and Regulations

STATUTES

STATEMENT OF RELATED CASES

HRI, Inc v. EPA, 198 F.3d 1224 (10th Cir. 2000); Hydro Resources, Inc. v. United States Environmental Protection Agency, Case File No. 07-9506

GLOSSARY

AEA ..... Atomic Energy Act

APA ..... Administrative Procedure Act

ACRS ..... Advisory Committee on Reactor Safeguards

COP ..... Consolidated Operations Plan

DEIS ..... Draft Environmental Impact Statement

EIS ..... Environmental Impact Statement

ENDAUM ..... Eastern Navajo Diné Against Uranium Mining

EPA ..... U. S. Environmental Protection Agency

FEIS ..... Final Environmental Impact Statement

HIR ..... Hydro Resources, Inc.

ISL ..... *in situ* leach

mSv ..... milliSievert

NEPA ..... National Environmental Policy Act

NRC/ Commission ..... Nuclear Regulatory Commission

SRIC ..... Southwest Research and Information Center

TEDE ..... Total Effective Dose Equivalent

TENORM ..... Technologically Enhanced Naturally Occurring Radioactive Material

I. JURISDICTIONAL STATEMENT

This case involves an appeal of orders by the U.S. Nuclear Regulatory Commission ("NRC") or ("Commission") granting Hydro Resources, Inc. ("HRI") a license to use, possess, acquire and transfer source and byproduct material pursuant to the Commission's authority under the Atomic Energy Act, ("AEA"), 42 U.S.C. §§ 2092 and 2111. Petitioners sought and were granted a hearing before the NRC on HRI's license application pursuant to 42 U.S.C. § 2239(a). Hydro Resources, Inc., LBP-98-9, 47 NRC 261, 268, 286-287 (1998) ("LBP-98-9"), Joint App. at 342, 351. The Commission issued its final order in the proceeding on December 14, 2006. Hydro Resources, Inc., CLI-06-29, 64 NRC 417 (2006) ("CLI-06-29"), Joint App. at 1385-1391.

This Court has jurisdiction pursuant to the Hobbs Act, 28 U.S.C. § 2342(4); the AEA, 42 U.S.C. § 2239(b); and the Administrative Procedure Act, 5 U.S.C. § 702 ("APA"). The appeal was timely filed pursuant to 28 U.S.C. § 2344, because it was docketed on February 12, 2007, within 60 days of the date of the final NRC order.

II. APPLICABLE STATUTES AND REGULATIONS

Relevant statutes and regulations are included in an addendum to this brief. Where indicated in the text of the brief, the addendum also includes relevant NRC rulemaking and guidance documents.

III. ISSUES PRESENTED FOR REVIEW

1. In approving a license that allowed radiation doses from HRI's licensed operation at Church Rock Section 17 to exceed regulatory dose limits on HRI's mining site, did the Commission interpret its regulations for protection of public health and safety contrary to the AEA's plain language, history and intent?

2. In approving a groundwater restoration cost estimate that NRC conceded was inadequate to restore groundwater quality at HRI's Church Rock Section 8 site, did the NRC violate the AEA and NRC implementing regulations and act arbitrarily and capriciously?

3. By allowing HRI to wait until after the close of the hearing to determine the amount of the groundwater restoration cost estimate for portions of its mine other than Section 8, did the NRC violate the public hearing requirements of the AEA?

4. Did the NRC violate the National Environmental Policy Act ("NEPA") by failing to consider the contribution of radioactive airborne

emissions from existing Section 17 mine waste to the cumulative environmental impacts of HRI's proposed mine?

5. Did the NRC violate NEPA by failing to address the environmental impacts of groundwater contamination in the reasonably foreseeable event that HRI lacks sufficient funds to restore the Section 8 aquifer upon completion of its mining operation?

IV. STATEMENT OF THE CASE

In 1998, the NRC issued HRI a license to operate four *in situ* leach ("ISL") uranium mines[1] in the towns of Church Rock and Crownpoint, New Mexico, within the Navajo Nation. Materials License, SUA-1508 (Jan. 5, 1998) ("License"), Joint App. at 314-326. Following issuance of the license, between 1999 and 2005, the NRC held informal adjudicatory hearings on Petitioners' claims that HRI's license violated the AEA and NRC regulations, and that the NRC's supporting environmental analysis violated NEPA.

Petitioners seek this Court's review of three sets of NRC decisions. In the first set of decisions, the NRC unlawfully ignored radioactive airborne emissions from mine waste on Church Rock Section 17 when it concluded that radiation doses from HRI's proposed mining operation will not exceed

[1] The ISL mining process is described *infra* at 13.

the NRC's regulatory limit of 100 millirems per year ("mrem/yr"). Hydro Resources, Inc., LBP-06-01, 63 NRC 41 ("LBP-06-01") (Joint App. at 1302-1321), affirmed, CLI-06-14, 63 NRC 510 (2006) ("CLI-06-14"), Joint App. at 1340-1351.

In the second set of decisions, the NRC violated NEPA by approving a Final Environmental Impact Statement ("FEIS") that failed to consider the contribution of radioactive emissions from Section 17 mine waste to the cumulative impacts of HRI's mining operation.[2] Hydro Resources, Inc., LBP-06-19, 64 NRC 53 ("LBP-06-19") (Joint App. at 1358-1384), affirmed, CLI-06-29, 64 NRC 417, Joint App. at 1385-1391.

In the third set of decisions, the Commission violated the AEA, its implementing safety regulations, and NEPA when it approved a groundwater restoration cost estimate that the NRC conceded was inadequate to remove contamination from Section 8 groundwater after mining. Hydro Resources, Inc., LBP-99-13, 49 NRC 233 (1999) ("LBP-99-13") (Joint App. at 472-474), affirmed, CLI-00-8, 51 NRC 227, 244 (2000) ("CLI-00-8") (Joint App. at 548-556), reconsideration denied, CLI-04-33, 60 NRC 581 (2004) ("CLI-04-33"), Joint App. at 628-641. The NRC's

[2] NUREG-1508, Final Environmental Impact Statement to Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico (1997). Joint App. at 230-293 (portions).

acceptance of HRI's asserted ability to restore groundwater quality at Section 8 was arbitrary and capricious. Hydro Resources, Inc., LBP-99-30, 50 NRC 77 (1999) ("LBP-99-30") (Joint App. at 512-547), review denied, CLI-00-12, 52 NRC 1 (2000) ("CLI-00-12") (Joint App. at 560-564); LBP-05-17, 62 NRC 77 (2005) ("LBP-05-17") (Joint App. at 962-986), review denied, CLI-06-01, 63 NRC 1 (2006) ("CLI-06-01") Joint App. at 1322-1326.

These decisions must be reversed because they fail to ensure that the public health, safety and the environment will be protected from air and groundwater contamination if HRI is allowed to mine uranium under its license.

V. STATUTORY AND REGULATORY FRAMEWORK

The two statutes that govern this case are the AEA and NEPA. Under the AEA, the NRC establishes minimum standards for protecting public health and safety from the operation of NRC-licensed nuclear facilities, while NEPA requires the NRC to evaluate the environmental impacts of proposed nuclear facility operations and to weigh the relative costs and benefits of measures to avoid or mitigate those impacts. Limerick Ecology Action v. NRC, 869 F.2d 719, 729-30 (3rd Cir. 1989). While the statutes

have some overlapping concerns, they establish independent requirements. Id.

A. AEA and NRC Implementing Regulations

1. General licensing and regulation

The AEA and NRC implementing regulations require that after uranium in a concentration of 0.05% or greater has been taken out of the ground, its possession and use must be licensed. 42 U.S.C. § 2092; 10 C.F.R. §§ 40.3, 40.13. The AEA prohibits the NRC from issuing a license that would be inimical to the health and safety of the public. 42 U.S.C. § 2099. *See also* Union of Concerned Scientists v. NRC, 824 F.2d 108, 114 (D.C. Cir. 1987) (AEA's "command is simple and sure: the Commission must provide 'adequate protection' of the public health and safety").

2. NRC safety regulations

NRC regulations for the issuance of source materials licenses also require that issuance of a license must "not be inimical to the common defense and security or to the health and safety of the public." 10 C.F.R. § 40.32(d). In addition, NRC safety regulations establish standards for specific aspects of licensed operations, including control of radioactive airborne emissions and funding for site decommissioning.

a. NRC regulation of radioactive airborne emissions

In 10 C.F.R. Part 20, the NRC sets forth standards for protection of the public health against exposure to radioactive materials, including airborne emissions. The purpose of these regulations is:

> to control the receipt, possession, use, transfer, and disposal of licensed material by any licensee in such a manner that the total dose to an individual (including doses resulting from licensed and unlicensed radioactive material and from radiation sources other than background radiation) does not exceed the standards for protection against radiation prescribed in the regulations in this part. . .

10 C.F.R. § 20.1001(b).

Section 20.1301(a)(1) limits the total effective dose equivalent ("TEDE")[3] from a "licensed operation" to an individual member of the public to 0.1 rem or 1 milliSievert ("mSv") per year, exclusive of

[3] TEDE is defined as "the sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures)." 10 C.F.R. § 20.1003. "Deep-dose equivalent (for external exposures)" means "the dose equivalent at a tissue depth of 1 cm (1000 mg/cm^2)" received from "radiation sources outside the body." Id. "Committed effective dose equivalent (for internal exposures) means "the dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 5-year period following the intake" of "radioactive material taken into the body." Id.

background radiation, medical exposures, and sanitary sewerage exposures.[4] Background radiation, which is excluded from the TEDE, is defined as:

> radiation from cosmic sources; naturally occurring radioactive material, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee. "Background radiation" does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission.

10 C.F.R. § 20.1003.

b. NRC and EPA standards for decommissioning and groundwater restoration

NRC regulations require that after an ISL mining and milling operation has concluded, the site must be cleaned up or "decommissioned" and groundwater quality must be restored. 10 C.F.R. § § 40.42(h)-(k); 10 C.F.R. Part 40, Appendix A, Criterion 6(6) ("Criterion 6(6)"). Background radiation is not subject to these cleanup standards. Criterion 6(6).

In setting standards for restoration of groundwater at ISL mines, the NRC applies U.S Environmental Protection Agency ("EPA") regulations for implementation of the Uranium Mill Tailings Radiation Control Act and maximum contamination levels in the Safe Drinking Water Act regulations. *See*, SECY-05-0123, Status of the Development of Memoranda of

[4] The text of 10 C.F.R. § 20.1301(a)(1) is quoted below at page 29.

Understanding with Nebraska and Wyoming Regarding the Regulation of Groundwater Protection at their In Situ Leach Uranium Recovery Facilities at 2-3 (2005), Addendum ("Add.") at C84. EPA's regulations provide that groundwater restoration standards should be either a) the background condition of the groundwater or b) the maximum contamination level set by the EPA pursuant to the Safe Drinking Water Act. 40 C.F.R. §§ 192.32(a)(2), 264.94. HRI's License reflects these requirements in License Condition ("LC") 10.21(A). Joint App. at 320.

c. NRC's requirements for financial assurance for decommissioning

The Commission has determined that adequate financial assurance for decommissioning of source materials operations is essential to the fulfillment of its statutory mandate to protect public health and safety and ensure that cleanup will not become a public liability. Final Rule, Uranium Mill Licensing Requirements, 45 Fed. Reg. 65,521, 65,523, 65,526 (Oct. 3, 1980). Thus, NRC regulations require each license applicant to submit a "decommissioning funding plan," including an estimate of the costs of decommissioning. 10 C.F.R. §§ 40.36(a); 10 C.F.R. Part 40, Appendix A, Section II, Criterion 9. *See also* CLI-00-8, 51 NRC 227, Joint App. at 548-556.

3. Requirement for hearing on license applications

Section 189a of the AEA provides that:

> In any proceeding under this chapter, for the granting, suspending, revoking, or amending of any license … the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding.

42 U.S.C. § 2239(a)(1)(A). Both the U.S. Court of Appeals and the Commission have interpreted this provision to require that all material aspects of a licensing decision must be subject to a public hearing. Union of Concerned Scientists v. NRC, 735 F.2d 1437, 1438-1450 (D.C. Cir. 1984), cert. denied, 469 U.S. 1132 (1985); Wisconsin Power Co. & Wisconsin-Michigan Power Co. (Point Beach Nuclear Power Plant, Unit 2), CLI-73-4, 6 AEC 6 at 7 (1973); Consolidated Edison Co. of New York, Inc. (Indian Point Station, Unit No. 2), CLI-74-23, 7 AEC 947, 951-952 (1974).

B. National Environmental Policy Act

NEPA has two aims:

> First, it places upon a federal agency the obligation to consider every significant aspect of the environmental impact of a proposed action. Second, it insures that the agency will inform the public that it has indeed considered environmental concerns in its decision-making process.

Baltimore Gas & Electric Co. v. Natural Resources Defense Council, 462 U.S. 87, 97 (1983). NEPA ensures these goals are fulfilled by requiring

federal agencies to prepare environmental impact statements ("EISs") that take a "hard look" at the environmental consequences of proposed actions. *See* Utahns for Better Transp. v. U.S. Dept. of Transp., 305 F.3d 1152, 1163 (10th Cir. 2002).

The environmental impacts that must be examined in an EIS include not only the incremental impacts of the discrete proposed action, but the action's "cumulative" impacts," *i.e.* 'the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions . . ." 40 CFR §1508.7. An EIS must consider reasonably foreseeable catastrophic consequences even if their probability is low. 40 C.F.R. § 1502.22(b).

VI. STATEMENT OF FACTS

From the beginning of the Atomic Age, the Navajo people have been at the epicenter of uranium production in the United States, sustaining devastating effects on their health, air, lands and water. Navajo uranium miners, including potentially hundreds within the Church Rock area alone, were exposed to radon, uranium and other contaminants from their work in uranium mines and mills during the 1950s through the 1980s. Written Testimony of Christine J. Benally, Ph.D., at 21 (Feb. 15, 1999), attached as Exhibit 2 to Eastern Navajo Diné Against Uranium Mining's and Southwest

Research and Information Center's Brief in Opposition to Hydro Resources, Inc.'s Application for a Materials License With Respect to Environmental Justice Issues (Feb. 19, 1999) ("Environmental Justice Brief"), Joint App. at 440. Most of the uranium mines on the Navajo Nation were abandoned and never reclaimed. Id. at 24, Joint App. at 443. As a result, members of the Navajo Nation, in particular those living in and near Church Rock, are chronically exposed to dangerous levels of radiation. Id. at 38-40, Joint App. at 450-452. The natural resources in the area, including surface water, soil, and livestock, are likewise contaminated with radioactivity from past uranium mining and milling activities. Id. at 40-42, Joint App at 452-454; *see also* NUREG 1508, Draft Environmental Impact Statement to Construct and Operate the Crownpoint Uranium Solution Mining Project, Crownpoint, New Mexico (1994) ("DEIS") at 3-19 (Joint App. at 226) and FEIS at 4-117, Joint App. at 284. It is in this context that the NRC's actions in this case must be evaluated.

A. Description of Petitioners

Eastern Navajo Diné Against Uranium Mining ("ENDAUM") is a Navajo community organization whose members reside principally in Church Rock and Crownpoint, New Mexico, within the Navajo Nation. Southwest Research and Information Center ("SRIC") is a New Mexico-

based non-profit educational organization dedicated to providing the public with scientific information on the environment, including the development of uranium on Indian lands. Marilyn Morris and Grace Sam are residents of Pinedale, New Mexico, within the Eastern Agency of the Navajo Nation, who graze their livestock in close proximity to the HRI mine site.

B. HRI's License and ISL Operation

HRI's license allows it to conduct uranium ISL mining on four sites in the towns of Church Rock and Crownpoint, including Church Rock Sections 8 and 17.[5] ISL mining involves injecting a solution of water, dissolved oxygen, and sodium bicarbonate (known as "lixiviant") into the ground to dissolve uranium into the groundwater. The uranium-laden solution (known as "pregnant lixiviant") is then pumped to the surface for processing. LBP-05-17, 62 NRC at 82, Joint App. at 965. At a processing plant on the surface, the uranium is chemically stripped from the groundwater, which is then returned to the aquifer to extract more uranium. Id. at 83, Joint App. at 965.

The target of the lixiviant is the ore zone, which consists of long, thin, discreet deposits of uranium located within the surrounding geologic formation. FEIS at 3-12, Joint App. at 247. The ore zone "contain[s]

higher concentrations of uranium and other chemical constituents (radium, molybdenum, etc.) than are found outside the ore zone." Affidavit of William H. Ford at 25, ¶ 40 (Feb. 20, 1998) ("1998 Ford Affidavit"), attached to NRC Staff's Response to Motion for Stay, Request for Prior Hearing, and Request for Temporary Stay (Feb. 20, 1998), Joint App. at 331.

C. Environmental Conditions at Church Rock

HRI's Section 17 licensed area at Church Rock is located on land held in trust by the U.S. Government for the Navajo Nation and leased by the Bureau of Indian Affairs to local residents who live and graze their livestock there.[6] Three families live on Section 17 *inside* the licensed area,[7] and approximately 850 people live within five miles of the Section 8 and Section 17 mining sites.[8]

---

[5] HRI's licensed areas at Church Rock are depicted in the FEIS at pages 2-25 and 2-29, Joint App. at 245-246.

[6] See FEIS at 2-25, Joint App at 245. *See also* Declaration of Larry J. King, ¶¶ 3 and 4 and Exhibit 3 (June 2, 2005) ("King Declaration"), attached to Intervenors ENDAUM's and SRIC's Written Presentation in Opposition to HRI's Application for a Materials License With Respect to Radiological Air Emissions for Church Rock Section 17 (June 13, 2005) ("Intervenors' Air Presentation"), Joint App 835, 838.

[7] King Declaration, ¶¶ 3, 4, 8 and Exhibit 3 attached to Intervenors' Air Presentation, (Joint App. at 835, 838); FEIS at 2-29, Fig. 2.10, Joint App. at 246.

HRI's licensed area on Section 17 includes the site of the abandoned Old Church Rock Mine, an underground uranium mine that operated in the early 1960s and from 1977 to 1983 before it was purchased by HRI in the early 1990s. CLI-06-14, 63 NRC at 514, Joint App. at 1354. Although some of the mine waste has been removed, the surface of the Section 17 portion of HRI's Church Rock licensed area remains contaminated by "dust and rocks apparently lost from trucks hauling the ore from the site, or possibly from excavated rock used to build the road." Id.

1. Airborne radioactive contamination at Church Rock

Mine waste at HRI's Church Rock sites emits gamma radiation, which emanates from uranium-decay chain radionuclides, such as radium, and airborne radon. The DEIS reports that near the Old Church Rock mine, HRI measured elevated radon levels that were more than ten times higher than radon levels at Crownpoint, where no mining had occurred. DEIS Table 3.2 at 3-19, Joint App. at 226. HRI has also recorded gamma radiation emissions near the Old Church Rock mine that were seventeen to twenty-nine times higher than "typical" gamma radiation levels for the area. Id. at

[8] Testimony of Dr. Robert D. Bullard Regarding Environmental Justice Issues at the Crownpoint Uranium Project at 25 and Exhibit J attached thereto (Feb. 17, 1999), attached as Exhibit 1 to Environmental Justice Brief, Joint App. at 460.

3-20. In 2003, more than 20 years after the Old Church Rock Mine closed, consultants to the Church Rock Chapter measured high levels of gamma radiation on Section 17 in the area around the Old Church Rock Mine. *See* Declaration of Melinda Ronca-Battista, pars. 21-27 (June 12, 2005) ("Ronca-Battista Declaration"), attached to Intervenors' Air Presentation, Joint App. at 824-827.

2. Drinking water quality at Church Rock

The licensed portions of Church Rock Section 8 and Section 17 are underlain by the Dakota Sandstone and Westwater Canyon aquifers, both of which provide drinking water for residents throughout the Eastern Navajo Agency. According to the FEIS, current water quality in the Dakota Sandstone and Westwater Canyon aquifers at Church Rock Sections 8 and Section 17, prior to the commencement of HRI's proposed mining activities, is "good and meets New Mexico drinking water quality standards." [9]

---

[9] FEIS at 3-35, Joint App. at 252. *See also* Church Rock Revised Environmental Report at 86 (1993) (Joint App. at) ("In most cases, water quality parameters [at the Church Rock site] meet New Mexico standards for human consumption") (Joint App. at 212) and Church Rock Well Tables contained therein (Joint App. at 213-223); Affidavit of Dr. Richard J. Abitz at 15 (January 8, 1999), attached as Exhibit 1 to Intervenors Amended Written Presentation in Opposition to Hydro Resources, Inc.'s Application for a Materials License With Respect to Groundwater Protection (January 18, 1999) ("Intervenors' Phase I Groundwater Presentation") (Joint App. at 429) ("undisturbed groundwater in the mineralized zones is not necessarily

Although there are no drinking water wells within the boundary of the licensed Church Rock mine site, private wells are "widely dispersed" in the area. FEIS at 3-31, Joint App. at 251. The Westwater Aquifer alone is estimated to be used by more than 13,000 people for drinking water and is viewed by the Navajo Nation as the most important groundwater resource for future supplies in the Eastern Agency.[10]

D. NRC License Terms and Environmental Analysis for Groundwater Quality Restoration and Surety.

1. License requirements for groundwater restoration.

HRI's license requires that before mining may begin, it must establish "groundwater restoration goals" on a "parameter-by-parameter" basis for an array of chemicals and radionuclides. LC 10.21(A) and (B), Joint App. at 320. The license establishes a "primary restoration goal" of returning all parameters to "average pre-lixiviant injection conditions," also known as "baseline" conditions. Id. If this goal cannot be met, the license establishes a "secondary goal" of returning groundwater to "the maximum concentration

---

unfit for human consumption") (Joint App. at); Declaration of Dr. John W. Leeper at 5, ¶ 10; 15, ¶ 28; and 17, ¶ 31 (March 1, 2005) ("Leeper Declaration"), attached as Exhibit E to Intervenors Written Presentation in Opposition to Hydro Resources, Inc.'s Application for a Materials License With Respect to Groundwater Protection, Groundwater Restoration and Surety Estimates (March 7, 2005), Joint App. at 753, 763, 765.

limits as specified in the EPA's secondary and primary drinking water regulations." Id. The license also established a secondary restoration goal of 0.44 milligrams per liter ("mg/l") for uranium. Id. This restoration standard was later decreased to the more stringent level of 0.03 mg/l. LBP-05-17, 62 NRC at 92. Joint App. at 970. The actual numerical standards representing baseline water quality (i.e., primary restoration goals) *have not been established*, and will not be established until after the license is issued but before injection of lixiviant. License, LC 10.21, Joint App. at 320[11].

2. Decommissioning funding requirements.

License Condition 9.5 requires HRI to submit an "NRC-approved surety arrangement to cover the estimated costs of decommissioning reclamation and groundwater restoration." Joint App. at 315-316. The license requires that the surety for "groundwater restoration of the initial well fields" (*i.e.*, HRI's initial well fields on Church Rock Section 8) must be based on "9 pore-volumes." Id. A "pore volume" is "the water that fills the void space inside a certain volume of rock or sediment." FEIS at 4-29, Joint App. at 258. HRI must set aside a financial surety large enough to

---

[10] Leeper Declaration at 5, ¶ 9; 8-9, ¶¶ 19-20; 11, ¶ 23, Joint App. at 713, 756-757, 759.

[11] The Commission also concluded that restoration goals could be established after the conclusion of the administrative proceeding. CLI-06-1, 63 NRC at 4-5, Joint App. at 1324.

flush the initial Section 8 well field nine times with the volume of water held by the host aquifer. The amount of the surety for all of the other mines sites must remain at that level "until the number of pore volumes required to restore the groundwater quality of a production-scale well field" has been established by using the restoration of Section 8 as a "demonstration." Id.

HRI determined the amount of the surety by multiplying (a) the estimated pore volume or number of gallons of water held by the aquifer, (b) HRI's estimate of the number of times that the pore volume must be flushed through the aquifer to achieve restoration standards, and (c) the estimated dollar value for each gallon of water used to flush the aquifer. Church Rock Section 8/Crownpoint Processing Plant Restoration Action Plan § E.2, Joint App. at 565-571. Based on nine pore volumes, HRI estimated that it would require 1,330,327,106 gallons of water to restore groundwater at Church Rock Section 8, at a cost of $ 7,131,813. Id., Attachment A-1, Joint App. at 565-571.[12]

3. FEIS analysis in support of groundwater surety amount

The FEIS describes the process by which the NRC technical staff arrived at its decision to base HRI's required decommissioning surety

amount on flushing nine pore volumes of water through the aquifer. In deciding on nine pore volumes, the NRC staff relied on several tests conducted by HRI and historical data from a prior ISL pilot project called "Mobil Section 9." FEIS at 4-29 – 4-37, Joint App. at 258-266.

As dramatically demonstrated by Table 4.9 of the FEIS, almost all of the tests relied on by the NRC failed to restore groundwater quality.[13] In the Mobil Section 9 pilot project — the largest ISL pilot test and the test deemed the most "applicable" by the Presiding Officer (LBP-99-30, 50 NRC at 106, Joint App. at 527) — flushing with 16.7 pore volumes failed to restore groundwater to baseline levels for eighteen of twenty-eight contaminants, including the toxic and/or radioactive constituents arsenic, radium-226, and uranium. FEIS at 4-38, Table 4.13, Joint App. at 267. HRI's Crownpoint slow core leach test could not return arsenic, barium, radium-226, selenium or uranium to baseline values after flushing with twenty-eight pore volumes.

---

[12] HRI has committed to funding only about a third of the total Section 8 surety because it plans on developing only a portion of the Section 8 ISL mine initially. Id.; *see also* LBP-04-3, 59 NRC 84, 94-95 (2004).

[13] FEIS at 4-40, Joint App. at 255. Only one of the tests relied on in the FEIS (the single hole "Teton" test) successfully restored groundwater to baseline for most contaminants with less than nine pore volumes. FEIS at 4-36, Table 4.12, Joint App. at 265. But the NRC staff admitted that the Teton test "may not represent restoration of a full-scale well field" because, among several reasons, "considerable dilution" by uncontaminated groundwater

Id. at 4-35, Table 4.11. HRI's fast core leach test could not return arsenic, uranium or radium-226 to baseline conditions after flushing the mine with 16 pore volumes of fresh water. Id. at 4-34, Table 4.10. With respect to total dissolved solids and specific conductivity values, the NRC admitted that groundwater quality "showed little improvement with continued pumping after 8 to 10 pore volumes."[14] .

Nevertheless, despite these dismal results, the FEIS inexplicably concludes, "practical production-scale groundwater restoration activities would *at most* require a 9 pore volume restoration effort." FEIS at 4-40, Joint App. at 269(emphasis added).

E. FEIS Analysis of Environmental Impacts of Airborne Radioactive Emissions

The FEIS acknowledges that the Church Rock mine site is contaminated. FEIS at 4-117, Joint App. at 284. Nevertheless, in evaluating the cumulative impacts of airborne radioactive emissions from HRI's mine, the FEIS fails to assess the present and future contribution of radiation doses from Church Rock mine waste to the overall impacts of HRI's mining

---

occurred during restoration and the test was not conducted long enough. FEIS at 4-31, Joint App. at 260.

[14] The NRC Staff's hydrology expert, William Ford, conceded that "for uranium and radium, greater than 12 and 16 pore volumes, respectively, was

operation. Instead, the FEIS only focuses on the incremental impacts of radioactive emissions (largely, those from radon) from HRI's prospective ISL mining operation. FEIS at 4-125, Joint App. at 290.

Paradoxically, at the same time that it ignores the impacts of radiation doses from existing mine waste at Church Rock, the FEIS attempts to justify licensing HRI's mine by claiming that the Church Rock contamination may be cleaned up as a result of the issuance of the license. FEIS at 4-88, Joint App. at 278; *see also* FEIS at 4-117, Joint App. at 284.

F. NRC Hearing on HRI License Application

The Petitioners requested and were granted an informal adjudicatory hearing, before an NRC Presiding Officer, regarding the safety and environmental risks posed by the proposed HRI mine, including (1) inadequate air emissions control; (2) degradation of the Crownpoint and Church Rock water supplies, threatening public health; (3) failure to demonstrate that adequate restoration (particularly for uranium) can be achieved; and (4) inadequate financial surety for the proposed restoration and reclamation plan. LBP-98-9, 47 NRC at 281-282.

---

needed to achieve relevant Federal standards." 1998 Ford Affidavit at 26, ¶ 42, Joint App. at 332.

As provided in 10 C.F.R. § 2.1233,[15] the Petitioners submitted written legal and evidentiary presentations regarding the inadequacy of HRI's license application and the NRC's supporting environmental analysis. These presentations consisted of briefs, supporting affidavits from experts and nearby residents, and documentary evidence.

1. Section 17 airborne radiological emissions

In the hearing on HRI's license application with respect to Section 17, Petitioners presented legal arguments and evidence demonstrating that HRI's license application failed to satisfy 10 C.F.R. § 20.1301(a)(1) radiation dose limits. Intervenors' Air Presentation, Joint App. at 773-822. Through expert testimony, including field measurements, Petitioners showed that existing radon and gamma emissions from mine waste on the Section 17 mine site yield radiation doses to nearby Navajo ranchers in excess of the § 20.1301(a)(1) standard. Id. at 17. *See also* Declaration of Bernd Franke, ¶ 15 (June 12, 2005) attached to Intervenors' Air Presentation, (Joint App. at 840), and Exhibit 2 attached thereto, Crownpoint Uranium Mining Project: Review of Outdoor Gamma Radon Levels and External Gamma Radiation at 4-7 (January 5, 1999) (Joint App. at 848-851); Ronca-Battista Declaration,

[15] The administrative proceeding was governed by the regulations in 10 C.F.R. § 2.1201 *et. seq.* These regulations were amended in 2004, but the

¶¶ 21-27, Joint App. at 825-828. Petitioners also showed that radiation doses to people living and grazing their cattle on Section 17 would be more than ten times in excess of the NRC's TEDE limits due to exposure to radiation from the mine waste *alone*. Id. Subsequently, the Petitioners submitted a supplemental brief responding to questions posed by the Presiding Officer regarding the appropriate interpretation of NRC standards for the control of radiation doses to the public.[16]

The Presiding Officer concluded in LBP-06-01 that radioactive emissions from previous uranium mining operations on Section 17 must be excluded from the TEDE as "background" radiation. 63 NRC 41, Joint App. at 1302-1321. Petitioners sought Commission review of LBP-06-01 and filed a supplemental brief at the Commissioners' request.[17] The Commission affirmed LBP-06-01 in CLI-06-14, 63 NRC 510, Joint App. at 1352-1357.

---

new regulations only applied to proceedings initiated after February 13, 2004. *See e.g.*, LBP-06-1, 63 NRC at 49, n. 3.

[16] Order Directing Parties to Provide Supplemental Briefing in Phase II Radiological Air Emissions Challenges to In Situ Leach Uranium Mining License (November 15, 2005) (Joint App. at 1250); Intervenors' Supplemental Brief on Radioactive Air Emissions (December 7, 2005) ("Intervenors' Supplemental Air Brief"), Joint App. at 1254-1301.

Separately, Petitioners presented evidence and legal arguments challenging the FEIS' failure to adequately consider the environmental impacts of radioactive airborne emissions at Church Rock Section 17.[18] The Presiding Officer ruled against Petitioners in LBP-06-19, 64 NRC 53, Joint App. at 1358-1384. His decision was affirmed by the Commission in CLI-06-29, 64 NRC 417, Joint App. at 1385-1391.

2. Groundwater restoration and decommissioning funding

In the portion of the hearing devoted to the adequacy of HRI's decommissioning cost estimates, the Petitioners argued that the NRC failed to comply with regulations for protection of public health and safety by approving a facially inadequate groundwater restoration surety.[19] In LBP-

---

[17] Intervenors' Petition for Review of LBP-06-01 (January 26, 2006)(Joint App. at 1327-1338); Intervenors' Supplemental Brief Regarding Church Rock Section 17 Air Emissions (March 13, 2006), Joint App. at 1254-1301.

[18] Intervenors' Written Presentation in Opposition to Hydro Resources, Inc.'s Application for a Materials License With Respect to NEPA Issues for Church Rock Section 17, Unit 1 and Crownpoint at 20-26 (June 24, 2005), Joint App. at 913-919.

[19] Eastern Navajo Diné Against Uranium Mining's and Southwest Research and Information Center's Brief in Opposition to Hydro Resources, Inc.'s Application for a Materials License With Respect to: Financial Assurances for Decommissioning at 15-16 (Jan. 11, 1999) ("Intervenors' 1999 Financial Surety Presentation") (Joint App. at 371-372); Brief of Intervenors Eastern Navajo Diné Against Uranium Mining and Southwest Research and

99-13, the Presiding Officer rejected Petitioners' claim. 49 NRC 233, Joint App. at 472-476. The Commission affirmed LBP-99-13 in CLI-00-08, 51 NRC 227, Joint App. at 548-556.

In the portion of the hearing related to financial assurance for decommissioning, Petitioners also challenged the effectiveness of flushing HRI's mine with nine pore volumes, based on information in the FEIS demonstrating the ineffectiveness of nine pore volumes.[20] The Presiding Officer ruled against Petitioners in LBP-99-13, 49 NRC at 236-237 (Joint App. at 474) and the Commission denied review in CLI-00-12, 52 NRC 1, Joint App. at 560-564. The Commission subsequently refused to reconsider its decision regarding the pore volume issue in CLI-04-33, 60 NRC 581, Joint App. at 628-641. In the subsequent phase of the proceeding, the pore volume issue was held to be settled by the law of the case doctrine, although in the alternative, the Presiding Officer found against Petitioners on the merits. LBP-05-17, 62 NRC at 103-108, 110, Joint App. at 975-978.

Information Center on Review of Partial Initial Decision LBP-99-13, Financial Assurance for Decommissioning at 6, 23 (Aug. 13, 1999), Joint App. at 505, 508.

VII. SUMMARY OF THE ARGUMENT

The NRC is charged by the AEA with the responsibility to protect the residents of Church Rock and surrounding communities from the dangers of radioactive materials. In this case, however, the NRC violated this fundamental directive by allowing HRI to operate on a contaminated site whose radioactive emissions yield public radiation doses in excess of federal standards. Based on an impermissible interpretation of its regulations, the NRC issued HRI a license to operate on Section 17 in spite of the fact that airborne radiation doses to the public exceed NRC regulatory limits for protection of public health.

The NRC's evaluation of the cumulative environmental impacts of HRI's mining operation violated NEPA by failing to include the present and ongoing environmental impacts of radioactive air emissions from mine waste at Church Rock Section 17. Instead, the NRC distorted the analysis by considering only the relatively small incremental impacts of HRI's proposed ISL mine.

In addition, the NRC violated its statutory and regulatory mandate to protect public health and safety, and acted arbitrarily and capriciously by approving a groundwater restoration surety estimate for HRI's Section 8

---

[20] Intervenors' 1999 Financial Surety Presentation at 15-16, Joint App. at

mine that is facially inadequate to remove hazardous radioactive and toxic contaminants from the groundwater after mining operations have concluded.

Finally, the NRC violated NEPA by failing to consider the environmental impacts of groundwater contamination in the reasonably foreseeable event that HRI lacks sufficient funds to restore the Section 8 aquifer.

VIII. ARGUMENT

A. Standard of Review

The APA provides that an agency's decision will be set aside if it is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law. 5 U.S.C. § 706(2)(A). While courts generally defer to an agency's legal interpretation of its own regulations, the agency's discretion is "not absolute." Culbertson v. U.S. Depart. of Agric., 69 F.3d 465, 467 (10th Cir. 1995). The Court may reject an agency's interpretation of its own regulations that is "unreasonable, plainly erroneous, or inconsistent with the regulation's plain meaning." Id. (quoting Lewis v. Babbitt, 998 F.2d 880, 882 (10th Cir. 1993)). Agencies may not make "fundamental changes" to their interpretation of governing regulations without a notice and comment rulemaking. Paralyzed Veterans of America v. D.C., 117 F.3d 579, 586

371-372.

(D.C. Cir. 1997); Alaska Professional Hunters Ass'n v. FAA, 177 F.3d 1030, 1033-34 (D.C. Cir. 1999).

Factual decisions are reviewed under the arbitrary and capricious standard. Mohave Elec. Coop., Inc. v. NLRB, 206 F.3d 1183, 1188 (D.C. Cir. 2000). The court must ascertain whether the agency examined the relevant data and articulated a rational connection between the facts found and the decision made. Cliffs Synfuel Corp. v. Norton, 291 F.3d 1250, 1257 (10th Cir. 2002) (internal quotation marks omitted). The agency action may be overturned:

> if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

Ecology Center, Inc. v. United States Forest Service, 451 F.3d 1183, 1189 (10th Cir. 2006) quoting Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29 (1983).

In reviewing NEPA decisions, the Tenth Circuit employs the "rule of reason" or "abuse of discretion" test to determine whether the agency has taken the requisite "hard look" at the environmental aspects of a proposed action. Utahns, 305 F.3d at 1163; *see also* Environmental Defense Fund v. Andrus, 619 F.2d 1368, 1375 (10th Cir. 1980), citing Manygoats v. Kleppe,

558 F.2d 556, 560 (10th Cir. 1977). The environmental aspects of a project must be related in an EIS in such detail that the consequences of the action are apparent and it is possible to make a reasoned choice of alternatives. Andrus, 619 F. 2d 1152.

B. The NRC's Decision to Exclude from the TEDE Radioactive Emissions From Previous Mining Operations at Section 17 Is Inconsistent With the Plain Language of NRC Regulations.

NRC regulation 10 C.F.R. § 20.1301(a)(1) requires that:

> (a) Each licensee shall conduct operations so that –
> (1) The total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year, exclusive of the dose contributions from background radiation, from any administration the individual has received, from exposure to individuals administered radioactive material and released under § 35.75, from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage in accordance with § 20.2003.

As demonstrated by Petitioners in their evidentiary presentations, HRI does not comply with § 20.1301(a)(1) because non-background radioactive emissions from existing mine waste at the Section 17 portion of HRI's licensed operation already yield radiation doses in excess of the NRC standard, even without adding the emissions from HRI's prospective mining activities.[21] The NRC offers three plainly invalid rationales for refusing to

[21] *See* Intervenors' Air Presentation at 12-22, Joint App. at 905-915; Intervenors' Supplemental Air Brief at 6-19, Joint App. at 1264-1277.

consider the radiation doses from Section 17 mine waste in calculating the TEDE: first, that the AEA does not permit such consideration because the NRC does not regulate mining; second, that the doses do not come from the "licensed operation" as the term is used in 10 C.F.R. § 20.1301(a)(1); and finally, that the emissions from the Section 17 mine waste constitute "background radiation." All three rationales are inconsistent with the plain language of the AEA and NRC regulations, and contradict the regulatory scheme and history of 10 C.F.R. Part 20.

1. The Atomic Energy Act authorizes the NRC to consider radiation from unregulated sources in calculating the TEDE.

The Commission's decision in CLI-06-14 rests on the fundamentally flawed premise that because the NRC is not authorized to regulate the conventional mining activities that generated the mine waste at HRI's Section 17 mining site, it lacks authority under the AEA and its implementing regulations to take the mine waste emissions into account in determining whether HRI satisfies the radiation dose limits in 10 C.F.R. § 20.1301(a)(1). The Commission concluded:

> Were the NRC to expand the definition of TEDE to include radioactive air emissions from debris left over from unlicensed conventional mining activities, the agency, in effect, would be entering an area of regulation that it has historically considered beyond the scope of the Atomic Energy Act. This we decline to do.

CLI-06-14, 63 NRC at 515, Joint App. at __. The NRC's narrow interpretation of the AEA is not consistent with the statute's plain language. The AEA forbids the NRC from issuing a license if the Commission believes that "the issuance of a license … would be inimical to the common defense and security or the health and safety of the public." 42 U.S.C. § 2099. This language does not just require the NRC to determine whether the *permitted activity* would be inimical to public health and safety, but instead whether the *issuance of a license* would be inimical to public health and safety.

Regardless of the NRC's authority to regulate the possession or use of mine waste, there is no question that the AEA authorizes the NRC to consider the contribution of radiological emissions from mine waste to the health effects of its licensing decisions. Here, the AEA authorizes the NRC to consider the contribution to the TEDE by existing radiological emissions from Section 17 that are under HRI's control.

2. The Commission's narrow interpretation of "licensed operation" is inconsistent with NRC regulations and the NRC's own licensing actions.

In CLI-06-14, the Commission ruled that in requiring TEDE compliance for radiation doses "from the licensed operation," Section 20.1301(a)(1) imposes the requirement that radiation doses must be "directly

linked to licensed activity" through processing, handling, or licensing. CLI-06-14, 63 NRC at 516, Joint App. at 1355. This overly narrow interpretation of the term "licensed operation" conflicts with the statutory and regulatory scheme described in Section VIII.B.1 above, and with the NRC's own licensing actions in this case. The AEA requires the NRC to ensure that issuance of the license itself, not just the processes authorized by the license, is not inimical to public health and safety. 42 U.S.C. § 2099. [22]

The license issued by the NRC for the HRI mine also contradicts the Commission's ruling in CLI-06-14, by establishing that HRI has a license not just for an activity, but for "*the place(s) designated"* in the license, including Section 17. License at 1, Joint App. at 314 (emphasis added).[23] Given that the license has the force of law, the NRC's interpretation of its regulations must be consistent with the terms of the license. *See* Culbertson, 69 F.3d at 467.

---

[22] Moreover, as discussed below in Section VIII.B.3, the regulatory history of Part 20 shows that the Commission's primary criterion for whether a radiation source should be included in the TEDE calculation is whether it is under the control of the licensee, irrespective of whether it is directly related to the licensed activity.

[23] HRI's Consolidated Operations Plan ("COP"), Rev. 2.0, whose terms are incorporated in Condition 9.3 of the License, describes the designated Section 17 licensed area very specifically as: "200.0 acres being NE/4, and the SE/4 NW/4." Id. at 7, Figure 1.1-3 (1997). Joint App. at 310, 314. This licensed area includes the site of the old Church Rock mine. *See* discussion in Section VI.B, *supra.*

Finally, as implicitly conceded by the Commission, its interpretation of the term "licensed operation" violates the standard principle of statutory and regulatory interpretation that a provision must be read in a way that gives meaning to all of its terms:

> . . . simply interpreting the phrase 'from the licensed operation' as limiting the scope of TEDE arguably renders unnecessary other provisions in the TEDE rule expressly excluding doses resulting from medical administration and disposal of radioactive material in sanitary sewerage.

63 NRC at 516, citing LBP-06-01, 63 NRC at 66 n.22. *See* Rucker v. Wabash Railroad Co., 418 F.2d 146, 150 (7th Cir. 1969) (regulation may not be construed to "read out" one of its terms). If the radioactive sources covered by the dose limits in Section 20.1301(a)(1) consisted only of sources that were handled or processed in the course of the licensed activity, then it would not be necessary to explicitly exempt doses resulting from medical administration and disposal of radioactive material in sanitary sewers. In order to give meaning to the entire regulation, the rule must be interpreted to cover unlicensed sources of radioactivity within the area of the licensed operation that are not directly related to the activities authorized by the license, such as the mine waste at Section 17.

3. The NRC historically has interpreted Part 20 regulations to require consideration of unlicensed non-background radiation sources in estimating the TEDE.

Contrary to CLI-06-14, the NRC historically has interpreted the AEA to require it to consider unlicensed radiation sources in calculating the TEDE. Dating back to its earliest radiation protection standards, the NRC (formerly the Atomic Energy Commission or "AEC") included unlicensed and unregulated radiation sources in its evaluation of licensee compliance with radiation exposure limits:

> The use of radioactive material or other sources of radiation not licensed by the Commission is not subject to the regulations in this part. However, it is the purpose of the regulations in this part to control the possession, use, and transfer of licensed material by any licensee in such a manner that exposure to such material and to radiation from such material, *when added to exposures to unlicensed radioactive material and to other unlicensed sources of radiation in the possession of the licensee and to radiation therefrom, does not exceed the standards of radiation protection prescribed in the regulations in this part.*

Statement of Purpose, 10 C.F.R. § 20.1(b), 22 Fed. Reg. 548, 549 (January 29, 1957) (emphasis added) (Add-C43). The only significant aspect of the NRC's Part 20 regulatory scheme that has changed since 1957 is that between 1979 and 1991, the Commission *broadened* the statement of purpose to remove the requirement that in order to be considered in

evaluating compliance with radiation dose limits, the source of radiation had to be in the licensee's control or possession.[24]

In 1986, the NRC issued a proposal to add public dose limits to the Part 20 regulations.[25] Like the 1979 rule, the 1986 proposed rule sought to continue the NRC's expanded interpretation of the scope of the regulations.

> (a) Exposure of any individual member of the public shall be constrained so that the total dose from *all known sources and operations, licensed and unlicensed*, except for natural background, medical diagnosis, and therapy, and radioactive material disposed into sanitary sewerage according to § 20.10003, does not exceed 0.5 rem 95 mSv) per year. . . .

---

[24] The 1979 version of the regulations, which remained in effect until the 1991 revisions, provided that:

> [I]t is the purpose of the regulations in this part to control the possession, use, and transfer of licensed material by any licensee in such a manner that the total dose to an individual (*including exposures to licensed and unlicensed radioactive material and to other unlicensed sources of radiation, whether in the possession of the licensee or any other person, but not including exposures to radiation from natural background sources or medical diagnosis and therapy*) does not exceed the standards of radiation protection described in the regulations in this part.

10 C.F.R. § 20.1(b), 44 Fed. Reg. 32,352 (June 6, 1979) (emphasis added) (*see* Add-C45).

[25] Proposed Rule, Standards for Protection Against Radiation, 51 Fed. Reg. 1,032 (January 9, 1986) ("1986 Proposed Rule") (Add-C47). Earlier regulations limited radiation doses by setting concentration limits for radioactive effluents, designed to ensure that members of the public would not receive a total radiation dose of more than 0.5 rem per year from all sources. 51 Fed. Reg. at 1,112 (Add-C49).

51 Fed. Reg. at 1,133 (emphasis added) (Add-C59). As explained in the preamble to the proposed rule, the term "all known sources and operations" encompassed offsite as well as onsite sources, including neighboring nuclear facilities operated by the Department of Energy or licensed by the NRC. 51 Fed. Reg. at 1,112 (Add-C49).

In proposing the new public dose limit of 0.5 rem/year, however, the Commission recognized that its proposal to include "all known sources and operations" within the allowable dose posed a number of impracticalities, including the fact that:

> "individual members of the public might be subjected to exposures to radiation from several sources, *not all of which are controlled by the licensee.*"

51 Fed. Reg. at 1,133 (emphasis added) (Add-C59). As a remedy for this problem, the Commission proposed a "reference level" of 0.1 rem/year for individual "operations," stating that:

> Operations that result in doses at or below these reference levels will ensure that no individual member of the public will be subject to doses that exceed the annual dose limits [of 0.5 rem/year] in § 20.310.

Proposed 10 C.F.R. § 20.303, 51 Fed. Reg. at 1,133 (Add-C59). Thus, the word "operations" was linked in the proposed rule to radiation sources within the licensee's control.

In 1991 the NRC issued a Final Rule that simplified the regulation by adopting a "primary dose limit for protection of the public" of 0.1 rem/year from the "licensed operation." Final Rule, Standards for Protection Against Radiation, 56 Fed. Reg. 23,360, 23,374, 23,398 (May 21, 1991) ("1991 Final Rule") (Add-C65).[26]

The 1991 Final Rule clarified that control by the licensee was the key factor in determining whether to include doses from a particular radiation source in the calculation of the TEDE. In response to a comment that the radiation dose included in the new dose limit "should not be all-inclusive and should not include fallout from nuclear weapons tests, transportation of radioactive material, or other sources of radiation not under the control of the licensee," the Commission responded that:

> The new lower dose limit for members of the general public (which was described as a 'reference level' in the proposed rule) applies only to doses from radiation and radioactive materials *under the licensee's control.*

56 Fed. Reg. at 23,374 (emphasis added).

Thus, under the NRC's longstanding interpretation of the AEA and its own regulations, the mere fact that the NRC does not regulate or license non-background radioactive material does not exclude the consideration of

[26] The Commission did not consider this to be a "major change from the proposed rule." 56 Fed. Reg. at 23,374. (Add-C70).

emissions from that material in determining TEDE compliance. The operative factor is whether the material is *under the licensee's control.* The NRC may not change this longstanding interpretation of its regulations without initiating a notice-and-comment rulemaking. Paralyzed Veterans of America, 117 F.3d at 586.[27]

4. The Commission's conclusion that radioactive emissions from mine waste on Section 17 constitute background radiation is contradicted by the language and history of the NRC's Part 20 rules.

In concluding that the radioactive emissions from mine waste on Church Rock Section 17 constitute "background radiation" that is excluded from the TEDE limits in 10 C.F.R. § 20.1301(a)(1) (CLI-06-14, 63 NRC at 517-20), the Commission disregarded the plain language of its own regulations and the history of the regulations.

a. The Commission's decision in CLI-06-14 conflicts with the plain language of NRC regulations.

---

[27] Clearly, mine waste on HRI's Section 17 mine site meets the criterion of being under HRI's control. *See also* LBP-99-19, 49 NRC at 427, Joint App. at 1444(finding that Section 17 mine waste is "[a]rguably" under HRI's control "because remedial measures may be taken to reduce radiation from those sources" and because HRI "obtained its title from a prior land owner who is in the same chain of title and whose acts may reasonably be said to pass with the title"). Only if the material constitutes a source of "background radiation" may it be excluded. *See* discussion below in Section VIII.B.4.

NRC regulations define background radiation as:

> radiation from cosmic sources; naturally occurring radioactive material, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee. "Background radiation" does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission.

10 C.F.R. § 20.1003. Under the principle that terms must be given their "ordinary meaning," Smith v. United States, 508 U.S. 223, 228 (1993), the term "naturally occurring" must be given its ordinary meaning, *i.e.*, undisturbed in nature. Thus, radiation from the Section 17 mine waste must be excluded from the scope of "background radiation" under the first part of the definition because it emanates from material that does not naturally occur on the surface of Section 17, but rather was put there by human hands during previous mining operations.

b. CLI-06-14 is contradicted by the history of the 1991 Final Rule.

According to the Commission in CLI-06-14, however, the term "naturally occurring radioactive material" ("NORM") has a technical meaning that includes the concept of "technologically enhanced naturally occurring radioactive material" ("TENORM"), *i.e.*, "naturally occurring radioactive material that has been moved, but neither artificially produced

nor processed for its radioactive content." 63 NRC at 518-19 (citing Smith, 508 U.S. at 228). The Commission also asserts that "[a]t the time the NRC drafted the regulation defining 'background radiation,' the term NORM was understood to include TENORM." 63 NRC at 518.

While the Commission's interpretation of its own regulations is entitled to deference, that deference is not absolute. Culbertson, 69 F.3d at 467. Here, the Commission's rationale must be rejected because it conflicts with the regulatory history of the 1991 Final Rule, in which the NRC established the definition of "background radiation." This history clearly shows that at that time, TENORM was *not* commonly understood to be a subset of naturally occurring radioactive material. Rather, a reference to TENORM was inserted into the proposed rule and then deleted from the final rule after the NRC received criticism from its own advisory body.

In the 1986 proposed rule, the Commission proposed a definition of "natural background radiation" that included TENORM and specifically described the type of TENORM that would be included:

> 'Natural background exposure' means exposure to cosmic and terrestrial sources of naturally occurring radioactive material, including technologically enhanced radioactive material, such as plasterboard and fertilizer, but not including byproduct material or radioactive material specifically intended to be a radiation source.

51 Fed. Reg. at 1,126. Had it been clear that TENORM was a subset of naturally occurring radioactive material, the NRC would not have considered it necessary to explicitly mention it in the proposed rule's definition of "natural background radiation" or to distinguish between the types of TENORM that were included or excluded.

The fact that TENORM was not commonly understood to be a subset of naturally occurring radioactive material is also reflected in a comment on the proposed rule by the NRC's independent advisory body, the Advisory Committee on Reactor Safeguards ("ACRS"). Asserting that "[s]everal of the definitions included in the proposed revision [to 10 C.F.R. Part 20] appear to be incomplete or to contain errors," the ACRS stated that the definition of "natural background" should "emphasize that the exempted sources do not include those of natural origin that have been technologically enhanced." Letter from W. Kerr, Chairman, ACRS, to Lando W. Zech, Chairman, NRC, re: Proposed Revisions of 10 CFR 20, "Standards for Protection Against Radiation" at 2 (June 7, 1988),(Add-C81). Obviously, the ACRS did not share the NRC's asserted common understanding that

TENORM was an established part of naturally occurring radioactive material. [28]

In addition, the Commission's failure to include TENORM in the final rule or to confirm in the preamble that TENORM is included in the final rule demonstrates that the Commission intended not to include it in the final rule. *See* Microsoft Corp. v. Commissioners of Internal Revenue, 311 F.3d 1178 (9th Cir. 2002) (holding that where Congress considered narrow limitation on copyrights but adopted broader language, it would be unreasonable to conclude that Congress intended to retain the limited meaning).[29]

---

[28] The Commission incorrectly asserts that the ACRS' comment shows that it "implicitly recognized *excluding* TENORM would have required express language, if that was what the NRC had intended with this regulation." 63 NRC at 518 (emphasis in original). To the contrary, the ACRS' comment reflects the ACRS' concern that the NRC needed to be clear about the meaning and scope of the term "background radiation." Moreover, the NRC's *inclusion* of TENORM in the 1986 proposed rule shows that the NRC itself recognized that if TENORM is included in background radiation, the inclusion must be express.

[29] While CLI-06-14 cites a 1988 internal NRC memorandum for the proposition that the NRC rejected the ACRS' suggestion, "for the reason that most TENORM is outside NRC's regulatory jurisdiction" [63 NRC at 518 and note 41], the 1991 Final Rule gives no indication that the Commission carried out the memorandum's advice to reject the ACRS' comment. In any event, the memorandum offers no valid rationale for rejecting the ACRS' comment, because the question of whether a radiation source lies within the NRC's regulatory jurisdiction does not determine whether it must be considered in calculating the TEDE. *See* discussion above in Section VIII.B.1- 3.

The Commission's claim that in 1991, government and industry had a common understanding that naturally occurring radioactive material included TENORM, is also contradicted by the record. As conceded in LBP-06-01, not until 1998 – seven years after promulgation of the 1991 Final Rule – did the concept of TENORM as a subset of naturally occurring radioactive material become "known." 63 NRC at 67, Joint App. at 1305.

Finally, the Commission's assertion that there is no meaningful distinction between naturally occurring radioactive material and the material it refers to as "TENORM" because "[t]here is no need for the NRC to draw fine distinctions among various classes of materials that it does not even regulate" [63 NRC at 520], contradicts fifty years of NRC's interpretation of the AEA and its Part 20 regulations for protection of the public from exposure to unsafe levels of radiation. As discussed above in Section VIII.B.3, the NRC has consistently interpreted the AEA to allow it to consider, in the TEDE, unlicensed sources of radiation within the licensee's control.[30]

---

[30] The NRC's interpretation of the regulation also violates standard principles of regulatory interpretation because it effectively collapses the definition of background radiation into the second sentence, which excludes from background radioactive materials that are regulated by the Commission. If background radiation consists of all radiation from sources that are not regulated by the Commission, then the first sentence of the

c. CLI-06-14 is contradicted by the FEIS.

The FEIS for the HRI mine also demonstrates that subsequent to the promulgation of the 1991 rule, the NRC technical staff did not interpret the term "background radiation" to clearly include radiation from mine waste. For example, at page 4-117, the FEIS asserts that "some areas" of the Church Rock site:

> have higher concentrations of residual radioactivity (from previous mining activities) than would be allowed in decommissioning the site under the proposed action. Therefore, these areas may be cleaned up as part of the well field decontamination.

Joint App. at 284. If the NRC had clearly understood the radiation from the Church Rock mine waste to constitute "background radiation," it would not have proposed that the mine waste would be cleaned up as part of decommissioning, because background radiation is not subject to NRC regulation. *See* discussion below in Section VIII.D.

C. The NRC Violated the AEA and NRC Implementing Regulations By Approving a Groundwater Restoration Surety for Section 8 That Was Not Based on Protection Of Public Health and Safety.

1. The NRC's determination that nine pore volumes will be adequate to restore Section 8 was based on diminishing improvements in groundwater quality rather than protection of public health and safety.

---

definition becomes unnecessary and meaningless. Duncan v. Walker, 533 U.S. 167, 174 (2001)

Consistent with the AEA's requirement that the issuance of NRC source materials licenses may not be "inimical to public health and safety," NRC decommissioning funding requirements are designed to ensure that at the end of operations, a licensee will possess "sufficient funds to eventually decontaminate and decommission the site to a level at which public health and safety is assured." Shieldalloy Metallurgical Corp. (Newfield, NJ); Director's Decision Under 10 C.F.R. 2.206, 45 NRC 338, 342 (1997). The groundwater restoration surety estimate approved by the NRC for HRI's Section 8 mine violates these requirements because it is based on the cost of flushing the Section 8 aquifer with nine pore volumes of water, a quantity whose ineffectiveness was conceded by the NRC Staff in the FEIS, and whose only distinction is that it is the maximum quantity of water that achieves any noticeable improvement in groundwater quality; flushing with additional pore volumes achieve only diminishing marginal improvements in groundwater quality.[31] The NRC made no finding that the surety would be adequate to protect public health and safety after decommissioning; rather, it simply asserted that nine pore volumes was the "most" that should be required. FEIS at 4-40, Joint App. at 269. By failing to require a decommissioning surety sufficient to ensure groundwater restoration at

Section 8 to pre-mining baseline or drinking water standards, the NRC violated the AEA's fundamental prohibition against issuance of a license that would be "inimical to public health and safety."[32]

2. In determining that any insufficiency in the Section 8 surety, no matter how gross, could be remedied at the time of decommissioning, the NRC violated its health and safety regulations.

Central to the Commission's approval of HRI's groundwater restoration cost estimate was the Presiding Officer's determination that the amount of the surety could be increased "if 'at any time' it is determined that well-field restoration requires greater pore volumes or a higher cost." LBP-99-13, 49 NRC at 236-37, citing LC 9.5 of License, Joint App. at 474. *See also* CLI-00-8, 51 NRC at 245, Joint App. at 556 and LBP-99-30, 50 NRC at 106. While Criterion 9 of Appendix A to 10 C.F.R. Part 40 allows a surety to be "adjusted" in order to "recognize any increases or decreases resulting

---

[31] *See* discussion at Section VI.D.3, *supra.*

[32] Guiding the entire surety estimation process is the fundamental mandate that the NRC may not take economic costs into account in fulfilling its statutory mandate to ensure adequate protection of public health and safety. Union of Concerned Scientists v. NRC, 824 F.2d at 117. In this case, the record indicates that in addition to failing to base its approval of HRI's surety estimates on public health and safety, the NRC impermissibly considered HRI's financial well-being. *See*, 1998 Ford Affidavit at 26, ¶ 42 (Joint App. at 332); Testimony of William H. Ford, Hearing of November 8, 2001, Transcript at 305-306 (Nov. 8, 2001) Joint App. at 1428-1429.

from inflation, changes in engineering plans, activities performed, and any other conditions affecting cost," this later opportunity to "adjust" a decommissioning funding estimate may not be used to excuse a decommissioning estimate that is fundamentally deficient at the outset. As the Commission recognized in CLI-00-8, the reasonableness of the decommissioning funding plan must be established at the time of licensing. 51 NRC at 239, Joint App. at 553. *See also* Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), CLI-88-10, 28 NRC 573, 586 (1988).

The reason for requiring a license applicant to submit a reasonable decommissioning funding estimate at the outset is plain: to wait until license termination to determine a reasonable decommissioning cost poses the risk that the operator and/or the operator's money may no longer "be around" to clean up the site. NUREG-0706, Generic Environmental Impact Statement on Uranium Milling at 14-4 (1980). If, as demonstrated by the data in the FEIS, it may be necessary to flush the Section 8 aquifer with two or three times the volume of water that is currently covered by HRI's surety, HRI's decommissioning costs could be increased by between seven million and fourteen million dollars. Such an increase would be more than a mere adjustment to HRI's decommissioning fund, and there has been no showing

that HRI would have the financial ability to cover these costs at the end of the project. Thus, the Presiding Officer's blithe assurance that if nine pore volumes proves insufficient, "HRI will be required to continue to restore" (50 NRC at 106), will be quite meaningless if HRI runs out of funds before the groundwater has been restored. In fact, this is exactly the kind of empty promise the NRC's decommissioning funding requirements were designed to guard against.

D. The Commission's Rationalizations For Basing HRI's Surety on the Cost of Nine Pore Volumes of Water Are Arbitrary and Capricious.

In defending the reasonableness of the NRC Staff's decision to base HRI's groundwater restoration surety on the cost of flushing the aquifer with nine pore volumes of water, the Presiding Officer and the Commission relied on rationales that are arbitrary and capricious and should therefore be reversed.

First, in LBP-99-30, the Presiding Officer decided that restoration of only six contaminants (twenty-six percent) to "secondary groundwater goals" in the Mobil Section 9 test was acceptable. 50 NRC at 103 and 106. However, the primary restoration goal is pre-mining baseline water quality. *See* discussion above in Section VI.D.1. Moreover, in the Mobil test relied on by the FEIS, sixty-four percent of contaminants (eighteen of twenty-

eight) were *not* restored to baseline. *See* discussion above in Section VI.D.3. Furthermore, restoration to achieve baseline water quality required *more than* nine pore volumes for fifteen of twenty-four contaminants (sixty-three percent) in the Mobil pilot test. FEIS at 4-33, Table 4.9, Joint App. at 262. These facts flatly contradict the Presiding Officer's finding that "water quality will be restored to acceptable levels". LBP-99-30, 50 NRC at 106, Joint App. at 527.

Second, in LBP-99-13, the Presiding Officer determined that the nine pore volume figure, as set forth in the FEIS and the License, was based on the "professional judgment" of the NRC staff. LBP-99-13, 49 NRC at 236, Joint App. at 474. But as discussed above in Section VIII.C, the staff did not apply its professional judgment to determine that flushing the Section 8 aquifer with nine pore volumes would protect groundwater quality in compliance with the AEA or NRC's health and safety standards; instead, the staff simply concluded that despite the ineffectiveness of using nine pore volumes to restore groundwater quality, no further benefits could be derived from flushing with additional pore volumes. No deference is owed to an exercise of professional judgment that is inconsistent with the agency's statutory mandate. Legal Envtl. Assistance Found. v. United States EPA, 118 F.3d 1467, 1473 (11th Cir. 1997). Moreover, the required nexus

between the data relied on by the NRC and the NRC's action of approving nine pore volumes was completely absent. Humana of Aurora v. Heckler, 753 F.2d 1579, 1582 (10th Cir. 1985).

Third, the Presiding Officer found that restoration of the Section 8 groundwater is unnecessary because "the subsurface water in this part of the Westwater is not potable." LBP-99-30, 50 NRC at 102, Joint App. at 525. In making this determination, the Presiding Officer ignored substantial evidence that groundwater within the proposed mine areas currently meets drinking water standards and is considered an underground source of drinking water. *See* discussion above in Section VI.C.2. The record evidence that drinking-water-quality groundwater exists within the mine area also undercuts the Presiding Officer's rationale that natural processes will reduce levels of toxic and radioactive pollutants before they can affect potential drinking water sources outside of the licensed area. LBP-99-30, 50 NRC at 105, Joint App. at 526. [33]

[33] In LBP-99-30, the Presiding Officer also relied on an EPA decision exempting Section 8 from any requirement to restore it to drinking water standards. 50 NRC at 102, Joint App. at 525. However, the Commission subsequently found this fact to be irrelevant to the issue of whether nine pore volumes was adequate to achieve groundwater restoration. CLI-01-4, 53 NRC at 71 n. 16, Joint App. at 601. In any event, the 1989 aquifer exemption granted by EPA Region VI is currently invalid due to this Court's ruling in HRI, Inc. v. EPA, 198 F.3d 1224 (10th Cir. 2000), and EPA Region IX's subsequent determination that Section 8 is Indian Country and thus

In approving the adequacy of the nine-pore-volume-based groundwater restoration cost estimate, the Commission also relied on the arbitrary and capricious assumption that average groundwater quality at Church Rock Section 8 is poor. CLI-00-12, 52 NRC at 6, Joint App. at __ (noting that "HRI will not be required to restore the uranium level in Section 8 to a cleaner, more stringent level than the average level already existing in Section 8."). The Commission's averaging of groundwater quality values at Section 8 contradicts the Presiding Officer's order in LBP-05-17 that groundwater quality inside the ore zone may not be averaged with groundwater quality outside the ore zone in order to establish baseline water quality to which groundwater must be restored after conclusion of operations. 62 NRC at 97, Joint App. at 972. As demonstrated in the FEIS, groundwater quality in the Church Rock portion of the Westwater Canyon Aquifer ranges from a high of 10.9 mg/l uranium in the ore zone to 0.002 mg/l uranium in places outside the ore zone but still *inside* the licensed mine area. FEIS at 3-36, Joint App. at 253. Accordingly, HRI will have to restore

---

subject to Region IX's jurisdiction. *See*, Notice of Final Determination, Safe Drinking Water Act Determination; Underground Injection Control Program, Determination of Indian Country Status for Purposes of Underground Injection Control Permitting, 72 Fed. Reg. 8,380 (Feb. 26, 2007).

Section 8 groundwater quality to the much better quality represented by the non-ore zone groundwater.

Thus, the Commission's defense of the FEIS is irrational and "runs counter to the evidence before the agency." Ecology Center, Inc., 451 F.3d at 1189.

E. By Allowing HRI to Determine the Amount of the Surety for Most of Section 8, Section 17, Unit 1 and Crownpoint After the Close of the Administrative Hearing, the NRC Subverted the AEA's Hearing Requirement.

As discussed above in Section V.A.3, Section 189 of the AEA, 42 U.S.C. § 2239(a), requires the NRC to offer the opportunity to request an adjudicatory hearing on all material aspects of any NRC proposal to issue a license for possession or use of source material. While the Commission has discretion to relegate ministerial issues to post-hearing resolution, these issues do not include matters that require a decisionmaker's consideration and weighing of many people's observations, questions of credibility, conflicts, and sufficiency. Union of Concerned Scientists, 735 F.2d at 1449-1450.

In this case, the Commission generally ruled that decommissioning funding issues may not be relegated to post-hearing resolution. CLI-00-8, 51 NRC at 240, Joint App. at 554("This does not mean that some matters may not be left for post-licensing action, particularly activities that are

simply ministerial or by their very nature require post-licensing verification by our Staff, but we do not consider the financial assurance plan among them.") Yet, inexplicably, the Commission has deferred, until after the close of the hearing, its determination of whether the nine pore volume basis for restoration surety for the initial well-fields at Section 8 will be adequate to restore the remainder of Section 8, Section 17, Unit 1, or Crownpoint., CLI-00-8, 51 NRC at 245, Joint App. at 556.

The Commission's decision violates the AEA's requirement to offer a hearing on material licensing issues. The materiality of an initial surety estimate is clear. Final Rule, Uranium Mill Licensing Requirements, 45 Fed. Reg. at 65,523 ("Certain requirements in the regulations represent minimum levels of protection of public health, safety and the environment. These requirements can and must be met in all cases. For example, … financial surety provisions … are mandatory in all cases.")

Determining the amount of a decommissioning surety is not subject to a simple inspection or ministerial action, but requires the application of professional judgment about the adequacy of data and their interpretation. One need only examine the FEIS — in which the NRC concluded that a nine pore volume surety was sufficient to restore groundwater at the initial well fields at Section 8 in the face of test evidence showing that nine pore

volumes was ineffective in restoring groundwater at a similar site — to recognize that the determination is one that cannot be relegated to a ministerial act. The determination is also complicated by the fact that, as discussed above in Section VI.D.1, HRI has yet to establish baseline water quality levels for any of its four mine sites. The question of what is a reasonable groundwater restoration cost estimate for HRI's mining operation must therefore be subject to a hearing. Union of Concerned Scientists, 735 F.2d at 1449-1450.

F. The Commission Violated NEPA by Considering Only Incremental Impacts of HRI's ISL Mine at Section 17 and Ignoring or Mischaracterizing the Impacts of Airborne Radioactive Emissions from Existing Mine Waste.

In evaluating the environmental impacts of their proposed actions, Federal agencies must consider cumulative impacts, *i.e.*:

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

40 C.F.R. § 1508.7. Cumulative impacts "can result from individually minor but collectively significant actions taking place over a period of time." Id. The NRC committed to follow 40 C.F.R. § 1508.7 in this case. Hydro Resources, Inc., CLI-01-4, 53 NRC 31, 60 (2001).

In violation of 40 C.F.R. § 1508.7 and NEPA's "hard look" requirement, the Commission approved an FEIS that focused only on the incremental impacts of HRI's proposed ISL mining activities at Section 17, excluding the cumulative impacts of ongoing radioactive emissions from mine waste at Section 17. To the limited extent that it even acknowledged the existence of ongoing impacts from Section 17 mine waste, the Commission mischaracterized them as background radiation, thereby incorrectly minimizing their significance.

1. The Commission violated NEPA by considering only the incremental impacts of HRI's ISL operation at Section 17.

Nowhere in the FEIS, the DEIS, or the NRC's decisions in the adjudicatory proceeding did the NRC analyze the significant prospective contribution of ongoing radioactive airborne emissions to the cumulative impacts of mining at Section 17.[34] Instead, the NRC addressed only the incremental impacts of HRI's ISL mining operation. In the FEIS, the NRC Staff asserted that "[t]he proposed project would result in a *negligible increase* in cumulative impacts in the area." Id. at 4-125, Joint App. at 290 (emphasis added). In approving the FEIS, the Commission similarly concluded

that the "incremental increase in radiological air impacts due to the HRI project is so 'de minimis' or 'negligible' that it *would not significantly enhance* already existing environmental effects from background radiation." CLI-06-29, 64 NRC at 423, Joint App. at 1388 (emphasis added).[35]

By focusing only on incremental impacts and ignoring present and ongoing impacts caused by past mining on Section 17, the Commission violated the requirement of 40 C.F.R. § 1508.7 that incremental impacts must be "*added to* other past, present, and reasonably foreseeable future actions." (emphasis added) Had the FEIS complied with § 1508.7 by addressing the cumulative environmental impacts of mining at Section 17, it would have acknowledged that existing and ongoing radiation doses to members of the public currently exceed federal radiation standards, and that emissions from HRI's proposed ISL operation would only add to those

---

[34] *See* description of existing contamination levels in Sections VI.B and VI.D.2.a, *supra*.

[35] According to the Presiding Officer, the DEIS did provide data on background radiation levels at Church Rock Section 17. LBP-06-19, 64 NRC at 72. As the Presiding Officer concedes, however, the information was not included in the FEIS. Id. More important, in violation of 10 C.F.R. § 51.71's requirement to quantify environmental impacts to the extent possible, neither the DEIS nor the FEIS ever explained how the radionuclide concentrations described in the FEIS translated into radiation doses to the public, or the health impacts of those doses.

significant radiation levels.[36] Further, had the NRC actually conducted such an analysis, it would have been expressed quantitatively. *See* 10 C.F.R. § 51.71 (the NRC is required, "to the fullest extent practicable, to quantify the various factors considered.") *Cf.* Hall v. Norton, 266 F.3d 969, 978 (9th Cir. 2001) (environmental assessment that failed to quantify the cumulative emissions from potential development was inadequate, even when the project would only contribute a small portion of overall emissions).

2. The NRC mischaracterized as background radiation the contribution to cumulative impacts of ongoing airborne radioactive emissions from mine waste at Section 17.

In defending the FEIS' failure to consider the contribution to cumulative impacts of ongoing radioactive emissions from Section 17 mine waste, the Commission and the Presiding Officer minimized the significance of radioactive airborne emissions from the existing mine waste, by classifying it as "background radiation," for which doses of 1,000 mrem/year are "not unusual for the United States." CLI-06-29, 64 NRC at 423 (citing LBP-06-19, 64 NRC at 70), Joint App. at 1388. In characterizing

---

[36] With respect to past impacts, the FEIS did address the impacts of former conventional uranium mining activities at Church Rock Section 17, including increased cancers. *See* LBP-06-19, 64 NRC at 68. But past impacts may not be confused with present impacts that, while they may have

the Section 17 mine waste emissions as typical "background radiation," the Commission violated NEPA by confusing the human-caused environmental impacts of uranium mining with natural conditions that must be accepted as a part of the environment. This confusion of impacts and natural conditions undermines NEPA. *See* Utah Shared Access Alliance v. Carpenter, 463 F.3d 1125, 1130-31 (10th Cir. 2006) (NEPA "was enacted in recognition of the 'profound impact of man's activity on the . . . natural environment.' 42 U.S.C. 4331). While radiation doses of 1,000 mrem/year from natural sources are in fact rare in the U.S., at Church Rock the radiation doses from Section 17 mine waste emissions constitute ongoing environmental impacts of past human activity that (a) could have been, but were not, mitigated by cleanup and (b) are in excess of federal regulatory standards for protection of public health.[37]

---

started in the past, continue in the present and the future. 40 C.F.R. § 1508.7.

[37] Calculated doses from the maximum gamma radiation level measured on the King grazing land on Section 17 (i.e., 180 microRoengtens per hour) were nearly 1,576.8 mrem/yr, or nearly 16 times greater than the 10 C.F.R. 20.1301(a)(1) standard of 100 mrem/yr. Intervenors' Supplemental Air Brief at 17-18. Assuming only an occupancy rate of only 6.5 percent (of 11 hours per week), Mr. King's dose from the maximum gamma level would be 176 mrem/yr, which still exceeds the annual dose limit. Id. at 17. As noted in Petitioners' Supplemental Air Brief at 17-18, Mr. King would also be receiving doses from high levels of airborne radon likely released from mine spoil at Section 17 in excess of the 100 mrem/yr limit.

The Commission's confusion of natural environmental conditions with human-caused impacts is echoed in the FEIS. In some parts of the FEIS, the NRC Staff appeared to include the radioactive emissions from Church Rock Section 17 within the scope of "natural background radiation." For example, the FEIS' statement that

> [t]he primary radiological impact to the environment in the vicinity of the project results from naturally occurring cosmic and terrestrial radiation and naturally occurring radon-22 and its daughters

implies that Church Rock mine waste emissions are part of natural background radiation. FEIS at 4-72, Joint App. at 276. Elsewhere, however, the FEIS describes the Section 17 mine waste as "remnant radiation stemming from previous mining and milling activities near the Church Rock site" (FEIS at 4-73, Joint App. at 276) or "residual radioactivity (from previous mining activities)." FEIS at 4-117, Joint App at. 284. The FEIS also presents HRI's proposed ISL mining operation as a benefit because the residual contamination from the old Church Rock mine would be cleaned up if HRI receives a license:

> If no action is taken, no radiological exposures are estimated to the general public other than *natural background*, medical-related exposures, *and exposures from existing residual contamination.* At the Church Rock Site, *areas of the site have greater concentrations of residual radioactivity present than would be allowed in decommissioning the site. With the proposed project, these areas would generally be cleaned up as part of the well field decontamination.* Under the no-action alternative, the residual

> radioactivity would remain in these areas and would not necessarily be remediated.

FEIS at 4-88, Joint App. at 278(emphasis added). *See also* FEIS at 4-117, Joint App. at 284 (touting clean-up of the Section 17 mine waste as a "positive health effect" of licensing HRI's ISL mine). By characterizing the Section 17 mine waste emissions as background radiation, CLI-06-29 and LBP-06-19 effectively negate the benefits of HRI's license as promised by the FEIS. As discussed above in Section VIII.B., the NRC does not regulate background radiation and therefore would have no authority to order cleanup of the Section 17 mine waste.

Taken together, the FEIS and the Commission's and Presiding Officer's decisions approving the FEIS are so confusing and misleading that they demand a complete revision of the EIS. Johnston v. Davis, 698 F.2d 1088, 1094 (10th Cir. 1983) (misleading or unqualified statements that do not represent a realistic assessment of project justify remand); Hughes Watershed Conservancy v. Glickman, 81 F.3d 437, 446 (4th Cir. 1999) (rejecting EIS that contained misleading projections of a project's economic benefits); South Louisiana Envtl. Council v. Sand, 629 F.2d 1005, 1011-12 (5th Cir. 1980) (misleading assumptions can defeat the first of an EIS by impairing the agency's consideration of the adverse environmental effects of a proposed project). The NRC's licensing decision for HRI's ISL mine

should be reversed and the FEIS should be remanded to the agency for republication and clarification of (a) the difference between background radiation and emissions from mine waste, (b) the environmental impacts of the radioactive emissions from the mine waste, and (c) whether or not the mine spoil will be remediated as part of HRI's licensed operation.

The NRC's narrow focus on incremental impacts and its mischaracterization of mine waste as background radiation is unreasonable in light of Church Rock's mining history and the evidence before the agency. Thus, the agency cannot be said to have taken the requisite "hard look" at the project's cumulative impacts. Accordingly, the Court should reject the NRC's licensing decision for the HRI mine on the ground that it fails to comply with NEPA.

G. The NRC Violated NEPA By Failing to Address the Environmental Impacts of Incomplete Groundwater Restoration in the FEIS.

As discussed above in Section VIII.A, NEPA requires that an agency take a "hard look" at the environmental aspects of a proposed action, including consequences that are reasonably foreseeable despite their low probability. Contrary to this requirement, the FEIS failed to address the reasonably foreseeable environmental impacts of HRI's failure to restore groundwater quality at Church Rock Section 8. Even assuming for purposes

of argument that the Presiding Officer was correct in LBP-99-30 in finding a reasonable assurance that the aquifer would be restored (50 NRC at 106, Joint App. at 527), the potential that restoration efforts will fail, with catastrophic impacts on the public's ability to use the Section 8 groundwater and groundwater outside of but contiguous to Section 8 as a source of drinking water, is established by the groundwater restoration demonstrations and tests referenced in the FEIS. *See* discussion in Section VIII.C.1, *supra.* Given that nine pore volumes is unlikely to restore groundwater to primary or secondary standards such that it can be used as drinking water, the FEIS should have evaluated environmental impacts and alternatives in light of the fact that some groundwater resources would likely only be suitable for lower quality uses after restoration.

Finally, in rejecting Petitioners' NEPA arguments on groundwater, the Presiding Officer simply reasoned that because he rejected their arguments under the AEA, their arguments under NEPA were "invalid." LBP-99-30, 50 NRC at 113, Joint App at 530. This reasoning fundamentally ignores the requirement to comply with NEPA independently of the AEA. Limerick Ecology Action, 869 F.2d at 729.

IX. CONCLUSION

For the above-cited reasons, the Petitioners respectfully request that the NRC decisions granting HRI's License be reversed.

Respectfully submitted this 5th day of November, 2007.

_____

Eric D. Jantz
New Mexico Environmental Law Center
1405 Luisa Street, Suite 5
Santa Fe, New Mexico 87505
Telephone: (505) 989-9022
Facsimile: (505) 989-3769
Email: ejantz@nmelc.org

_____

Diane Curran
Harmon, Curran, Spielberg & Eisenberg, L.L.P.
1726 M Street N.W. Suite 600
Washington, D.C. 20036
Telephone: (202) 328-3500
Facsimile: (202) 328-6918
e-mail: dcurran@harmoncurran.com

Attorneys for Petitioners ENDAUM and SRIC

Zackeree Kelin
DNA-People's Legal Services, Inc.
PO Box 306
Window Rock, Arizona 86515
Telephone: (928) 871-5621
Facsimile: (928) 871-5036
email: zkelin@dnalegalservices.org

Attorneys for Petitioners Marilyn Morris and Grace Sam

ORAL ARGUMENT REQUESTED

Petitioners ENDAUM, SRIC, Marilyn Morris, and Grace Sam respectfully request oral argument in this case. The administrative proceeding before the NRC spanned nearly 20 years and involves technical issues requiring close review. HRI applied for a source and byproduct materials license on April 13, 1988, and NRC hearings on the application did not conclude until December, 2006. The administrative record of the case is lengthy, encompassing tens of thousands of pages. Much of the record consists of technical documents and testimony, which require particularly careful review.

UNITED STATES COURT OF APPEALS FOR THE 10th CIRCUIT

Eastern Navajo Diné Against Uranium Mining, Southwest Research and Information Center, Marilyn Morris and Grace Sam	)	
Petitioners,	)	Case File No. 07-9505
v.	)	
United States Nuclear Regulatory Commission and the United States,	)	
Respondents,	)	
Hydro Resources, Inc.,	)	
Intervenors.	)	

CERTIFICATE REGARDING WORD COUNT

Pursuant to Federal Rule of Appellate Procedure 32(a)(7)(C), undersigned counsel for Petitioners hereby certifies that the number of words in Petitioners' Revised Opening Brief of November 5, 2007, excluding the Table of Contents, Table of Authorities, Addendum, corporate disclosure statement, and signature block as counted by the Microsoft Word program, is 13,984.

Respectfully submitted,

Zackeree Kelin
DNA-People's Legal Services, Inc.
PO Box 306
Window Rock, Arizona 86515
Telephone: (928) 871-5621
Facsimile: (928) 871-5036
email: zkelin@dnalegalservices.org

UNITED STATES COURT OF APPEALS FOR THE 10th CIRCUIT

Eastern Navajo Diné Against Uranium Mining, Southwest Research and Information Center, Marilyn Morris and Grace Sam	)	
Petitioners,	)	**Case File No. 07-9505**
v.	)	
United States Nuclear Regulatory Commission and the United States,	)	
Respondents,	)	
Hydro Resources, Inc.,	)	
Intervenors.	)	

CERTIFICATE OF SERVICE

I hereby certify that true and correct copies of Petitioners' Revised Opening Brief (Including Joint Appendix Citations) filed in Case No. 07-9505 in the above-captioned proceeding has been served on the following parties by U.S. Mail, first class this 5th day of November, 2007:

Charles Mullins
Office of the General Counsel
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, Maryland 20852

John E. Arbab
Katheryn E. Kovacs
United States Department of Justice

PO Box 23795 – L'Enfant Plaza Station
Washington, D.C. 20026

Christopher S. Pugsley
Thompson & Simmons
1225 19th Street, NW
Suite 300
Washington, D.C. 20036

Marc D. Flink
Baker & Hostetler, LLP
303 East 17th Avenue, Suite 1100
Denver, Colorado 80203

Louis Denetsosie, Esq.
David A. Taylor, Esq.
Navajo Nation Department of Justice
Po Box 010
Window Rock, AZ 86515

By: _____