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Tenth Circuit

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UNITED STATES COURT OF APPEALS

TENTH CIRCUIT

MARILYN MORRIS, GRACE SAM, EASTERN NAVAJO DINE AGAINST URANIUM MINING "ENDAUM," SOUTHWEST RESEARCH AND INFORMATION CENTER "SRIC," Petitioners, v. UNITED STATES NUCLEAR REGULATORY COMMISSION, UNITED STATES OF AMERICA, Respondents, HYDRO RESOURCES, INC., Intervenor - Respondent. NAVAJO NATION, Amicus curiae.	No. 07-9505

Appeal from the United States Nuclear Regulatory Commission (No. 40-8968-ML)

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Nuclear Regulatory Commission (Ronald J. Tenpas, Acting Assistant Attorney General, John E. Arbab, Appellate Section, Environmental and Natural Resources Division, United States Department of Justice, Karen D. Cyr, General Counsel, John F. Cordes, Jr., Solicitor, E. Leo Slaggie, Deputy Solicitor, Steven C. Hamrick, Attorney, Office of the General Counsel, United States Nuclear Regulatory Commission, with him on the brief) Washington, D.C., for Respondents.

Anthony J. Thompson (Christopher S. Pugsley, with him on the brief) Thompson & Simmons, PLLC, Washington, D.C. for Intervenor-Respondent.

Louis Denetsosie, Attorney General and David A. Taylor, Senior Attorney, Natural Resource Unit, Navajo Nation Department of Justice, filed an amicus curiae brief for the Navajo Nation.

Before **LUCERO, EBEL** and **FRIZZELL,*** Circuit Judges.

EBEL, Circuit Judge.

The Nuclear Regulatory Commission ("NRC") issued Hydro Resources, Inc. ("HRI") a license to conduct in situ leach mining for uranium on four sites in northwest New Mexico. In this case, Petitioners—Eastern Diné Against Uranium Mining, a Navajo community organization, Southwest Research and Information Center, a non-profit environmental education organization, and two local ranchers, Grace Sam and Marilyn Morris—seek review of the NRC's licensing decision. Petitioners assert that the NRC, in issuing HRI's license, violated two

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*Honorable Gregory K. Frizzell, District Court Judge, Northern District of Oklahoma, sitting by designation.

federal statutes—the Atomic Energy Act ("AEA"), which sets forth specific requirements that an applicant must meet before obtaining a license, and the National Environmental Policy Act ("NEPA"), which requires, in more general terms, that an agency give a "hard look" to the environmental impact of any project or action it authorizes. Having jurisdiction to review the agency's licensing decision under 28 U.S.C. § 2342(4) and 42 U.S.C. § 2239(b), as well as the Administrative Procedures Act ("APA"), 5 U.S.C. § 702, we DENY the petition for review and uphold the NRC's licensing decision in all respects.

I. BACKGROUND

In 1988, HRI applied with the NRC for a license to conduct in situ leach ("ISL") uranium mining at four locations in McKinley County, New Mexico, near the Navajo Indian Reservation. Two of these sites, referred to as Sections 8 and 17, are adjacent to each other and are both located near Church Rock, New Mexico; the other two sites, Unit One and Crownpoint, are located near Crownpoint, New Mexico. The entire project is known as the Crownpoint Uranium Project.

ISL mining involves injecting lixiviant—a mixture of ground water charged with oxygen and bicarbonate—into the "ore zone," the underground geological formation containing the uranium deposits. As the lixiviant is pumped through the ore zone, the uranium dissolves into the lixiviant. This now "pregnant lixiviant" is then pumped back to the surface, where the uranium is separated

from the lixiviant, processed into yellowcake, and shipped to other facilities to be enriched for use as reactor fuel. The "barren lixiviant" is re-charged with oxygen and bicarbonate and re-injected into the ore zone to repeat the cycle.

In order to conduct its ISL operation, HRI plans to create a number of "well fields" at each mining site. Each "well field" includes one production well located in the midst of several injection wells, all spaced in a five- or seven-well geometric pattern.[1] As the lixiviant is pumped by the injection wells through the ore zone, a greater amount of water is extracted through the middle production well, lowering the pressure in the center of the well field and thereby drawing the uranium-enriched lixiviant to the production well to be pumped to the surface. The production and injection wells, which tap into the Westwater Canyon aquifer, will be surrounded by monitoring wells, both horizontally in that aquifer and vertically in other aquifers, to insure that there are no excursions of lixiviant outside each well field being mined.

In 1997, the NRC, in cooperation with the Bureau of Land Management ("BLM") and the Bureau of Indian Affairs ("BIA"), issued a final environmental impact statement ("FEIS"), recommending that the NRC grant HRI's license

[1]The Environmental Protection Agency ("EPA") and the State of New Mexico regulate the design, construction, testing, and operation of these wells. HRI's compliance with those regulations is not at issue in this review petition.

application.[2] The NRC did so, issuing HRI a license in January 1998.

This license imposes a number of requirements on HRI. Chief among those is the requirement that, when HRI is finished mining each site, it must reclaim the site and restore the quality of the groundwater. In order to insure this restoration occurs, the license requires HRI to provide a surety to cover the estimated cost of those reclamation efforts.

The NRC, during its proceedings addressing HRI's license application, permitted Petitioners to intervene because they, or their members, "use[] a substantial quantity of water personally or for livestock from a source that is reasonably contiguous to either the injection or processing sites" for the proposed mining locations. In re Hydro Res., Inc., 47 N.R.C. 261, 263, 275-78, 286 (1998), rev'd in part on other grounds, 48 N.R.C. 119 (1998). After issuing HRI its license, the NRC conducted a bifurcated informal adjudicatory hearing, pursuant to 10 C.F.R. Part 2, Subpart L.[3] See In re Hydro Res., Inc., 47 N.R.C. at 263.

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[2]Because the four mining sites are very near the Navajo Reservation, the NRC, along with the BIA, invited the Navajo Nation to participate in the drafting of the FEIS as a cooperating agency. See 10 C.F.R. §§ 51.14(a), 51.28(a)(5). The Navajo Nation declined that offer, however, based both upon the Nation's "executive order formally recognizing the 1983 tribal moratorium on uranium mining on Navajo lands," and the Nation's announced opposition to HRI's proposed Crownpoint uranium project. (Jt. App. at 208-10.)

[3]These administrative proceedings, then, occurred in two parts, see 10 C.F.R. Part 2, Subpart A:

1) The NRC prepared the draft environmental impact statement ("DEIS"), then

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In Phase I of these administrative proceedings, the NRC conducted a hearing specifically addressing only the Section 8 site near Church Rock. The NRC addressed this site first because that is where HRI intends to begin its ISL operations. In a series of decisions, the NRC upheld HRI's license as it pertained to that one site. Phase II of these administrative proceedings then addressed HRI's other three mining sites, ultimately upholding HRI's license as it pertained to those sites, as well.

In this petition for review, Petitioners now challenge several of the NRC

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[3](...continued)
published it and sought public comment. See 59 Fed. Reg. 56,557-02 (Nov. 14, 1994). In light of the DEIS's recommendation that the NRC grant HRI's request for a license, Petitioners and a number of others who opposed HRI's license application sought to intervene. The NRC concluded Petitioners had standing to challenge the license application and so permitted them to intervene. The NRC, however, abated Petitioners' challenge until after the NRC made a final decision concerning HRI's license application. Eventually, the NRC completed the FEIS, which recommended issuing HRI the license. The NRC then issued HRI a license.

2) After the NRC issued HRI's license, the NRC, based on Petitioners' earlier requests, conducted an informal adjudicatory hearing, pursuant to 10 C.F.R. Part 2, Subpart L. See In re Hydro Res., Inc., 47 N.R.C. at 263. Although 10 C.F.R. Part 2 includes rules governing a number of different types of NRC hearings, including formal adjudicatory hearings and hearings regarding special licenses, see 10 C.F.R. Part 2, the parties agree that, in this case, an informal adjudicatory hearing was appropriate. See 10 C.F.R. §2.310 (addressing "Selection of Hearing Procedures"). It is during this informal adjudicatory hearing that Petitioners were able to challenge the NRC's decision to issue the license, as well as the adequacy of the FEIS. The NRC ultimately rejected all of Petitioners' challenges and upheld its decision to issue HRI the license. It is that final agency action—the NRC's issuing HRI a license after rejecting Petitioners' administrative challenges—that is at issue here. See 5 U.S.C. § 704 (providing for judicial review of final agency action).

determinations pertaining only to the Church Rock Sections 8 and 17 sites. This court granted both HRI's motion to intervene in this review proceeding and the Navajo Nation's request to file an amicus brief.

II. AIRBORNE RADIATION AT SECTION 17

> The licensed area in Section 17, located near Church Rock, New Mexico, is 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. Three families live on Section 17 inside the licensed area, and approximately 850 people live within five miles of the Section 8 and Section 17 mining sites.

(Pet. Br. at 14 (citing Jt. App. at 245, 835-38).) "HRI's licensed area on Section 17 includes the site of the abandoned Old Church Rock Mine, an underground [conventional] uranium mine that operated in the early 1960s and from 1977 to 1983[,] before it was purchased by HRI." (Id. at 15 (citing Jt. App. at 1354).) As a result of that prior mining operation, the site contains debris and waste that emit airborne radiation.[4]

Petitioners contend that the NRC, in considering HRI's licensing application, failed to take into account the airborne radiation already being emitted at Section 17, contrary to both the Atomic Energy Act of 1954, as amended by the Uranium Mill Tailings Radiation Control Act of 1978 ("AEA"),

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[4]During the administrative appeal of the NRC's licensing decision, the NRC's Presiding Officer ("P.O.") found that the earlier conventional underground mine had been properly capped and, therefore, the mine itself was not the source of any current airborne radiation. Petitioners do not challenge that finding.

42 U.S.C. §§ 2011-2297h-13, and the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321-4370f.

A. Atomic Energy Act

NRC regulations promulgated under the AEA limit the amount of airborne radiation from an NRC-licensed operation to 0.1 rem in a year. See 10 C.F.R. § 20.1301(a)(1). The parties agree that HRI's ISL mining will emit only negligible airborne radiation, well under that limit. The problem at Section 17 is that the debris from the prior conventional mining operation already emits a greater amount of airborne radiation than the NRC regulations allow, even before considering the airborne radiation that the ISL mining might produce. Petitioners argue that because this site already exceeds the airborne emissions allowed under § 20.1301(a)(1), the NRC cannot license another operation on that same site. The NRC, however, interpreted its regulations instead to require the agency to consider under § 20.1301(a)(1) only the amount of airborne radiation that the operation seeking the license—here, HRI's ISL mining—will emit irrespective of the airborne radioactive emissions already occurring on the site. See In re Hydro Res., Inc., 63 N.R.C. 510, 512, 515 (2006). Affording the agency's interpretation of its own regulations proper deference, we uphold that determination.

1. Standard of review

As Petitioners acknowledge, "[w]e must give substantial deference to an agency's interpretation of its own regulations." Thomas Jefferson Univ. v.

Shalala, 512 U.S. 504, 512 (1994) Here, then, "[o]ur task is not to decide which among several competing interpretations best serves the regulatory purpose. Rather, the agency's interpretation must be given controlling weight unless it is plainly erroneous or inconsistent with the regulation." Id. (quotations omitted); see also Fed. Express Corp. v. Holowecki, 552 U.S. 389, 397 (2008); Nat'l Ass'n of Home Builders v. Defenders of Wildlife, 551 U.S. 644, 672 (2007); Ariz. Pub. Serv. Co. v. U.S. Envtl. Prot. Agency, 562 F.3d 1116, 1123 n.5 (10th Cir. 2009). Therefore, "we must defer to the Secretary's interpretation unless an alternative reading is compelled by the regulation's plain language or by other indications of the Secretary's intent at the time of the regulation's promulgation." Thomas Jefferson Univ., 512 U.S. at 512 (quotation omitted). "This broad deference is all the more warranted when, as here, the regulation concerns a complex and highly technical regulatory program, in which the identification and classification of relevant criteria necessarily require significant expertise and entail the exercise of judgment grounded in policy concerns." Id. (quotations omitted); see Envtl. Def. Fund v. United States Nuclear Regulatory Comm'n, 902 F.2d 785, 789 (10th Cir. 1990) (noting, in addressing challenges to NRC's rulemaking, that "[t]he NRC's resolution of technical matters, like the regulation of uranium and thorium mill tailings, is a technical judgment 'within its area of special expertise, at the frontiers of science where a reviewing court must generally be most deferential'") (quoting Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc., 462 U.S.

87, 103 (1983) (alteration omitted)).

2. Analysis

The AEA requires HRI to obtain a license from the NRC in order to conduct ISL mining.[5] See 42 U.S.C. § 2092. The NRC may not grant a license application, however, "if, in the opinion of the Commission, the issuance of a license to such person for such purpose would be inimical to the common defense and security or the health and safety of the public." 42 U.S.C. § 2099; see also 10 C.F.R. § 40.32(d).

The NRC has adopted regulations to implement this statutory mandate. See 10 C.F.R. § 20.1001(a).[6] Most relevant here, these implementing regulations

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[5]The AEA specifically provides, in pertinent part, that, "[u]nless authorized by a general or specific license issued by the Commission, . . . no person may transfer or receive in interstate commerce, transfer, deliver, receive possession of or title to or import or export from the United States any source material [such as uranium] after removal from its place of deposit in nature." 42 U.S.C. § 2092; see also id. § 2014(z) (defining source material to include uranium or ores containing uranium). Although this licensing requirement does not apply to conventional uranium mining, see Barnson v. United States, 816 F.2d 549, 554-55 (10th Cir. 1987), the NRC has interpreted the AEA to apply to ISL mining because, during that procedure, the uranium is "remov[ed] from its place of deposit in nature" at the time the uranium dissolves into the lixiviant underground and the miner only takes possession of it after it is then pumped to the surface (Jt. App. at 1248-49). No one challenges here the NRC's interpretation of this regulation to apply the AEA to ISL uranium mining.

[6]The NRC applied the regulations in effect at the time it issued HRI a license, in January 1998. The regulations found in 10 C.F.R. Part 20 were promulgated en masse in 1991, after HRI filed its license application, but before the NRC issued the license. See 10 C.F.R. Part 20, Subparts A, D; see also 56 Fed. Reg. 23,391, 23,398 (May 21, 1991). See generally In re TMI, 67 F.3d

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"establish standards for protection against ionizing radiation resulting from activities conducted under licenses issued by the" NRC.[7] Id.; see 10 C.F.R. Pt. 20.

> It is the purpose of the[se] regulations . . . 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. However, nothing in this part shall be construed as limiting actions that may be necessary to protect health and safety.

Id. § 20.1001(b).

By the specific regulation at issue here, 10 C.F.R. § 20.1301, the NRC adopted radiation "Dose limits for individual members of the public." 10 C.F.R. Pt. 20, Subpt. D. A "[m]ember of the public means any individual except when that individual is receiving an occupational dose," which is "the dose received by an individual in the course of employment," 10 C.F.R. § 20.1003. Most pertinent to this case, 10 C.F.R. § 20.1301(a) provides, in relevant part:

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[6](...continued)
1103, 1110-12 (3d Cir. 1995) (addressing revisions).

[7]10 C.F.R. Part 20 provides for "detailed federal standards for protection against radiation." Roberts v. Fla. Power & Light Co., 146 F.3d 1305, 1307 n.4 (11th Cir. 1998). These regulations address doses of ionizing radiation, that is, radiation stemming from "alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in this part, does not include non-ionizing radiation, such as radio- or microwaves, or visible, infrared, or ultraviolet light." 10 C.F.R. § 20.1003.

Each licensee shall conduct operations so that —

> (1) The total effective dose equivalent [("TEDE")] 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 medical 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 . . . .

10 C.F.R. § 20.1301(a).[8]

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[8]Total effective dose equivalent, or TEDE, is "the sum of the deep-dose equivalent (for external exposure) and the committed effective dose equivalent (for internal exposures)." 10 C.F.R. § 20.1003 (2003) (subsequently revised). The "[d]eep-dose equivalent . . . , which applies to external whole-body exposure, is the dose equivalent at a tissue depth of 1 cm," while a "[c]ommitted effective dose equivalent . . . is the sum of the products of the weighting factors [provided in the regulations] applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues." Id.

The limits

> "in present NRC regulations . . . have been set at a level which is conservatively arrived at by incorporating a significant safety factor. Thus, a discharge or dispersal which exceeds the limits in NRC regulations . . . although possible cause for concern, is not one which would be expected to cause substantial injury or damage unless it exceeds by some significant multiple the appropriate regulatory limit."

Dumontier v. Schlumberger Tech. Corp., 543 F.3d 567, 570-71 (9th Cir. 2008) (quoting 10 C.F.R. § 140.81(b)(1)), cert. denied, 129 S. Ct. 1329 (2009).

According to the NRC, an individual in the United States receives, on average, a total annual dose of 3 mSv, or 300 mrem, resulting from radiation that is generally breathed, ingested or absorbed. An individual's annual dose of radiation will vary, however, depending upon many things, including geographic

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In this case, the NRC's presiding officer, during Petitioners' administrative appeal of the NRC's licensing decision, "found that HRI's [ISL mining] operations would not emit airborne radiation in excess of the 0.1-rem 'total effective dose equivalent' (TEDE) limit set out in Part 20 of [the NRC's] regulations." (Jt. App. at 1354.) Petitioners, in their petition for review, do not challenge that finding. Instead, they assert that the airborne radiation emitted by the waste and debris from the prior conventional mining operations on Section 17, considered by itself, already exceeds § 20.1301(a)(1)'s limit of 0.1 rem. And the NRC does not dispute that.[9] The specific question presented here, then, is whether § 20.1301(a)(1) requires the NRC, in considering HRI's licensing

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[8](...continued)
location. So people living "in well-ventilated wooden houses on sandy soil near the ocean would receive a minimal dose from radon–one tenth of the United States average–and a minimal external gamma dose–about one-fourth the average. With an internal and cosmic ray component of about average, the total dose to these individuals is only 1mSv . . . per year." (Jt. App. at 1164.) On the other hand, "people living in Denver, Colorado, could receive double the cosmic ray dose, triple the gamma dose, and quadruple the radon dose. With a somewhat higher intake of radionuclides from drinking water, the total dose is about 10 mSv . . . per year." (Id.) "Overall, this range of 1 to 10 mSv . . .–a span of a factor of ten–is typical of the variation in background doses for most United States citizens in a given year." (Id.) The FEIS addressing HRI's license application estimated that "[t]he average whole-body dose rate to the population in this part of New Mexico includes a dose of 1.5 mSv/year . . . from local natural background radiation and 0.75 mSv/year . . . from medical procedures, based on national average. Therefore, total background estimated to be about 2.25 mSv/year . . . ." (Id. at 1146.)

[9]Intervenor HRI does dispute this. For our purposes, here, however, we will assume that the aggregate dose resulting from the conventional mining debris would exceed the § 20.1301(a)(1) limit of 0.1 rem annually.

application, to consider only the negligible airborne radiation expected to result from HRI's ISL mining operation or, instead, to aggregate that minute amount of airborne radiation with the already existing radioactive emissions from the previously abandoned conventional mine site. The NRC determined that it need only consider the radioactive emissions expected from the ISL mining operations HRI sought to license.

a. Whether 10 C.F.R. § 20.1301(a)(1) "compels" an interpretation other than that given it by the NRC

In light of the NRC's determination that it need consider only the radioactive emissions from the operation seeking the license, we first consider whether "an alternative reading [of § 20.1301(a)(1)] is compelled by [that regulation's] plain language." Thomas Jefferson Univ., 512 U.S. at 512 (quotation omitted). We conclude it is not.

Section 20.1301(a)(1) requires that "[t]he total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1mSv) in a year." (Emphasis added.) The clear language of this regulation supports the NRC's decision to focus only on the licensed operation. Thus, the NRC's determination is not a "plainly erroneous" interpretation of the regulation's language.

In reaching this conclusion, we reject Petitioners' argument that the NRC's simplistic reading of this phrase makes the remainder of the sentence at

issue—requiring the TEDE calculation to be made "exclusive of the dose contributions from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released under [10 C.F.R.] § 35.75, from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage in accordance with [10 C.F.R.] § 20.3003"—irrelevant. The NRC asserts, however, that this language clarifies that the NRC's regulations specifically addressing sanitary sewers and medical administration of radiation continue to govern those other matters. This interpretation explains all but the regulation's exclusion of background radiation, and that exclusion makes sense in its own right.

The NRC also rejected Petitioners' contention that "licensed operations" should include a particular physical location that is under the operator's control:

> HRI's bare ownership of land containing radioactive mine spoil is not part of its NRC-licensed "operation." It did not bring the material to the surface. It is not required to have an NRC license to possess source material in the form of unprocessed ore (so long as it does not process that ore). Nothing in the record suggests that HRI plans to "process" the dust and rock that cover the surface of Section 17.

In re Hydro Res., Inc., 63 NRC at 516 (footnote omitted). The agency's interpretation of the regulation's language, in this regard, is also not "plainly erroneous"; that is, the language does not compel another construction. See Thomas Jefferson Univ., 512 U.S. at 512.

Lastly, Petitioners argue that the NRC has historically interpreted this regulation to include both unlicensed and unregulated sources of radiation in its calculation of the TEDE, along with licensed sources of airborne radiation. The NRC agrees that that was true for a time, under different versions of this regulation. But the NRC revised § 20.1013 in 1991, changing language that included radiation from both licensed and unlicensed sources, see 10 C.F.R. § 20.1(b) (1979 ver.); see also 22 Fed. Reg. 548, 549 (Jan. 29, 1957); 44 Fed. Reg. 32,349, 32,352 (June 6, 1979), to the current language, referring only to "the licensed operation," 10 C.F.R. § 20.1301(a)(1), see 56 Fed. Reg. 23,391, 23,398 (May 21, 1991). With this revision, the NRC has now specifically linked the relevant measured dose to the "licensed operation." See 56 Fed. Reg. 23391, 23398 (May 21, 1991). At that same time, the NRC also reduced the maximum exposure to members of the public from 0.5 rem to 0.1 rem. See In re TMI, 67 F.3d at 1111 n.18.

b. Whether other indications of the NRC's intent at the time it promulgated these regulations contradict the NRC's current interpretation of § 20.1301(a)(1)

We must also consider whether indications of the agency's "intent at the time of the regulation's promulgation" contradict the NRC's interpretation of 10 C.F.R. § 20.1301(a)(1) at issue here. Thomas Jefferson Univ., 512 U.S. at 512 (quotation omitted). The NRC's predecessor, the Atomic Energy Commission ("AEC"), first promulgated "regulations 'to establish standards for the protection

of . . . licensees, their employees and the general public against radiation hazards'" in 1957. In re TMI, 67 F.3d at 1110 (quoting 25 Fed. Reg. 8595, 8595 (1960)). "The preface to the regulation explained, 'It is believed that the standards incorporated in these regulations provide, in accordance with present knowledge, a very substantial margin of safety for exposed individuals. It is believed also that the standards are practical from the standpoint of licensees.'" Id. (quoting 25 Fed. Reg. at 8595). These regulations, then, emphasized safety, of course, but also the development of nuclear energy when possible. And this is consistent with the policy established by the AEA in general to address "the development, use, and control of atomic energy."[10] 42 U.S.C. § 2011; see also English v. Gen. Elec. Co., 496 U.S. 72, 80-81 (1990) (noting the Atomic Energy

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[10]Congress stated its policy underlying the AEA as follows:

> Atomic energy is capable of application for peaceful as well as military purposes. It is therefore declared to be the policy of the United States that —
>
> > (a) the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security; and
> >
> > (b) the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise.

42 U.S.C. § 2011.

Act of 1954 "stemmed from Congress' belief that the national interest would be served if the Government encouraged the private sector to develop atomic energy for peaceful purposes under a program of federal regulation and licensing"). To effectuate this purpose, the AEA provides for "a program of conducting, assisting and fostering research and development in order to encourage maximum scientific and industrial progress" and "to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public." 42 U.S.C. § 2013(a), (d); see Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n, 461 U.S. 190, 221 (1983) (noting that "a primary purpose of the [AEA] was, and continues to be, the promotion of nuclear power," and that the AEA's legislative history "confirm[s] that it was a major policy goal of the United States that the involvement of private industry would speed the further development of the peaceful uses of atomic energy") (quotations omitted).

"In 1960, the AEC substantially revised these regulations . . . [,] setting 0.5 rem as the maximum yearly radiation exposure allowed for the general public." In re TMI, 67 F.3d at 1111. These new regulations again emphasized the safe development of nuclear energy, "represent[ing] 'an appropriate regulatory basis for protection of the health and safety of employees and the public without

imposing undue burdens upon licensed users of radioactive material.'"[11] Id. (quoting 25 Fed. Reg. at 8595).

In 1991, the NRC issued the regulation at issue in this case, 10 C.F.R. § 20.1301. See In re TMI, 67 F.3d at 1111 n.18. This new regulation "reduc[ed] the annual permissible exposure rate for the public to 0.1 rem per individual–down from the 0.5 rem standard that had existed for more than three decades." Id. This amendment was part of the NRC's effort to "amend[] federal regulations to incorporate updated scientific information and to reflect changes in the basic philosophy of radiation protection." Good v. Fluor Daniel Corp., 222 F. Supp. 2d 1236, 1248 (E.D. Wash. 2002).

The NRC's construction of 10 C.F.R. § 20.1301(a)(1) in HRI's case is not contrary to any indication of the NRC's intent when it promulgated that regulation. We note, too, that the NRC's construction of 10 C.F.R. § 20.1301(a)(1)'s dose limit to apply only to the operation being licensed is also consistent with Congressional policy, expressed in the AEA, to develop and use atomic energy.[12]

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[11]The NRC again revised these regulations in 1964 and 1979. See In re TMI, 67 F.3d at 1111 & n.19.

[12]We further note, however, that the NRC's interpretation of § 20.1301(a)(1)'s dose limit for individual members of the public would not preclude the NRC from denying a license application where the already existing airborne radiation presents a significant threat to the public safety and the licensed operation would substantially add to that radiation. That is because the (continued...)

c. Conclusion

For the foregoing reasons, we conclude that the NRC's interpretation of 10 C.F.R. § 20.1013(a)(1) to require the agency to consider only airborne radiation stemming from the licensed operation itself was not plainly erroneous or inconsistent with the regulation.[13]

B. National Environmental Policy Act

Petitioners assert that the manner in which the NRC considered the airborne radiation at the Church Rock Section 17 site also violated NEPA. "[NEPA] mandates that federal agencies . . . assess potential environmental consequences of a proposed action." Utah Envtl. Cong. v. Russell, 518 F.3d 817, 820-21 (10th Cir. 2008); see also New Mexico ex rel. Richardson v. Bur. of Land Mgmt., 565

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[12](...continued)
AEA authorizes the NRC to "establish, by rule, minimum criteria for the issuance of specific or general licenses for the distribution of source material depending upon the degree of importance to the common defense and security or to the health and safety of the public . . . ." 42 U.S.C. § 2093(b) (emphasis added). Furthermore, 10 C.F.R. § 20.1301(f) provides that "[t]he Commission may impose additional restrictions on radiation levels in unrestricted areas," where the public might be exposed, "and on total quantity of radionuclides that a licensee may release in effluents in order to restrict the collective dose." Thus, the NRC could still deny a license or make a license more restrictive where a licensed operation would significantly increase the airborne radiation already being emitted. But that is not the case here. The parties do not dispute that HRI's licensed operation will add only negligibly to the airborne radiation being emitted on Section 17.

[13]In light of this conclusion, we need not consider the NRC's alternative conclusion that the airborne radiation being emitted from the prior mining operation is background radiation expressly excluded from the radiation dosage calculation called for under § 20.1301(a)(1).

F.3d 683, 703 (10th Cir. 2009); Citizens' Comm. to Save Our Canyons v. Kreuger, 513 F.3d 1169, 1177-78 (10th Cir. 2008) (noting "NEPA places upon federal agencies the obligation to consider every significant aspect of the environmental impact of a proposed action") (quotation omitted). NEPA further "ensures that an agency will inform the public that it has considered environmental concerns in its decision-making process." Krueger, 513 F.3d at 1177-78 (quotation omitted). "By focusing both agency and public attention on the environmental effects of proposed actions, NEPA facilitates informed decisionmaking by agencies and allows the political process to check those decisions." New Mexico, 565 F.3d at 703.

But "NEPA itself does not mandate particular results"; "[i]nstead [it] imposes only procedural requirements to ensure that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts." Winter v. Natural Res. Def. Council, Inc., 129 S. Ct. 365, 376 (2008) (quotations omitted); see also New Mexico, 565 F.3d at 704; Russell, 518 F.3d at 821 ("NEPA dictates the process by which federal agencies must examine environmental impacts, but does not impose substantive limits on agency conduct."). Nor does NEPA "require agencies to elevate environmental concerns over other appropriate considerations." Krueger, 513 F.3d at 1178 (quotation omitted). Instead, NEPA "requires only that the agency take a 'hard look' at the environmental consequences before taking a

major action. . . . The role of the courts in reviewing compliance with NEPA is simply to ensure that the agency has adequately considered and disclosed the environmental impact of its actions . . . ." Id. at 1178 (citations, quotations omitted); see also New Mexico, 565 F.3d at 704.

1. Standard of review

NEPA itself does not provide for a private right of action; therefore, this court reviews an agency's approval of a project, including the agency's compliance with NEPA, under the APA. See Russell, 518 F.3d at 823. In doing so, this court "will not set aside an agency decision unless it is 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.'" Id. (quoting 5 U.S.C. § 706(2)(A)); see also New Mexico, 565 F.3d at 704.

> An agency's decision is arbitrary and capricious if the agency 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. Furthermore, we must determine whether the disputed decision was based on consideration of the relevant factors and whether there has been a clear error of judgment.

Russell, 518 F.3d at 823-24 (quotation, citations, alterations omitted); see also New Mexico, 565 F.3d at 704. Again, our "deference to the agency is especially strong where the challenged decisions involve technical or scientific matters within the agency's area of expertise." Russell, 518 F.3d at 824 (quotation omitted). "A presumption of validity attaches to the agency action and the burden

of proof rests with the [parties] who challenge such action." Kreuger, 513 F.3d at 1176 (quotation omitted).

2. Analysis

Petitioners assert that the NRC's consideration of airborne radiation at Section 17 violated NEPA in two respects: 1) the NRC failed to consider the cumulative amount of airborne radiation that will be emitted from both the prior conventional mining operation and HRI's proposed ISL mining operation; and 2) the NRC mischaracterized the airborne radiation as "background radiation."

a. Whether the NRC erred in failing to consider the cumulative airborne radiation that will result from both the prior conventional mining activities and HRI's proposed ISL mining operation

In arguing that the NRC violated NEPA by failing to consider the cumulative impact of the airborne radiation at Section 17, Petitioners rely on 40 C.F.R. § 1508.7.[14] Under NEPA,

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[14]40 C.F.R. § 1508.7 defines "cumulative impact" as

> the impact on the environment which results from the incremental impact of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

See also Wilderness Workshop v. U.S. Bur. of Land Mgmt., 531 F.3d 1220, 1228 n.8 (10th Cir. 2008); Utah Envtl. Congress v. Richmond, 483 F.3d 1127, 1133, 1139-40 (10th Cir. 2007). The NRC has also promulgated its own regulations for complying with NEPA, 10 C.F.R. Pt. 51.

> [o]ur job is not to question the wisdom of the agency's ultimate decision or its conclusion concerning the magnitude of indirect impacts. Rather, our job is to examine the administrative record, as a whole, to determine whether the agency made a reasonable, good faith, objective presentation of those impacts sufficient to foster public participation and informed decision-making.

Fuel Safe Washington v. FERC, 389 F.3d 1313, 1331 (10th Cir. 2004) (quotations, citations, alterations omitted); see also Richmond, 483 F.3d at 1140 (noting that "NEPA does not prohibit approval of projects with negative cumulative effects; it only requires that the [agency] consider and disclose such effects"). We conclude the NRC has met that standard here.

In addressing "airborne radiation," the NRC's FEIS noted 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-222 and its daughters." (Jt. App. at 276.) After further noting that "[t]he average whole-body dose rate to the population in this part of New Mexico," resulting from "local natural background radiation and . . . from medical procedures[,] . . . is estimated to be about 2.25 mSv/year," the FEIS went on to acknowledge that the "[r]adiological effects during project construction would include natural background plus remnant radiation stemming from previous mining and milling activities near the Church Rock site." (Id. at 276-77.)

The FEIS went on to discuss the possible airborne radiation that the ISL mining operations would create, and then considered

> the cumulative effect of the long history of mining in the area and the large exposures to radon (and other radioactive elements that form as radon decays) that occurred primarily to miners and resulted in a high incidence of cancer among them. [The FEIS] concludes that the proposed project would result in a negligible increase in existing impacts to the area due to mining and milling.
>
> The NRC staff is aware that to some members of the local community, any increase in the cumulative effect or in radioactivity, brought to the surface by any uranium mining activity, would be unacceptable. This perception is likely to be most prevalent among those whose health has been, or who have family members or friends whose health has been negatively affected by uranium mining activity.

(Id. at 284.)

The FEIS concluded that HRI's ISL mining would have "negligible" impact on the current airborne emissions levels:

> The proposed project would make a minor contribution to cumulative impacts in terms of health physics and radiological impacts. . . . The annual population dose was estimated for the period in time of greatest releases from all three project sites. Two population dose estimates were calculated: one for the Crownpoint/Unit I sites and one for the Church Rock site. As the area of impact is similar for both calculations, the results were combined with a total population dose less than .01 man-Sv/year . . . .
>
> Northwest New Mexico has a long history of uranium mining and milling. Effects of previous mining and milling operations in the area are considered here as they relate to the proposed licensing action. The Church Rock facility as proposed would mine an area previously mined by underground mining to supply ore to the Church Rock mill site. . . . Early mines and mills operated under much less stringent standards than exist today, and this resulted in large exposures to radioactive materials, especially radon and its daughters. The exposures were large enough to result in a high incidence of cancer among workers, and information gathered on these workers resulted in development of risk factors on radon.

> In addition, the methods used to mine and mill the uranium (i.e., "conventional" mining) resulted in very large amounts of radioactively and chemically contaminated sands and slimes, also known as tailings. In 1978, the U.S. Congress passed the Uranium Mill Tailing Radiation Control Act, which required standards to be developed to control exposure from tailings and clean up past sites of uranium milling. . . .
>
> The proposed project would result in a negligible increase in cumulative impacts in the area due to uranium mining and milling. HRI has proposed an ISL process which, by its nature, does not result in large amounts of tailings or environmental releases of radioactive particulate material. Additionally, HRI has proposed to use a vacuum dryer, which reduces the total releases of radioactive particulates to nearly zero, and a pressurized process circuit with a feedback system to return radon to the mine zone, which reduces environmental radon releases. The expected exposures from the remaining possible sources of radon are a very small fraction of the allowable limits for exposure of the public. The amount of generated tailings is very small, in the tens of cubic meters per year, and would be disposed of at an off-site licensed facility. In addition, the facility and related well fields would be required to be decontaminated and decommissioned to the appropriate State and Federal standards.

(Id. at 289-90.)

It is clear, then, that the NRC did consider the cumulative effect of the airborne radiation from past mining as well as that expected from HRI's proposed ISL operations.[15] Petitioners, nevertheless, fault the FEIS for not quantifying the

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[15]The FEIS also considered the cumulative impact of the past, present and future airborne radiation when it noted, in several places, that as a result of the NRC granting HRI a license, HRI will be required to clean up the Section 17 site, thus remedying the past contamination. For example, the FEIS noted that

> [t]he proposed project may result in a positive health effect at the Church Rock site. This effect would occur because some areas of the site have higher concentrations of residual activity (from previous mining activities) than would be allowed in decommissioning the site

(continued...)

amount of airborne radiation already being emitted on Section 17 from the past mining debris. "But NEPA's 'hard look' does not necessarily always require the agency to develop 'hard data.'" Krueger, 513 F.3d at 1179 (citing Ecology Ctr., Inc. v. U.S. Forest Serv., 451 F.3d 1183, 1190 (10th Cir. 2006)). In this administrative proceeding, the NRC was considering the environmental impact of granting HRI a mining license. And the NRC determined that those mining operations would have only a negligible effect on the amount of airborne radiation on Section 17. The agency's "hard look" at the airborne emissions HRI's operations are expected to produce, therefore, sufficed to meet the NRC's obligation under NEPA to consider the cumulative impact that granting HRI's license would have on airborne radiation. The NRC was not tasked here with specifically mitigating the contamination left from prior mining operations.[16] Cf. Richmond, 483 F.3d at 1140 (noting that NEPA requires only that the agency

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[15](...continued)
under the proposed action. Therefore, these areas may be cleaned up as part of the well field decontamination.

(Jt. App. at 284.) Although Petitioners disagree with this reasoning, the FEIS's discussion of this possibility nevertheless reinforces the fact that the FEIS did consider the cumulative impact of the past, present and future airborne radiation at Section 17.

[16]Because they raise the issue for the first time before this court in their reply brief, Petitioners have waived their argument that the FEIS improperly averaged airborne radiation readings. We, therefore, decline to address that issue. See Silverton Snowmobile Club v. U.S. Forest Serv., 433 F.3d 772, 783-84 (10th Cir. 2006).

consider and disclose negative effects; it does not prohibit the agency's approval of programs with negative cumulative effects).

2. Whether the NRC erred in characterizing the airborne radiation emitted from the prior conventional mining operation as background radiation

Petitioners also argue that the FEIS, in addressing the effects of the past mining operations, erroneously treated the airborne radiation already being emitted from the debris as naturally occurring rather than as man-made background radiation. Even if it did so, the FEIS still adequately considered the cumulative impact from all of these sources of airborne radiation, regardless of how the NRC characterized that airborne radiation.

3. Conclusion

For the foregoing reasons, the NRC's consideration of the cumulative impact of airborne radiation at Section 17 amounted to the "hard look" NEPA required. We cannot say, therefore, that the NRC's decision to issue HRI a license was arbitrary, capricious, an abuse of discretion, or otherwise contrary to law.

III. GROUNDWATER CONTAMINATION AND RESTORATION AT SECTION 8

"Although . . . 'in situ' leach mining techniques are considered more environmentally benign [than] traditional mining and milling practices they still tend to contaminate the groundwater." (Jt. App. at 1394 (NRC publication

"Consideration of Geochemical Issues in Groundwater Restoration at Uranium In-Situ Leach Mining Facilities").) In light of that, the license the NRC issued HRI requires HRI to restore the groundwater after it finishes mining each site. The license also requires HRI to maintain an adequate financial surety to guarantee that HRI or a third party, in HRI's absence, will be able financially to conduct this restoration. See also 10 C.F.R. §§ 40.1, 40.36, 40.42, App'x A, Criterion 9. Petitioners assert that the NRC, in crafting these license provisions, violated the AEA's mandate that the NRC not issue any license that, "in the opinion of the Commission," is "inimical to the common defense and security or the health and safety of the public." 42 U.S.C. § 2099; see also 10 C.F.R. § 40.32(d). Further, Petitioners contend that the FEIS violated NEPA because it failed to take the required "hard look" at the possible impact ISL mining might have on Section 8's groundwater quality, and particularly the impact on that groundwater quality should HRI be unable to meet the restoration goals set forth in the license.

A. Atomic Energy Act

As previously mentioned, the AEA mandates that the NRC not grant a license "if, in the opinion of the Commission, the issuance of a license to such person for such purpose would be inimical to the common defense and security or the health and safety of the public." 42 U.S.C. § 2099; see also 10 C.F.R. § 40.32(d). In order to implement that mandate, the NRC has promulgated

regulations governing "the issuance of [these] licenses . . . and [to] establish and provide for the terms and conditions upon which the [NRC] will issue such licenses." 10 C.F.R. § 40.1(a); see also id. § 40.1(b). Among those regulations, Appendix A to 10 C.F.R. Pt. 40 sets forth criteria the NRC will consider in making licensing determinations for an ISL uranium mining operation.[17] See In re Hydro Res., Inc., 49 N.R.C. 233, 235 (1999). At issue here, then, is whether the conditions the NRC imposed on the license it issued HRI, addressing the restoration of the quality of the groundwater at Section 8, remain true to the AEA's mandate.

1. Standard of review

This court "will not set aside an agency's decision unless it is 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.'" Russell, 518 F.3d at 823 (quoting 5 U.S.C. § 706(2)(A)). Further, this court defers to the agency's reasonable interpretation of its own regulations and, thus, will "accept the agency's position unless it is plainly erroneous or inconsistent

[17]According to HRI, the NRC promulgated Appendix A's criteria with only conventional uranium milling operations in mind. But a panel of the NRC's Atomic Safety and Licensing Board ("ASLB") concluded in this case that 10 C.F.R. Part 40 and its Appendix A also apply generally to ISL mining. See In re Hydro Res., Inc., 49 N.R.C. at 235; see also In re Hydro Res., Inc., 51 N.R.C. 227, 238 (2000). Nevertheless, some of Appendix A's criteria, because they are aimed at uranium milling, are not directly relevant to ISL mining. See In re Hydro Res., Inc. 49 N.R.C. at 236. After the NRC issued HRI the license disputed in this case, the agency developed a Standard Review Plan specifically applicable to ISL recovery operations.

with the regulation." Holowecki, 552 U.S. at 397 (quotations omitted).

2. HRI's license[18]

a. Restoration of water quality

The problem the NRC faced in this case, regarding the restoration of the groundwater at Section 8, was this: NRC regulations require that HRI decommission the site, including restoring the quality of the groundwater. But no one had, as yet, fully restored the groundwater quality after an ISL mining operation.[19] Nonetheless, based upon results from pilot demonstrations and small-scale tests, the NRC became convinced that it was possible for HRI to restore the groundwater at a well site after it finished ISL mining.

HRI proposes to do so by

> flushing the aquifer with naturally occurring groundwater and decontaminated water to remove any remaining lixiviant and degraded groundwater. Affected water in each mine unit being restored would be withdrawn . . . , processed through [the] ion exchange to remove uranium, then treated to remove radium and total dissolved solids. This treated water, known as permeate, would then be reinjected to further flush the aquifer. Groundwater sweep and permeate injection would be balanced so that a cone of depression would be maintained, causing

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[18]HRI's license incorporated "all commitments, representations, and statements made in its licensing application," as well as the "Crownpoint Uranium Project Consolidated Operations Plan (COP) . . . except where superseded by license conditions contained in th[e] license." (Jt. App. at 314 (§ 9.3).) In addition, the license also included a later-developed "Restoration Action Plan." See In re Hydro Res., Inc., 51 N.R.C. at 234, 238, 241-42.

[19]There is evidence in the record indicating that, after the NRC issued the FEIS in this case, groundwater quality was successfully restored at the Bison Basin mine following an ISL mining operation.

> groundwater to flow toward the mining unit. Thus, natural groundwater would be drawn into the mining unit's center.

(Jt. App. at 244.) The number of times the aquifer will need to be flushed is measured by "pore volumes":

> A pore volume is an indirect measure of the volume of water that must be pumped or processed to restore the groundwater. It represents the water that fills the void space inside a certain volume of rock or sediment. Restoration costs are closely linked to the amount of water that must be processed to effect restoration. The pore volume parameter is used to represent how many times the contaminated volume of water in the rock must be displaced or processed to restore groundwater quality. It provides a means of comparing the level of effort required to restore groundwater regardless of the scale of the test. In general, the more pore volumes of water it takes to restore groundwater quality, the more money it will cost to achieve restoration.

(Id. at 258.)

In calculating the restoration efforts needed for HRI to restore the groundwater quality during its Crownpoint project, the NRC considered at length data HRI submitted from demonstrations and test results "conducted at other project locations."[20] (Id. at 258.) The NRC concluded

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[20]HRI submitted to the NRC data from several studies and projects. The NRC first considered the results of HRI's own small core tests done in a laboratory using samples of rock removed from the ore zones at the sites HRI seeks to mine as part of its Crownpoint project. HRI conducted these tests in order to "demonstrate the restoration potential" of this area. (Jt. App. at 258-60.) Data from tests conducted on the core samples taken from the Church Rock site "show[ed] the restored values after 20 pore volumes [we]re circulated through the core," 16 if the pore volumes were run through at a faster pace; tests on the Crownpoint core took 28 pore volumes to reach "restored values." (Id. at 260; see also id. at 261-64.) While the NRC recognized that results from such small-scale studies can provide useful information, the agency had "significant

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concerns" about whether these small-scale test results accurately reflected an actual full-scale restoration process. (Id. at 258-60.)

Next, HRI submitted the results of "a single-well pilot solution mine test, conducted in the Westwater Canyon aquifer"—the aquifer where HRI proposes to conduct the ISL mining at issue here—"near the Church Rock site in June 1980 by United Nuclear Corporation and Teton Exploration Company." (Id. at 260.) This test "show[ed] the restored values after 3 pore volumes had been pumped from the aquifer." (Id.) Nevertheless, the data from this test indicated that not all of the individual parameters—chemicals or properties used to measure groundwater quality—were returned to baseline levels. While this test "was a larger-scale test than HRI's core restoration studies," the NRC was still concerned that the Teton

> test may not represent restoration of a full-scale well field because (1) considerable dilution from uncontaminated groundwater occurs during the clean-up phase; (2) one pore volume (at most) was leached, which is much less than in a commercial operation; (3) there was a relatively short contact time between the rock and lixiviant (5 days); and (4) fresh lixiviant was not continuously injected into the formation as would occur in an operating ISL mine.

(Id.)

HRI also submitted data from a 1979-80 pilot project, referred to as "Mobil Section 9 pilot," conducted by Mobil Oil Company at a location one mile from HRI's proposed Unit 1 mine site. (Id. at 266-67.) In that test, Mobil created an actual well field and injected lixiviant there for eleven months. This test "show[ed] restored water quality values after 16.7 pore volumes had been pumped from the aquifer." (Id.) But again not all of the individual parameters were restored to baseline levels. In particular, Mobil had trouble restoring the concentration of molybdenum and radium to pre-mining levels.

In addition to these test results, HRI also submitted "restoration demonstration data" from its production-scale facilities in Wyoming and New Mexico. (Id. at 266.) The NRC noted that it "regulates ISL mining in Wyoming and New Mexico," and that it had previously "approved the restoration of several test patterns [there] to explore the feasibility of ISL mining or demonstrate the
(continued...)

from this data that "all the parameters" used by the license to measure groundwater quality "can eventually be restored to water use standards." (Id. at 269.) The NRC, however, also concluded that, notwithstanding these demonstration and test results and because "water quality in aquifers containing uranium deposits may be highly variable[,] . . . groundwater restoration criteria

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[20](...continued)
feasibility of production-scale restoration." (Id.) But the "NRC has not yet approved the successful restoration of a production-scale well field at any of its licensed sites." (Id.)

The NRC went on to acknowledge that Texas had "approved groundwater restoration of production-scale ISL facilities," but that occurred "in groundwater of lower water quality than that on the New Mexico properties" at issue in HRI's license application. (Id.) For that reason, the NRC did "not consider the Texas data as representative for demonstrating restoration at the New Mexico sites." (Id.)

Lastly, the NRC noted the results of its own test, "conducted to investigate the ability of natural geochemical processes to restore water quality after ISL mining activities in an aquifer." (Id. at 268.) That test studied the migration of lixiviant "down-gradient from a mined area into the area of an aquifer where reducing conditions occur naturally." (Id.)

> The study indicated that major ion concentrations elevated during ISL mining, such as sodium, chloride, and sulfate, are affected very little when the lixiviant migrates into the undisturbed reduced zone. As a result, concentrations tend to remain at the level to which the water was restored for some distance from the area of former mining. Conversely, redox- (oxidation/reduction) sensitive ions such as uranium, arsenic, selenium, and molybdenum precipitate from solution if the restored water moves into a reducing zone. Therefore, after restoration activities, if groundwater moves into a reducing area, concentrations of these ions should rapidly decrease in the groundwater

(Id.) "This study also indicated that water quality in aquifers containing uranium deposits may be highly variable." (Id.)

for specific mining projects should be set taking into account site-specific conditions and spatial variation." (Id. at 268.) Further, "[r]estoration criteria should be based on a statistical analysis of groundwater chemistry data from a large set of wells sampled over a period of time." (Id.)

In light of these conclusions, the NRC, in crafting the terms of HRI's license addressing restoration of ground water quality at Section 8, did two things. First, the NRC determined that HRI's restoration efforts would be measured using thirty-five specified "parameters," or chemical elements or properties.[21] "HRI [is] required to use baseline [pre-mining] conditions as the primary restoration target for all constituents" or parameters. (Id. at 244.) The parties do not challenge this means by which the license measures HRI's restoration efforts.

> Lixiviant shall not be injected into a well field before groundwater quality data is collected and analyzed to establish groundwater restoration goals for each monitored aquifer of the well field, as follows:

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[21]HRI's license specifically provides:

> In establishing restoration goals, the following parameters shall be measured: alkalinity, ammonium, arsenic, barium, bicarbonate, boron, cadmium, calcium, carbonate, chloride, chromium, copper, fluoride, electrical conductivity, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, nitrate, pH, potassium, combined radium-226 and radium-228, selenium, sodium, silver, sulfate, total dissolved solids, uranium, vanadium, zinc, gross Beta, and gross Alpha (excluding radon, uranium, and radium).

(Jt. App. at 320.)

> A) The licensee shall establish groundwater restoration goals by analyzing three independently-collected groundwater samples of formation water from: (1) each monitor well in the well field; and (2) a minimum of one production/injection well per acre of well field. Samples shall be collected a minimum of 14 days apart from each other. Groundwater restoration goals shall be established on a parameter-by-parameter basis, with the primary restoration goal to return all parameters to average pre-lixiviant injection conditions. If groundwater quality parameters cannot be returned to average pre-lixiviant injection levels, the secondary goal shall be to return groundwater quality to the maximum concentration limits specified in the U.S. Environmental Protection Agency (EPA) secondary and primary drinking water regulations. The secondary restoration goal for barium and fluoride[, however,] shall be set to the State of New Mexico primary drinking water standard. The secondary restoration goal for uranium shall be 0.44 mg/L (300 pCi/L).[22]

(Id. at 320 (§ 10.21) (footnote added).)[23] The FEIS explained that meeting the secondary goals will suffice if "water quality parameters cannot be returned to average pre-mining baseline levels through reasonable restoration efforts." (Id. at 244.) And, although HRI's license does not state this, the FEIS suggests that if HRI "found that it were impracticable to restore to primary or secondary goals, it might request a license amendment that would allow some change in restoration requirements on a parameter-by-parameter basis." (Id. at 256.) The FEIS

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[22]The parties later agreed to reduce this amount to 0.03 mg/L. See In re Hydro Res., Inc., 62 N.R.C. 77, 92 & n. 7 (2005).

[23]"These goals are consistent with the NRC Staff Technical Position Paper *Groundwater Monitoring at Uranium In Situ Solution Mines* (NRC 1981b)." (Jt. App at 256.)

indicates, however, that

> [i]f a groundwater parameter could not be restored to its secondary goal, HRI would have to make a demonstration to NRC that leaving the parameter at the higher concentration would not be a threat to public health and safety and that, on a parameter by parameter basis, water use would not be significantly degraded.

(Id.)

The NRC was particularly concerned about restoring the "total dissolved solids," or "TDS," parameter:

> TDS is a measure of the total sum of all dissolved constituents, but it is most affected by the major constituents (sulfate, chloride, calcium, bicarbonate, carbonate, fluoride, sodium, and potassium). However, not all major constituents have a secondary or primary drinking water standard (for example, bicarbonate, carbonate, calcium, magnesium, potassium). Consequently, it is possible that after groundwater restoration, the TDS secondary goal might be achieved, but the secondary goal for individual major ions that contribute to TDS might not be achieved. If such a situation occurred, HRI would have to make a demonstration to NRC that leaving a parameter at higher than secondary goal concentrations would not be a threat to public health and safety and that water use would not be significantly degraded. For groundwater with TDS concentrations less than the secondary goal, NRC staff ha[s] assumed that worst-case groundwater restoration would return water quality to the secondary goal, even though it cannot be achieved without leaving some of the major parameters at higher than background concentrations (i.e., between primary and secondary goal concentrations).

(Id. at 256-58.)

The second thing the NRC did in drafting the terms of HRI's license was to employ a graduated approach to groundwater restoration at Section 8 and as to the Crownpoint project as a whole. Because "water quality in aquifers containing

uranium deposits may be highly variable" and, thus, "groundwater restoration criteria for specific mining projects should be set taking into account site-specific conditions" (id. at 268), the license requires HRI, when it begins mining at Section 8, to conduct a demonstration of its restoration methods. HRI must set aside a well field in Section 8, perform ISL mining there "for at least three months under commercial activity conditions," and then restore the groundwater quality in this test field "to levels consistent with baseline." (Id. at 311.) HRI will then be able to use this demonstration to calculate the pore values needed generally to restore the groundwater throughout the project to baseline. "Authorization for expansion of mining into additional areas will be contingent upon the results of the restoration demonstration." (Id.)

b. Surety to guarantee the financial ability to conduct restoration efforts

In order to facilitate the restoration of a mine site after the operator has finished mining it, the NRC's regulations further require that the mine operator provide a surety in order to insure that the licensee will have the economic wherewithal to "decommission" the ISL mine site. 10 C.F.R. Pt. 40, App. A, Criterion 9. The NRC will review the amount of the required surety annually and can adjust the surety requirements as necessary "to recognize increases or decreases resulting from inflation, changes in engineering plans, activities performed, and any other conditions affecting cost." Id.

In addressing this required surety arrangement, HRI's license mandates that the "ground water restoration of the initial well fields shall be based on nine pore volumes" (id. at 312):

> Surety for groundwater restoration of the initial well fields shall be based on 9 pore-volumes. Surety shall be maintained at this level until the number of pore volumes required to restore the groundwater quality of a production-scale well field has been established by the restoration demonstration described in [the license's section] 10.28. If at any time it is found that well field restoration requires greater pore-volumes or higher restoration costs, the value of the surety will be adjusted upwards. Upon NRC approval, the licensee shall maintain the NRC-approved financial surety arrangement consistent with 10 CFR Part 40, Appendix A, Criterion 9.
>
> Annual updates to the surety amount, required by 10 CFR Part 40, Appendix A, Criterion 9, shall be provided to the NRC at least 3 months prior to the anniversary date of the license issuance. If the NRC has not approved a proposed revision 30 days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing arrangement, prior to expiration, for 1 year. Along with each proposed revision or annual update of the surety the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation (i.e., using the approved Urban Consumer Price Index), maintenance of a minimum 15 percent contingency, changes in engineering plans, activities performed, and any other conditions affecting estimated costs for site closure.

(Id. at 315.)

3. Petitioners' challenges to the license's terms governing the restoration of groundwater at Section 8

Petitioners assert that the NRC violated the AEA, in two ways, when it issued HRI a license to conduct ISL mining at Section 8.

a. The license the NRC issued HRI is inimical to the

public's health and safety because the nine pore volumes required by the license to restore the ground water at Section 8, and the surety based upon that nine-pore-volume restoration, are inadequate

Petitioners contend that the NRC acted arbitrarily and capriciously in basing HRI's license and the required surety on a nine-pore-volume restoration effort. More specifically, Petitioners contend that the nine pore volumes will be inadequate to insure the public health and safety, as the AEA requires.

In choosing nine pore volumes, the NRC rejected HRI's original proposal that a four-pore-value restoration effort would be sufficient to restore the groundwater quality. The NRC chose nine pore volumes based on the agency's detailed analysis of the test and demonstration results HRI submitted, see supra n.20. Summarizing those results, the NRC concluded:

> Depending on the parameter and the test chosen, the pore volumes required to achieve the lower water quality of the secondary restoration goal or background ranged from less than 1 pore volume to greater than 28 pore volumes. However, plots of TDS concentrations and specific conductivity values (an indirect measure of TDS) show little improvement with continued pumping after 8 to 10 pore volumes. The Mobil Section 9 pilot is the largest restoration demonstration conducted in the project area to date. During groundwater restoration activities in the Mobil demonstration, TDS concentrations were close to the secondary goal of 500 mg/L after 6.9 and 9.7 pore volumes. On the basis of the data submitted by HRI, the [NRC] staff conclude[s] that practical production-scale groundwater restoration activities would at most require a 9 pore volume restoration effort. Accordingly the staff ha[s] calculated groundwater impacts assuming the use of 9 [pore] volumes for groundwater restoration. Furthermore, surety should be maintained at this level until the number of pore volumes required to restore the groundwater quality of a production-scale well field has been demonstrated.

(Jt. App. at 269.)

"In order for a factual determination to survive review under the arbitrary and capricious standard, an agency must examine the relevant data and articulate a rational connection between the facts found and the decision made." New Mexico, 565 F.3d at 713 (quotation, alterations omitted); see also Russell, 518 F.3d at 831. There is evidence in the administrative record supporting the NRC's determination that it is a reasonable estimate that HRI will be able to restore groundwater quality in Section 8 using nine pore volumes. For instance, the test results detailed in the FEIS suggest restoration of the groundwater quality is eventually possible. And in some of those tests, water quality was restored with fewer than nine pore volumes.

In addition, based upon those test results, the NRC's hydrologist, William Ford, indicated that it is "extremely likely that after in situ leach mining is completed, the groundwater quality will be restored to acceptable levels so that the water use of the aquifer is maintained." (Jt. App. at 484.) Ford further asserted that, while the Mobil Section 9 demonstration indicated that "it is unlikely that groundwater restoration activities at the Church Rock site will achieve baseline concentrations for all groundwater parameters," at "the 9-10 pore volume range," "it is likely that most, if not all, of the groundwater parameters will achieve the secondary groundwater restoration goals stated in HRI's License Condition 10.21." (Id.)

While Ford noted that "[a]pproximately 74% of the parameters monitored in the Mobil demonstration met the secondary groundwater restoration goals after 9-10 pore volumes of restoration effort" (id. at 484-85), he went on to explain why several of the parameters that the Mobil Section 9 demonstration could not restore should not present a problem for HRI's restoration efforts. According to Ford, two of the six parameters that Mobil could not restore—calcium and sodium—do not have primary or secondary drinking water standards because they are not hazardous to humans. And another—molybdenum—"is primarily a concern for cattle uptake." (Id. at 485.) Ford concluded that, in the Mobil Section 9 restoration demonstration, "[a]t 9.7 pore volumes, total dissolved solids (TDS) concentrations were at 587 parts per million (ppm), which was close to the secondary drinking water standard for dissolved solids of 500 mg/L." (Id.) Ford, therefore, concluded that "it is very likely that the TDS secondary goal will be achieved at Section 8, even though it cannot be accomplished without leaving some of the major parameters which are not a threat to public health and safety at higher than background concentrations." (Id.) In addition, Ford noted that, although the Mobil test did not restore arsenic after 9 pore volumes, it "was very close to" and "was for all practical purposes at the primary drinking water standard." (Id. at 485-86.) Finally, Ford acknowledged that the Mobil Section 9 demonstration was not able to restore uranium and radium levels after nine pore volumes. But after 9.7 pore volumes, "uranium was nearly in compliance with

the NRC standard, and radium concentrations were restored to anticipated baseline conditions." (Id. at 486.) Moreover, Ford opined that "parameters like arsenic, radium, molybdenum, and uranium are readily retarded by rock water interactions," and "[t]herefore, it is extremely unlikely that after restoration activities, arsenic, radium, molybdenum, or uranium levels would impact water quality outside the restored well field areas." (Id.)

The NRC's Atomic Safety and Licensing Board found Ford's explanation persuasive. See In re Hydro Res., Inc., 50 N.R.C. 77, 102-06 (Aug. 20, 1999). We cannot conclude here that that determination was arbitrary or capricious. See New Mexico, 565 F.3d at 713. Nor do we find any evidence in the administrative record to support Petitioners' assertion that the NRC based its adoption of the nine-pore-volume restoration effort on economic reasons and "HRI's financial well-being." (Pet. Br. at 47 n. 32.)

The NRC, then, considered in detail HRI's ability to restore the groundwater at Section 8 to its pre-lixiviant levels. And in drafting HRI's license, the NRC took a reasoned approach by requiring HRI to attempt to restore the groundwater at Section 8 before beginning ISL recovery operations at any of the other three sites. In light of that, we must uphold the NRC's licensing decision in this respect as not arbitrary or capricious, an abuse of discretion or contrary to law. See Utah Shared Access Alliance v. Carpenter, 463 F.3d 1125, 1134 (10th Cir. 2006) (noting that for an agency decision to survive

arbitrary-and-capricious review, the agency must have "examined the relevant data and articulated a rational connection between the facts found and the decision made," and "there must be a reasoned basis for the agency's action").

For the same reasons, we reject Petitioners' related contention that the NRC failed to require HRI to post an adequate surety for its groundwater restoration efforts. Petitioners contend that the actual pore volumes necessary to restore the groundwater at Section 8 could be much greater than the nine pore volumes on which the surety is currently based. But the regulations, as well as HRI's license, call for a surety based upon the "estimated" restoration costs. (Jt. App. at 315.) And, as just explained, the NRC has made a reasoned and informed determination of the needed restoration efforts. Further, based upon the relevant regulations, see 10 C.F.R. Part 40, Appendix A, Criterion 9, the license provides for an annual review of the surety and a mechanism by which that surety can be changed.

b. The license the NRC issued HRI is inimical to the public's health and safety because it allows HRI to remedy any deficiency in the surety funding at the time the site is decommissioned

Petitioners also argue that the NRC shirked its responsibility to set restoration goals and the surety in an amount adequate to insure the operator can restore the groundwater by simply relying on the fact that the surety can be increased later, during the NRC's annual reviews of the surety amount. As previously explained, however, the NRC did not shirk its responsibility. While

the NRC regulations do provide for an annual review of the surety and the possibility that the surety will need to be adjusted, see 10 C.F.R. Part 40, Appendix A, Criterion 9, the NRC made a definitive and reasoned selection of nine pore volumes at the outset of this project as the estimated necessary restoration effort that HRI must fund. The graduated nature of the project the NRC approved, however, represents a reasoned way to address the unknowns at play in this case.

4. Whether the NRC denied Petitioners the right to an administrative hearing on HRI's ability to restore the water quality in the other three mining sites

The AEA provides that, "[i]n 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." 42 U.S.C. § 2239(a)(1)(A). Petitioners requested such a hearing, and the NRC conducted one. Petitioners do not challenge the adequacy of that hearing. Instead, they complain that there will be a number of determinations about HRI's project that will be made in the future, and yet Petitioners will not at that time have the opportunity for another hearing on those issues. For example, the exact groundwater restoration standards cannot be determined until HRI drills its wells in Section 8. And restoration and surety requirements for the other three mining sites will not be determined until HRI initially demonstrates its ability to restore the groundwater at Section 8.

The NRC determined, however, that Petitioners

> had a fair opportunity to challenge the 9 pore volume estimate for Section 8, which was based upon the available information to date. The fact that data from the restoration demonstration project will be reviewed for confirmation of the 9 pore volume estimate does not obviate the fact that a meaningful hearing has been provided for the adjudication of the 9 pore volume estimate.

In re Hydro Res., Inc., 60 N.R.C. 581, 593 (2004). That determination was not arbitrary, capricious, an abuse of discretion or otherwise unlawful. The NRC conducted a hearing, after which it definitively determined that at this time a nine-pore-volume restoration effort would be necessary.

The NRC further noted that, if HRI or the NRC requested to amend the license and/or HRI's surety, Petitioners will, at that time, have an opportunity to request another hearing. See 42 U.S.C. § 2239(a)(1)(A) ("In any proceeding under this chapter, for the granting, 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.") (emphasis added). If, on the other hand, the NRC decides it does not need to amend HRI's license and/or surety, Petitioners themselves can petition to amend HRI's license. See 10 C.F.R. § 2.206(a) (stating that "[a]ny person may file a request to institute a proceeding pursuant to § 2.202 to modify, suspend, or revoke a license, or for any other action as may be proper"). See generally Fla. Power & Light Co. v. Lorion, 470 U.S. 729, 731 (1985).

Petitioners argue that it is unlikely that the relevant NRC Director will exercise its discretion, see Ohio ex rel. Celebrezze v. NRC, 868 F.2d 810, 814-15 (6th Cir. 1989), to grant them a hearing under § 2.206. See Eddleman v. NRC, 825 F.2d 46, 48 (4th Cir. 1987) (noting there is no right to a hearing under 10 C.F.R. § 2.206). But they are entitled to request a hearing. And if an NRC Director wrongly denies them a hearing, although there is no further administrative review available, see 10 C.F.R. § 2.206(c)(2), Petitioners may be able to seek judicial review of that determination. See Lorion, 470 U.S. at 740-41, 746; see also Kelley v. Selin, 42 F.3d 1501, 1515 (6th Cir. 1995) (citing Bellotti v. United States Nuclear Regulatory Comm'n, 725 F.2d 1380, 1383 (D.C. Cir. 1983)) (noting NRC may not deny arbitrarily a petition seeking a hearing under 10 C.F.R. § 2.206); Massachusetts v. United States Nuclear Regulatory Comm'n, 878 F.2d 1516, 1522, 1525 (1st Cir. 1989) (reviewing to determine whether agency "inexcusably default[ed] on its fundamental responsibility to protect the public safety"). But see Riverkeeper, Inc. v. Collins, 359 F.3d 156, 164 (2d Cir. 2004) (holding that NRC's denial of § 2.206(a) petition for a hearing was not reviewable because it was left to the agency's total and unreviewable discretion); Nuclear Info. Res. Serv. v. Nuclear Regulatory Comm'n, 969 F.2d 1169, 1178 (D.C. Cir. 1992) (noting the same); Arnow v. United States Nuclear Regulatory Comm'n, 868 F.2d 223, 235-36 (7th Cir. 1989) (same).

For these reasons, the NRC does not appear to have deprived Petitioners of

their right to a hearing.

B. Whether the NRC violated NEPA by failing to consider adequately the impact HRI's mining might have if HRI is unable to restore the groundwater quality at Section 8

Petitioners contend that the NRC violated NEPA by not properly considering the cumulative environmental impacts on Section 8 that might result if HRI is unable to restore the groundwater quality.[24] As previously mentioned, NEPA requires the NRC to consider the potential consequences of its proposed action by taking a "hard look" at those consequences. See Russell, 518 F.3d at 820-21; Kreuger, 513 F.3d at 1179. This court "will not set aside an agency decision unless it is 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.'" Russell, 518 F.3d at 823 (quoting 5 U.S.C. § 706(2)(A)).

The FEIS, in fact, does address the possibility that HRI will be unable to restore fully the groundwater at Section 8.

> The potential groundwater impacts of ISL mining are related to the consumption of groundwater (i.e., water is pumped from the aquifer but not returned to it) and short- and long-term changes to groundwater quality (i.e., the chemistry of the water). Perhaps the most significant environmental impact that can occur as a result of ISL mining is the degradation of water quality in the ore-bearing aquifer.

(Jt. App. at 254.) Further, the FEIS recognized that "[l]ocal groundwater quality

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[24]The NRC argues that Petitioners failed to preserve this issue before the agency. We need not address this waiver argument because, in any event, the NRC has complied with NEPA.

in the Westwater Canyon sandstone within the proposed mining units would deteriorate during HRI's proposed project." (Id.) In particular, during mining, "the concentrations of most of the naturally occurring dissolved constituents will be appreciably higher than their concentrations in the original groundwater." (Id.) "The total volume of groundwater that would be chemically affected by ISL mining is estimated to be 3.3 million m^3 (2671 acre-ft.)." (Id. at 287.)

In addition, the FEIS recognized the dangers posed by possible excursions—"unanticipated releases of mining solutions that move beyond the 'well field area'"—occurring during the mining process. (Id. at 254.) Specifically, the FEIS noted that "significant adverse effects to groundwater quality would result if an excursion (either horizontal or vertical) occurs or if, after routine mining, water quality is not restored." (Id. at 280.)

Not only did the FEIS recognize these possibilities, the FEIS expressly explored ways in which the groundwater contamination could be contained and eventually remediated.

> To preserve the community's use of the Westwater Canyon aquifer as a drinking water source, NRC staff would require several mitigation measures of HRI. . . . Generally, the measures include additional characterization, testing, and bonding above that proposed by HRI, for groundwater restoration. A groundwater restoration demonstration would be required at Church Rock before lixiviant could be injected at Unit 1 or Crownpoint.

(Id.) The FEIS discussed monitoring the groundwater contamination during ISL mining, as well as the methods and timing of HRI's efforts to restore the

groundwater quality after its mining operations cease. And the FEIS addressed the primary and secondary restoration goals which were eventually included in HRI's license. Further, the FEIS noted that, if HRI could not meet even the secondary restoration goals required of it, HRI "would have to make a demonstration to NRC that leaving the parameter at a higher concentration would not be a threat to public health and safety and that, on a parameter by parameter basis, water would not be significantly degraded." (Id. at 256.)

In addressing all of these issues, the FEIS acknowledged that "[s]uccessful restoration of a production-scale ISL well field has not previously occurred. Further, site-specific tests conducted by HRI have not demonstrated that the proposed restoration standards can be achieved at a production scale."[25] (Id. at 280.) Nevertheless, the FEIS ultimately determined that HRI would be able eventually to meet the required restoration goals. It did so based upon a detailed analysis of the test results from this and other projects offered by HRI, discussed above.[26]

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[25]There is evidence in the record that "after the FEIS was published[,] . . . groundwater was successfully restored by the State of Wyoming at the Bison Basin ISL mine site." (Jt. App. at 477 n.7.)

[26]On review, Petitioners fault the NRC for rejecting Petitioners' NEPA claim pertaining to the groundwater restoration at Section 8. In particular, Petitioners complain that NRC summarily upheld the NRC's compliance with NEPA because the agency had already rejected their arguments that HRI's license, as it addressed groundwater restoration, violated AEA. Most of Petitioners' arguments challenging HRI's ability to restore groundwater, however, (continued...)

For these reasons, we conclude that the NRC took the "hard look" NEPA requires regarding groundwater restoration at Section 8. See Kreuger, 513 F.3d at 1178 (quotation omitted); cf. Richmond, 483 F.3d at 1140 (noting NEPA does not prohibit agency from approving project with negative cumulative effects, so long as agency considered those effects). Therefore, we cannot say that the NRC's decision to issue HRI's license was arbitrary, capricious, an abuse of discretion or otherwise contrary to law.

IV. Conclusion

For all of the foregoing reasons, we DENY the petition for review and uphold the NRC's licensing decision in all respects.

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[26](...continued)
are the same, under both the AEA and NEPA. And the NRC addressed those at length.

07-9505, Morris v. US NRC, HRI

LUCERO, J., dissenting:

Because the majority's decision in this case will unnecessarily and unjustifiably compromise the health and safety of the people who currently live within and immediately downwind from Section 17, I must respectfully dissent. For thirty years, the United Nuclear Corporation ("UNC") mined Section 17. When it abandoned the mine, it failed to undertake a basic responsibility: cleaning up after itself. UNC left behind mining spoil that continuously emits gamma radiation and radon. Now, the Nuclear Regulatory Commission ("NRC") has granted a license to Hydro Resources, Inc. ("HRI") to mine the same property. HRI plans to mine the site, which will result in total radiation levels nine to fifteen times the permitted regulatory limit.

Petitioners in this case include members of three families that live within or near Section 17 and Eastern Navajo Diné Against Uranium Mining, a Navajo community organization representing members who reside primarily in Church Rock and Crownpoint, New Mexico. These petitioners should be able to rely on the NRC to properly interpret statutes and agency regulations designed to protect the public's health and safety. Instead, the NRC has abandoned its statutory commitment to refrain from issuing licenses if doing so "would be inimical to . . . the health and safety of the public," 42 U.S.C. § 2099, and has rendered this community vulnerable to the ill effects of dangerous radiation.

My respected colleagues compound the NRC's error by failing to adequately

review the agency's action. The NRC issued HRI's license at Section 17 using an interpretation of 10 C.F.R. 1§ 20.1301(a)(1) that is inconsistent with the text of the regulation. We should therefore set aside the NRC's decision and remand to the agency for decisionmaking consistent with the proper interpretation of the rule—an interpretation that is true to the regulation and that adequately protects the interests of the public and the petitioners in this case. Because the majority's decision compounds past injustice by committing legal error, I respectfully dissent.

I

In affirming the NRC's grant of a mining license to HRI, the majority erroneously concludes that we should defer to the NRC's interpretation of § 20.1301(a)(1). (Majority Op. 14.) The majority notes that when we review an agency's interpretation of its own regulations under the Administrative Procedure Act ("APA"), 5 U.S.C. § 551 et seq., we must give the agency's interpretation "controlling weight unless it is plainly erroneous or inconsistent with the regulation." (Majority Op. 9) (quoting Udall v. Tallman, 380 U.S. 1, 16-17 (1965)). In this case, the NRC's interpretation of § 20.1301(a)(1) is "inconsistent with the regulation" and thus warrants no deference. Thomas Jefferson Univ. v. Shalala, 512 U.S. 504, 512 (1994).

Section 20.1301(a)(1) requires that a licensee conduct operations such that:

> [t]he 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 medical 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.

1§ 20.1301(a)(1).

In granting the license in this case, the NRC interpreted the cap on the total effective dose equivalent ("TEDE") from the "licensed operation" to limit only the radiation "directly linked to licensed activity." In re Hydro Res., Inc., 63 N.R.C. 510, 516 (2006). The majority concludes that this interpretation is not "plainly erroneous" because "[t]he 1clear language of this regulation supports the NRC's decision to focus only on the licensed operation." (Majority Op. 14.) This conclusion, however, seems merely to beg the question: the meaning of the phrase "licensed operation" as used in § 20.1301(a)(1).

The NRC's interpretation of "licensed operation" is inconsistent with the regulation because it renders superfluous the exclusion of "background radiation" and radiation from other specified sources in § 20.1003. It is a well-established principle of statutory and regulatory interpretation that a provision should be read such that no term is rendered nugatory. See Time Warner Ent. Co., L.P. v. Everest Midwest Licensee, L.L.C., 381 F.3d 1039, 1050 (10th Cir. 2004) ("As

with statutory construction, in interpreting regulations;6937;6937, we strive to construe the text so that all of its provisions are given effect and no part is rendered superfluous."). The NRC interprets "licensed operation" to refer only to the licensee's activity. However, § 20.1301(a) expressly excludes from the radiation limit on a "licensed operation" any "background radiation," along with radiation from any "medical administration the individual has received, from exposure to individuals administered radioactive material . . . , from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage."

By focusing only on the licensee's activities, the NRC's interpretation of "licensed operation" renders these specific exclusions unnecessary: There is no reason to expressly exclude radiation from medical research programs if "licensed operation," by definition, refers only to activity of the licensee. The majority apparently accepts the NRC's explanation that not every licensee is a mining company and "this language clarifies that the NRC's regulations specifically addressing sanitary sewers and medical administration of radiation continue to govern those other matters." (Majority Op. 15.)

The regulation does no such thing. It does not refer to these other sets of regulations or state that they apply notwithstanding § 20.1301(a). Moreover, the NRC itself has admitted the superfluity of the relevant language under its

interpretation:

> [S]imply 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.

In re Hydro Res., 63 NRC at 516.

Because the NRC's asserted interpretation of § 20.1301(a)(1) violates a fundamental rule of construction, and because the NRC granted HRI a license in derogation of its duty to protect public health and safety, I would reject its definition of "licensed operation."

II

Although the majority does not reach the issue, I would also hold that radioactive emissions from existing mining spoil at Section 17 should not be excluded from the TEDE limit as "background radiation." Section 20.1301(a) excludes radiation doses due to "background radiation" from the limit on TEDE. The regulations define "background radiation" to include "naturally occurring radioactive material" ("NORM"). § 20.1003. Moreover, neither the Atomic Energy Act nor NRC regulations define NORM. The NRC concluded that NORM includes "technologically enhanced naturally occurring radioactive material" ("TENORM"), or "radioactive materials that, as a result of human activities, are no longer in

their natural state," In re Hydro Res., Inc., 63 N.R.C. 41, 67 (2006), including mining spoil. In re Hydro Res., Inc., 63 N.R.C. at 518 (2006).

The NRC's interpretation of the regulation is yet again unreasonable. When a term is not defined by the relevant statute or regulation, we interpret it using its "ordinary, contemporary, common meaning." Perrin v. United States, 444 U.S. 37, 42 (1979) (citation omitted). "Naturally" means "according to or by the operation of the laws of nature." Webster's 3d New Int'l Dictionary 1507 (1993). Thus, "naturally occurring radioactive material" is radioactive material that occurs according to or by the operation of the laws of nature. It does not include radioactive materials that are no longer in their natural state as a result of human activities.

The NRC asserts that that "technical terms of art should be interpreted by reference to the trade or industry to which they apply." Although an accurate statement of the law, see La. Pub. Serv. Comm'n v. FCC, 476 U.S. 355, 372 (1986), this argument is unavailing. The NRC failed to provide any authority—even one of its own past decisions—indicating that NORM is, in fact, a technical term of art with the meaning it now asserts. In contrast, petitioners cite a number of authorities indicating that TENORM was not understood to be a subset of NORM when the latest version of NRC rules was promulgated in 1991. "Background radiation" does not include radiation caused by existing mining

spoil at Section 17 and thus should not be considered radiation from a licensed operation.

III

Because the NRC granted HRI's license using interpretations of its regulations that are inconsistent with the regulations themselves, I would set aside its decision and remand for the agency to reconsider its licensure of HRI. Petitioners have submitted substantial evidence indicating that the total TEDE at Section 17 already exceeds the 0.1 rem permitted by § 20.1301. Further, they have presented evidence that HRI's mining will ultimately produce radiation many times the permitted limit. Using the correct interpretation of § 20.1301, the NRC would likely revoke HRI's license.

Families currently live within and just downwind from Section 17. The NRC's erroneous decision and the majority's endorsement of that decision will expose these families to levels of radiation beyond those deemed safe by the NRC's own regulations, jeopardizing their health and safety. Accordingly, I dissent.