UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
STRATA ENERGY, INC.,	)	Docket No. 40-9091-MLA
	)	
(Ross In Situ Recovery Uranium Project)	)	

(Materials License Application)

PETITION TO INTERVENE AND REQUEST FOR HEARING BY THE NATURAL RESOURCES DEFENSE COUNCIL & POWDER RIVER BASIN RESOURCE COUNCIL

I. INTRODUCTION

Pursuant to 10 C.F.R. § 2.309 and the notice published by the Nuclear Regulatory Commission (NRC, or Commission) at 76 Fed. Reg. 41,308 (July 13, 2011), Petitioners Natural Resources Defense Council (NRDC) and Powder River Basin Resource Council (Powder River) (collectively, Petitioners) hereby submit a petition to intervene and request a hearing in this proceeding regarding Strata Energy, Inc.'s (Strata, or Applicant) uranium recovery license application for the proposed Ross *In Situ* Recovery Uranium Project in Crook County, Wyoming. Petitioners describe their standing to intervene in Section II of this pleading, and set forth their contentions in Section III.

Petitioners submit these contentions because the project jeopardizes their economic and environmental interests. As detailed herein, the Environmental Report (ER), the Technical Report, and the Supplemental Report that comprise Strata's application are inadequate to satisfy the requirements of the Atomic Energy Act (AEA), 42 U.S.C. § 2011, *et seq*., the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321, *et seq*., and implementing regulations for these statutes.

As discussed in Section III, Petitioners' primary concerns about Strata's application are the lack of information regarding the site's hydrogeology and geochemistry and the harms that could result from Strata's failure to properly analyze the project's foreseeable environmental and safety impacts. Specific shortcomings include the application's lack of a defensible baseline groundwater characterization, its failure to examine the possibility and effects of fluid migration causing cross-contamination between aquifers, its lack of analysis on negative impacts to groundwater quantity, and its failure to consider that Strata will probably be unable to achieve either primary or secondary groundwater restoration standards during decommissioning.

Petitioners also contend that the application violates 10 C.F.R. § 51.45 in several regards. First, the ER lacks a thorough assessment of the cumulative impacts of the proposed project on the regional environment, which is replete with oil and natural gas drilling and other *in situ* leach (ISL) uranium mining projects (both historic and proposed). Second, the ER ignores the environmental impacts that will result if Strata's decommissioning bond is insufficient to meet its intended purposes, a highly probable outcome. Third, the ER fails to consider negative impacts related to disposal of 11e(2) byproduct material (including the possibility that it will be unable to dispose of this waste material). Fourth, the ER does not adequately address potential impacts to visual or aesthetic resources at the nearby Devils Tower National Monument. Finally, the ER improperly tiers to NRC's *Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities* (GEIS), which Petitioners consider legally and technically flawed. In support of each of their contentions, Petitioners have procured expert declarations from Dr. Richard Abitz, Dr. Robert E. Moran, and Dr. Ronald L. Sass.

In addition, for each of these contentions, Petitioners raise challenges directly under NEPA and various implementing regulations, as well as directly under the AEA and NRC

regulations at 10 C.F.R. § 40.32(c) and (d). Although these specific legal challenges will not be ripe until the NRC staff issues its Draft Supplemental Environmental Impact Statement (Draft SEIS) for Strata's application, Petitioners raise these issues here to preserve them for future contentions once the Draft SEIS is released.

II. STANDING

NRDC is a national non-profit environmental organization with offices in Washington, D.C., New York City, San Francisco, Chicago, Santa Monica, and Beijing. NRDC has a nationwide membership of over 350,000 (plus hundreds of thousands of online activists), including 696 members in Wyoming and 523 members in South Dakota. Declaration of Linda Lopez at ¶ 4, Oct. 20, 2011. Among its missions, NRDC seeks to maintain and enhance environmental quality, to safeguard the natural world for present and future generations, and to foster the fundamental right of all people to have a voice in the decisions that affect their environment. *Id*. at ¶ 5. Since its inception in 1970, NRDC has sought to improve the environmental, health, and safety conditions at the nuclear facilities operated by the Department of Energy and the civil nuclear facilities licensed by the NRC and their predecessor agencies. *Id*. at ¶ 6. To that end, NRDC utilizes its institutional resources, including legislative advocacy, litigation, and public outreach and education, to minimize the risks that nuclear facilities pose to its members and to the general public. *Id.*

The Powder River Basin Resource Council is a grassroots, membership-based non-profit organization in Wyoming. Powder River has approximately 1,000 members, most of whom live in Wyoming. Declaration of Wilma Tope at ¶ 4, Oct. 24, 2011. Among its missions, Powder River works to achieve the conservation of Wyoming's unique land, mineral, water, and clean air resources consistent with responsible use of those resources to sustain the livelihood of present

and future generations. *Id*. at ¶ 5. Powder River staff and members have worked to address impacts from uranium mining and milling since the early days of the organization and have an organizational policy that states that "no in-situ leach mining, uranium milling or storage [should] be permitted near home sites or in areas where such mining, milling, or storage would threaten to contaminate aquifers." *Id*. at ¶ 7.

Under the AEA, the Commission must grant a hearing on a license application upon "the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding." 42 U.S.C. § 2239(a)(1)(A). To that end, a petitioner must provide the Commission with information regarding "(1) the nature of the petitioner's right under the governing statutes to be made a party; (2) the nature of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any decision or order on the petitioner's interest." *Entergy Nuclear Vermont Yankee, L.L.C., and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station)*, 60 N.R.C. 548, 552 (2004) (citing 10 C.F.R. § 2.309(d)(1)). "The NRC generally uses judicial concepts of standing in interpreting this regulation." *Entergy Nuclear Vermont Yankee,* 60 N.R.C. at 552. Thus, a petitioner may intervene if it can specify facts showing "that (1) it has suffered or will suffer a distinct and palpable harm constituting injury-in-fact within the zone of interests arguably protected by the governing statutes, (2) the injury is fairly traceable to the action being challenged, and (3) the injury will likely be redressed by a favorable determination." *Id.* at 552–53. In determining whether a petitioner has met the requirements for establishing standing, this Board "construe[s] the petition in favor of the petitioner." *Id.* at 553.

Member organizations such as NRDC and Powder River may intervene on behalf of their members if they can "demonstrate that the licensing action will affect at least one of [their]

members, . . . identify that member by name and address, and . . . show that [they are] authorized by that member to request a hearing on his or her behalf." *Id.* Pam Viviano, a member of both NRDC and Powder River, resides at 735 New Haven Road, Hulett, Wyoming 82720. Declaration of Pam Viviano at ¶¶ 1–2, Oct. 21, 2011. Ms. Viviano's declaration describes the economic, aesthetic, and environmental interests she wishes to safeguard and the harms that Strata's proposed ISL uranium mining operation will pose to those interests. The declarations of Drs. Moran, Sass, and Abitz affirm the scientific basis for Ms. Viviano's concerns. *See infra* p. 6. Ms. Viviano supports this Petition, and has authorized NRDC and Powder River to intervene in this proceeding and request a hearing on her behalf. Viviano Decl. at ¶¶ 2, 13.

Ms. Viviano currently lives with her husband on a 260-acre ranch in Crook County, Wyoming, approximately ten miles southeast of the proposed drilling site. *Id.* at ¶¶ 1, 3. She and her husband have educated themselves about the process of ISL uranium mining and are concerned about the effects that the proposed Strata project may have on their groundwater. *Id.* at ¶¶ 2–3. Ms. Viviano and her husband take water from two wells on their property, which they use for drinking, washing, gardening, yardwork, and livestock. *Id.* at ¶¶ 1, 4, 6. Water from these wells currently meets the U.S. Environmental Protection Agency's (EPA) drinking standards for all parameters, but Ms. Viviano worries that leach solutions and other toxins from the ISL process could contaminate their water supply through thousands of drill holes in the local geography, and through leaks, spills, and fluid excursions. *Id.* at ¶¶ 1, 4–5. If this were to occur, the water could become effectively unusable, and Ms. Viviano and her husband would have to either haul water from another location or re-drill their well, which are expensive and possibly infeasible options. *Id*. at ¶¶ 4, 6.

Ms. Viviano is also concerned that the proposed Strata project could cause other harms to her and her husband's economic, environmental, and aesthetic interests. These harms include aquifer depletion (a common result of ISL mining), the likely impossibility of adequate groundwater restoration, the difficulty Strata may have in stopping the leaching process, a decline in the value of her property, increased traffic and dust (along with health problems that may result from dust), and light pollution. *Id.* at ¶¶ 6–11. Ms. Viviano and her husband have also invested in a 92-acre property seven miles southwest of the proposed project area in order to increase their retirement funds. *Id.* at ¶ 12. This land is particularly valuable on account of its working well, a fairly rare feature for that area. *Id.* If the well water on this property were to be depleted or contaminated, or if buyers were to be concerned about either of those possibilities, the value of the property could plummet, and Ms Viviano and her husband would see their retirement savings decline. *Id.*

Petitioners' experts discuss in their declarations the geologic and hydraulic processes by which Ms. Viviano's concerns about aquifer depletion and contamination may occur. Dr. Robert E. Moran details the potential impacts to groundwater quality associated with the proposed project. Declaration of Dr. Robert E. Moran at ¶¶ 64–69, Oct. 24, 2011. He also discusses the fractured geology of the area—the result of historic drilling and other anthropogenic disturbances—that could serve as pathways for contaminated groundwater from the project area to migrate into adjoining aquifers, thus potentially contaminating other properties in the vicinity. *Id.* at ¶¶ 14–31. *See also* Declaration of Dr. Ronald L. Sass at ¶¶ 8–15, 24–26, Oct. 25, 2011, and Declaration of Dr. Richard Abitz at ¶¶ 7–15, Oct. 23, 2011.

As Ms. Viviano has explained, she and her husband will suffer (or will be under threat of suffering) concrete and particularized injuries from Strata's proposed ISL uranium mining

operation.[1] Petitioners' experts confirm the science behind these injuries, which will not occur in the absence of Strata's project, and Strata may not begin operations without a license from the Commission. 42 U.S.C. § 2092. Accordingly, Strata and the NRC will have caused these injuries.

By granting Petitioners the relief they request and rejecting Strata's application, Ms. Viviano will obtain redress for her injuries, since the project as currently proposed will not go forward at this time. Even if the Board's only action is to order Strata to revise its ER, Ms. Viviano will still have obtained redress: NEPA and its implementing regulation at 10 C.F.R. § 51.45 accord procedural rights to those such as Ms. Viviano whose concrete interests may be harmed by the project. By requiring Strata and the NRC staff to comply with these authorities' requirements, Ms. Viviano's procedural rights will have been vindicated. *See Lujan v. Defenders of Wildlife*, 504 U.S. 555, 572 n.7 (1992) ("[P]rocedural rights are special: The person who has been accorded a procedural right to protect his concrete interests can assert that right without meeting all the normal standards for redressability and immediacy.") (internal quotations omitted).

Finally, Ms. Viviano has expressed concerns that fall within the zone of interests protected by NEPA and its implementing regulations. *See, e.g., Ouachita Watch League v. Jacobs*, 463 F.3d 1163, 1173 (11th Cir. 2006) ("[S]ince the injury alleged is environmental, it falls within the zone of interests protected by NEPA . . . ."); *Sabine River Auth. v. U.S. Dep't of Interior*, 951 F.2d 669, 675 (5th Cir. 1992) (plaintiffs' concerns about impacts on water quality

[1] So long as a Petitioner falls within the zone of interests protected by the statute, and alleges harm that is "concrete and particularized," rather than "conjectural" or "hypothetical," the "requisite injury may either be actual *or threatened*." *Crow Butte Res., Inc. (License Amendment for the North Trend Expansion)*, 67 N.R.C. 241, 271 (2008) (emphasis added).

and quantity fell within NEPA's zone of interests). Her concerns also fall within the zone of interests protected by the AEA and its implementing regulations. *Sequoyah Fuels Corp. and General Atomics (Gore, Oklahoma Site)*, 39 N.R.C. 54, 75 (1994) (membership organization granted standing by showing that "the health and safety interests of its members are within the AEA-protected zone of interests"); *Babcock and Wilcox (Apollo, Pennsylvania Fuel Fabrication Facility)*, 37 N.R.C. 72, 80 (1993) (holding that specified "health, safety, and environmental concerns . . . clearly come within the zone of interests safeguarded by the AEA and NEPA").

Ms. Viviano therefore has standing to intervene in her own right: she has met the requirements for injury-in-fact, causation, and redressability, and her concerns fall within the zone of interests protected by NEPA, the AEA, and their implementing regulations. She will be affected by Strata's proposed ISL uranium mining operation, has provided her name and address, and has authorized NRDC and Powder River, both of which she is a member, to intervene in this proceeding on her behalf. Thus, Petitioners have standing to pursue this action. *Entergy Nuclear Vermont Yankee,* 60 N.R.C. at 553.

Furthermore, NRDC and Powder River have members who have visited and plan to visit in the future the iconic Devils Tower National Monument, which is located approximately ten miles due east of the proposed Strata site. These members have an interest in preserving the viewshed and aesthetic integrity of this cherished feature in national heritage, and will suffer concrete injury from industrial incursions such as Strata's proposed project that will tarnish the site's visual resources. By obtaining a judgment from this Board requiring Strata to properly address these issues in its ER, these members will obtain redress for their injury, since Strata will have complied with its procedural requirements under 10 C.F.R. § 51.45. Accordingly, Petitioners have an additional basis for standing to intervene in this proceeding.

III. CONTENTIONS

Pursuant to 10 C.F.R. § 2.309, Petitioners set forth below the specific contentions they seek to litigate. Each contention challenges the sufficiency of the application under NRC regulations, as specified therein, as well as its compliance with NEPA. At the outset, Petitioners acknowledge that, as a private entity, Strata is not directly bound by NEPA. However, pursuant to 10 C.F.R. § 2.309(f)(2), Petitioners have styled their NEPA contentions as against the ER. *See id.* ("On issues arising under the National Environmental Policy Act, the petitioner shall file contentions based on the applicant's environmental report."). Because an applicant's ER generally serves as the basis for the Commission's eventual Draft SEIS, Petitioners raise these NEPA concerns at this time in order to preserve any objections they may have if the flaws that riddle the ER also appear in the Draft SEIS. In addition, if the Draft SEIS deviates from Strata's ER in a manner to which Petitioners object, they plan to submit amended or new contentions addressing these deviations pursuant to 10 C.F.R. § 2.309(f)(2).

Similarly, both the AEA and the NRC's implementing regulations impose rules for the issuance of source material licenses that are binding on the Commission itself, rather than on the applicant. *See* 42 U.S.C. § 2099 (barring the issuance of any source material license if it "would be inimical to the common defense and security or the health and safety of the public"); 10 C.F.R. §§ 40.32(c) (providing that source material licenses shall be issued to an applicant whose "proposed equipment, facilities and procedures are adequate to protect health and minimize danger to life or property"), 40.32(d) (providing for the issuance of a source material license if such issuance "will not be inimical to the common defense and security or to the health and safety of the public"). Petitioners raise claims based on the AEA and these regulations at this

time in order to preserve any objections they may have if the Commission ultimately grants Strata a source material license in spite of the many problems with its application.

Contention 1: **The application fails to adequately characterize baseline (i.e., original or pre-mining) groundwater quality.**

The application fails to comply with 10 C.F.R. § 51.45, 10 C.F.R. Part 40, Appendix A, and NEPA because it lacks an adequate description of the present baseline (i.e., original or pre-mining) groundwater quality and fails to demonstrate that groundwater samples were collected in a scientifically defensible manner, using proper sampling methodologies. The ER's departure from NRC guidance serves as additional evidence of these regulatory violations. NRC, NUREG-1569, *Standard Review Plan for In Situ Leach Uranium Extraction License Applications,* §§ 2.7.1, 2.7.3, 2.7.4 (2003).

Basis and Discussion:

This contention is supported by the declarations of Drs. Moran, Sass, and Abitz, particularly Moran Decl. at ¶¶ 36–56, Sass Decl. at ¶¶ 8–15, 22–23, and Abitz Decl. at ¶¶ 15–27.

10 C.F.R. § 51.60 requires each applicant for an NRC material license to submit with its application an ER containing the information specified in 10 C.F.R. § 51.45. 10 C.F.R. § 51.45(b) states that the ER "shall contain . . . a description of the environment affected" to aid the Commission in its conduct of an independent analysis. Similarly, NRC's regulation of uranium milling operations and the disposal of waste and tailings from such operations requires an applicant to provide "complete baseline data on a milling site and its environs." 10 C.F.R. pt. 40, app. A, Criterion 7.

Additionally, 10 C.F.R. pt. 40, app. A, Criterion 5, which "incorporate[s] the basic ground-water protection standards imposed by the Environmental Protection Agency in 40 CFR

part 192," provides that "[a]t the point of compliance, the concentration of a hazardous constituent must not exceed . . . [t]he Commission approved *background concentration* of that constituent in the ground water."[2] 10 C.F.R. pt. 40, app. A, Criterion 5B(5)(a) (emphasis added). For this regulation to have any discernable meaning, the applicant's ER must provide a scientifically defensible characterization of the existing aquifer and groundwater resources so that all background levels of hazardous contaminants are established at the outset and in advance of the public opportunity for review.

NRC guidance materials also reiterate the necessity of a proper characterization of existing groundwater resources in an ISL application's ER. According to this guidance, ISL applications must provide an "assessment of available ground-water resources and ground-water quality within the proposed permit boundaries and adjacent properties, including a quantitative description of the chemical and radiological characteristics of the ground water and potential changes in water quality caused by operations." NUREG-1569 § 2.7.1(4). Additionally, section 2.7.3(4) sets forth acceptance criteria for the application requiring a "reasonably comprehensive chemical and radiochemical analysis of water samples, obtained within and at locations away from the mineralized zone(s) . . . to determine pre-operational baseline conditions." These acceptance criteria also require an applicant to "show that water samples were collected by acceptable sample procedures." *See also id.* § 2.7.4. Lastly, NUREG-1569 requires that "[t]he applicant . . . identify the list of constituents to be sampled for baseline concentrations. The list of constituents in Table 2.7.3-1 is accepted by the NRC for *in situ* leach facilities." *Id.* § 2.7.3.

[2] The Commission may also set as concentration limits either "[the] respective value[s] given in the table in paragraph 5C" (that is, safe drinking water standards) or "[a]n alternate concentration limit established by the Commission," which must "present no significant hazard" and must be "as low as reasonably achievable." 10 C.F.R. pt. 40, app. A, Criteria 5B(5)(b), 5B(5)(c), 5B(6), 5C.

Although these guidance documents are not directly enforceable, they are persuasive tools for interpreting NRC's binding regulations, including those discussed previously.

In the instant matter, the ER fails to adequately present baseline groundwater quality as required by 10 C.F.R. § 51.45(b) and Part 40, Appendix A, Criteria 5 and 7, and as discussed in NUREG-1569. Specifically, the ER fails to adequately present the proposed site's geochemistry and the aquifer's hydrogeology, and to adequately define and characterize baseline conditions. Moran Decl. at ¶¶ 36–56; Sass Decl. at ¶¶ 8–15; Abitz Decl. at ¶¶ 16–27.

Regarding the site's geochemistry, Dr. Moran states that the ER does not properly define baseline conditions because it does not consider how conditions have changed from a true baseline—that is, conditions as they were prior to the Nubeth test project in the late 1970s and early 1980s—and how they will continue to change once Strata's commercial-scale project begins. Moran Decl. at ¶¶ 36–41. Dr. Moran states that "[b]aseline water conditions are usually interpreted as conditions existing prior to the beginning of any significant industrial activities." *Id*. at ¶ 40. He concludes that the application is deficient because it does not include or analyze pre-Strata water quality data that exists to show local and regional changes in water conditions as a result of prior industrial activities—namely, the Nubeth project. *Id.* at ¶ 39.

According to Dr. Moran, Strata's application "fails to properly characterize current water conditions" because it does not analyze testing data in a meaningful statistical manner. *Id*. at ¶ 42. Strata's baseline measures are also deficient because they do not contain unfiltered samples. *Id.* at ¶¶ 43, 45 ("In my opinion, in order to have a technically sufficient application, Strata must collect and analyze unfiltered samples, as a minimum, for baseline ground water evaluation."). Importantly, Strata's baseline measurements are also deficient because they do not

appropriately include water quality testing for all wells within a two-mile radius as required by NUREG-1569 § 2.2.1. Moran Decl. at ¶¶ 50, 53.

Dr. Sass is similarly critical of Strata's ER, explaining that it "fail[s] to adequately detail the underground ore zone, a necessary prerequisite to defining appropriate and accurate baseline." Sass Decl. at ¶ 15. The insufficient description of the ore zone concerns both the "spatial extent as well as distribution of ore concentration." *Id*. at ¶ 8. Crucially, the ER does not explain "just how many exploratory drill holes are being used by Strata, when and by whom they were drilled, their current status is (capped or not, surveyed, logged, cored, etc.) and which are being used for detailed analysis." *Id.* at ¶ 9. These drill holes apparently number in the "thousands," and those "that were capped were done so only with a surface concrete plug." *Id.* at ¶ 11. Thus, "they have served as a conduit among the four aquifers through which groundwater, including dissolved substances, could freely move from one aquifer to another." *Id.* Furthermore, many of these holes "may have been open to the surface and were subject to the introduction of surface water including contaminants such as oxygen that could have interacted with the aquifer chemistry, particularly the uranium ore which becomes soluble in an oxidizing environment." *Id.* The ER's failure to fully discuss the extent, placement, and nature of these holes seriously undermines its characterization of the baseline water quality.

Further complicating the ER's assessment of baseline water quality is Strata's failure to investigate and account for "injection problems which eventually led to the premature shutdown of the [Nubeth] test," including "organic material buildup in the wellfields," which occurred despite the use of filtering equipment. *Id.* at ¶ 22 (internal quotations omitted). As Dr. Sass explains, the Nubeth mining operations between 1975 and 1979 and subsequent restoration activities in 1983 "would have caused considerable changes in the OZ [ore zone] aquifer which

then could have been transmitted to the other aquifers through connections formed by the numerous exploratory wells." *Id.* at ¶ 23. Given these facts, Dr. Sass asserts that it is "essentially impossible to obtain a meaningful natural baseline value for the chemical components in the four aquifers without substantially more work in establishing an accurate and appropriate reflection of baseline water quality." *Id.* As an example, Dr. Sass suggests that Strata could provide "a more rigorous baseline measurement" by drilling "new baseline wells . . . at different distances from the 1970s wells to check for their accumulated impacts on the groundwater chemistry." *Id.* Without these or similar measures, Strata's characterization of the baseline groundwater quality remains inadequate.

Dr. Abitz expands on these points. First, he notes that the six cluster wells proposed by the Applicant "are an insufficient number of wells to provide a representative sample of the groundwater quality in the Ross permit area." Abitz Decl. at ¶ 16. Such a "cluster" in the proposed ore zone will bias water quality samples toward high water contaminant values and would not account for the collection of representative samples from the surrounding aquifer that will be part of the aquifer exemption permit. *Id*. Dr. Abitz goes on to propose a statistically valid approach for establishing baseline water quality, which he details in his declaration at paragraphs 18 and 19. He further highlights that "the screens placed through part of the OZ water horizon only sample water that is in contact with the ore zone, rather than the entire column of water in the OZ sand interval." *Id*. at ¶ 22.

As Petitioners' experts explain, Strata's ER fails to provide an adequate characterization of the baseline groundwater resources in the vicinity of the proposed ISL facility. Accordingly, it violates 10 C.F.R. § 51.45(b) and 10 C.F.R. Part 40, Appendix A, Criteria 5 and 7. This Board has previously admitted a contention challenging an ER's characterization of the existing aquifer

and groundwater resources in the vicinity of a proposed ISL uranium recovery site, *Powertech (USA), Inc. (Dewey-Burdock In Situ Uranium Recovery Facility)*, Dkt. No. 40-9075-MLA at 62–64 (Aug. 5, 2010), and should similarly admit Petitioners' Contention 1.

To the extent that the NRC staff's Draft SEIS repeats the flaws in the ER that violate 10 C.F.R. § 51.45(b), Petitioners expect to challenge the Draft SEIS directly under NEPA, which requires in any EIS an adequate description of the baseline conditions of the affected environment. *See Half Moon Bay Fishermans' Mktg. Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988). Petitioners raise this issue at this time in order to preserve any future NEPA challenges they may wish to bring.

Furthermore, unless Strata amends its application so as to provide an adequate characterization of baseline water quality, there can be no assurance that any license the Commission may issue will not be "inimical to the common defense and security or to the health and safety of the public," 42 U.S.C. § 2099, 10 C.F.R. § 40.32(d), nor will there be any assurance that Strata's proposed "procedures are adequate to protect health and minimize danger to life or property." 10 C.F.R. § 40.32(c). As Dr. Moran states:

> Without detailed baseline data (based on both historic and recent Strata data) on ground water quality and well water levels, there will be no reliable criteria for determining whether changes have occurred in the future during and after the various Strata operations. Also, there would be no reliable method for stating what Strata actions caused such changes in the future. This missing critical information makes it impossible for the NRC to determine whether the public health and safety will be protected during the project.

Moran Decl. at ¶ 55.

Thus, if the Commission issues Strata a license in spite of these flaws in its application, it will have violated the AEA and its implementing regulations. Petitioners raise these concerns at

this time in order to preserve any future challenges they may wish to bring under these authorities.

Contention 2: The application fails to analyze the environmental impacts that will occur if Strata cannot restore groundwater to primary or secondary limits.

The application fails to meet the requirements of 10 C.F.R. § 51.45 and NEPA because it fails to evaluate the virtual certainty that Strata will be unable to restore groundwater to primary or secondary limits.

Basis and Discussion:

This contention is supported by the declarations of Drs. Moran and Abitz, particularly Moran Decl. at ¶¶ 66–67, 70–75 and Abitz Decl. at ¶¶ 28–29.

As discussed on pp. 10-11, *supra*, 10 C.F.R. Part 40, Appendix A, Criterion 5B(5) provides groundwater restoration standards for ISL mining operations. Under these rules, an ISL mining operator must, during decommissioning, first seek to achieve primary groundwater restoration standards, or restoration to baseline quality levels. *Id.* In other words, "the concentration of a hazardous constituent must not exceed . . . [t]he Commission approved background concentration of that constituent in the ground water." 10 C.F.R. pt. 40, app. A, Criterion 5B(5)(a). If this standard is not feasible, the ISL operator must then seek to achieve secondary groundwater restoration standards, or standards that reflect "the drinking water limits" for hazardous effluents provided in the table published at Criterion 5C. *Id.* at Criteria 5B(5)(b), 5C. Finally, if neither of these standards is "practically achievable at a specific site . . . [t]he Commission will establish a site specific alternate concentration limit for a hazardous constituent," provided that the alternative standard is "as low as reasonably achievable, after

considering practicable corrective actions, and that the constituent will not pose a substantial present or potential hazard to human health or the environment." *Id.* at Criteria 5B(6), 5B(5)(c).

In reality, ISL mining operations have yet to achieve either primary or secondary groundwater restoration standards, but have thus far always required the Commission (or the relevant Agreement State) to establish an alternative (that is, more lenient) restoration standard. As Petitioners' experts attest, all the available information indicates that the operators of the proposed Strata ISL mining facility will be no more likely to achieve primary or secondary groundwater restoration standards during decommissioning than any of their predecessors.

In his declaration, Dr. Moran states:

> [T]he technical and regulatory literature amply documents the numerous *failures to restore aquifer water quality at other ISL sites to pre-mining conditions*. Thus, because Strata is proposing to use the same mining and milling methods as other ISL sites, it is reasonable to assume that portions of the ground water surrounding the leached zones will have degraded water quality and may be unfit for future uses.

Moran Decl. at ¶ 72 (emphasis in original); *see also id*. at ¶ 75. According to Dr. Moran, "[t]he Application describes great uncertainty as to the actual, detailed procedures that will be employed for aquifer restoration and fails to adequately define the specific aquifer restoration criteria/standards." *Id*. at ¶ 70. Thus, the exact timing and procedures for aquifer restoration are unknown. *Id*. Dr. Moran concludes that "[w]ithout up-front review of restoration methods or criteria, it is impossible to know whether restoration will be successful and whether the NRC's primary restoration standard of returning water to pre-mining conditions will be achieved." *Id*.

Dr. Moran also discusses in his declaration that the history of the Nubeth test project at the Ross site exemplifies the likely difficulty in restoring subsurface aquifers to pre-mining conditions. Dr. Moran states that "[i]nformation from the Nubeth project shows that it may be

difficult, if not impossible, to adequately restore the local aquifers": even after lengthy restoration periods and several attempts to restore the aquifer, levels of heavy metals exceeded baseline conditions. *Id*. at ¶ 73. Similarly, Dr. Abitz is specific when he notes that the two-year period for restoration of the Nubeth pilot ISL operation was four times as great as the suggested six month restoration proposed for the Ross project. Abitz Decl. at ¶ 28.

Although Criteria 5B(5) and (6) contemplate that the Commission may set alternate concentration limits for water quality restoration, these rules do not relax NRC's implementing regulations for NEPA, which require that an applicant's ER "discuss . . . the impact of the proposed action on the environment . . . [a]ny adverse environmental effects which cannot be avoided should the proposal be implemented … [and] [a]ny irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." 10 C.F.R. § 51.45(b)(1), (2), (5). Yet Strata's ER fails to address the virtually foregone conclusion that it will be unable to restore groundwater quality either to existing baseline levels or even to acceptable safe drinking levels, as provided in Criterion 5C. In fact, it offers no discussion at all of the ramifications of achieving each of the three levels of restoration and makes no other mention of the tiers of restoration standards other than observing that "[a]quifer restoration is the removal and/or treatment of groundwater in the exempted aquifer in order to return the groundwater quality consistent with baseline conditions, alternate standards or to a quality of use equal to or better than the uses for which the water was suitable prior to the operation." ER at 4-66 to 4-67. This cannot accord with the regulatory requirements: a permanent degradation of the aquifer constitutes an "impact of the proposed action," an "adverse environmental effect which cannot be avoided," and an "irreversible and irretrievable commitment of resources." 10 C.F.R. § 51.45(b)(1), (2), (5). Thus, by failing to adequately

address this outcome in its ER, Strata violates the governing regulations. The Board should admit Petitioners' Contention 2.

To the extent that the NRC staff's Draft SEIS repeats the flaws in the ER that violate 10 C.F.R. § 51.45(b)(1), (2) and (5), Petitioners expect to challenge the Draft SEIS directly under NEPA, which directly parallels NRC's implementing regulations. *See* 42 U.S.C. § 4332(C)(i), (ii) and (v). Petitioners raise this issue at this time in order to preserve any future NEPA challenges they may wish to bring. Furthermore, unless Strata amends its application so as to provide an adequate analysis of water quality impacts, there can be no assurance that any license the Commission may issue will not be "inimical to the common defense and security or to the health and safety of the public," 42 U.S.C. § 2099, 10 C.F.R. § 40.32(d), nor will there be any assurance that Strata's proposed "procedures are adequate to protect health and minimize danger to life or property." 10 C.F.R. § 40.32(c). Thus, if the Commission issues Strata a license in spite of these flaws in its application, it will have violated the AEA and its implementing regulations. Petitioners raise these concerns at this time in order to preserve any future challenges they may wish to bring under these authorities.

Contention 3: The application fails to include adequate hydrogeological information to demonstrate Strata's ability to contain fluid migration.

The application fails to provide sufficient information regarding the hydrogeological setting of the area to meet the requirements of 10 C.F.R. § 51.45, 10 C.F.R. Part 40, Appendix A, Criteria 4(e) and 5G(2), and NEPA. The application also runs afoul of NUREG-1569 § 2.6, which provides guidance for complying with the mandatory rules. The application similarly fails to assess the likelihood and impacts of fluid migration to the adjacent surface water and

groundwater, as required by 10 C.F.R. § 51.45 and NEPA, and as discussed in NUREG-1569 § 2.7.

Basis and Discussion:

This contention is supported by the declarations of Drs. Moran, Sass, and Abitz, particularly Moran Decl. at ¶¶ 14–31, Sass Decl. at ¶¶ 8–15, 24–26, and Abitz Decl. at ¶¶ 7–15.

As discussed above, 10 C.F.R. § 51.45 requires an application's ER to include a description of the affected environment and a discussion of the proposed project's impact on the environment, any adverse environmental effects, and any irretrievable or irreversible commitment of resources, with sufficient data to enable the Commission to conduct an independent analysis. Furthermore, 10 C.F.R. Part 40, Appendix A, Criterion 4(e) prohibits the establishment of uranium processing facilities, including ISL sites, near any fault that may cause impoundment failure, while Criterion 5G(2) requires an adequate description of the "characteristics of the underlying soil and geologic formations particularly as they will control transport of contaminants and solutions."

Under these regulations, the ER must provide a description of the affected environment sufficient to establish the potential effects of the proposed ISL operation on the adjacent surface water and groundwater resources. As discussed in NUREG-1569 § 2.7.1(3), the application must include a description of the "effective porosity, hydraulic conductivity, and hydraulic gradient" of site hydrogeology, including any "other information relative to the control and prevention of excursions." At minimum, the applicant must develop an acceptable conceptual model of site hydrology "adequately supported by the data presented in the site characterization." *Id.* § 2.7.2. This data and model must demonstrate with scientific confidence that the area hydrogeology,

including horizontal and vertical hydraulic conductivity, will confine the extraction fluids and permit the expected operational and restoration performance.

Here, Strata fails in its ER to adequately characterize the on-site and off-site hydrogeology, and thus cannot ensure in a scientifically defensible manner the confinement of the ISL extraction fluids. As Petitioners' experts discuss, these deficiencies include unsubstantiated assumptions as to the isolation of the aquifers in the ore-bearing zones and the failure to account for natural and man-made hydraulic conductivity through natural breccias, pipe formations, and thousands of drill holes in the aquifers and ore-bearing zones from mining operations that were not properly abandoned.

First, Dr. Moran concludes that the Ross water-bearing units are hydrogeologically interconnected with potential pathways for fluid migration and that the application fails to demonstrate hydrologic isolation of the ore zone. Moran Decl. at ¶ 24. He states that Strata's own application includes information showing that the ore zone is hydrologically linked with shallower aquifers, *id*. at ¶¶ 25–27, and affirms that the scientific literature also supports a conclusion that the aquifers in the area are hydrolgocially connected. *Id.* at ¶¶ 23, 28. Moreover, Strata did not conduct sufficient pump tests to confirm or deny the connection of the aquifers. *Id*. at ¶ 29.

Second, as Dr. Moran discusses, over 5,000 exploration boreholes were drilled in the area, which can serve as pathways for fluid migration. *Id*. at ¶¶ 22, 31. Dr. Moran states that "the open boreholes provide potential pathways for the movement of ground water and solution fluids between the various water-bearing strata and the inter-fingering finer-grained sediments, both vertically and laterally. . . . Thus there is much less certainty that Ross site ground waters and leach solutions can be as completely contained as is alleged throughout the Application." *Id*. at

¶ 22. Accordingly, "[i]n the present situation, we don't know the details, but we do know that at least hundreds and probably thousands of these Ross-Lance area boreholes have remained open for several decades, allowing mixing of waters between water-bearing units. Until these wells are located and shown to be sealed properly, they will continue to serve as a conduit for fluid migration and inter-mixing of the aquifers." *Id*. at ¶ 20. Strata's application fails to properly identify the old wells or analyze their status and how they may or may not serve as conduits for fluid migration from the ore zone. *Id.* at ¶¶ 14–19.

As discussed in Contention 1, Dr. Sass echoes Dr. Moran's concerns about the possibility of fluid migration resulting from unplugged or improperly plugged boreholes from the Nubeth project. *See supra*, p. 13; Sass Decl. at ¶¶ 8–15. He also explains how the ER's data on each of the four aquifers indicate that such migration may now be occurring, calling attention to "the similar chemical composition of the various aquifers and especially the high concentrations of sodium carbonate and bicarbonate," which "may suggest high groundwater interchange among the aquifers via the long existing exploratory bore holes." *Id.* at ¶ 25. Furthermore, the somewhat lower levels of radium 226 in the OZ aquifer indicates either that radium simply did not interact with oxygen in a manner to liberate it from the ore, or that "radium has been carried away by some process. One suggestion is that the groundwater flow within an aquifer and/or the inter-aquifer transfer is high." *Id.* at ¶ 26. The latter scenario is distinctly possible, "judging by the high variability among the four different chemical analyses during the year in each well indicating a relatively fast replacement of the groundwater at the well site." *Id.*

Dr. Sass raises related concerns pertaining to the insufficiency of newly drilled exploratory wells. Although Strata's ER "shows that the gamma radioactivity occurs in the OZ (ore zone) at five different levels," it provides "no data . . . stating the ore concentration at any

[of the] five deposits." *Id.* at ¶¶ 17–18. That is, the ER offers "no indication . . . as to the relative or absolute amount of ore present in any of the five deposits," "no information as to how these data relate to any other location in the ore body," and "no concentration data and no chemical analyses of the core segments." *Id.* at ¶¶ 18–19. These data are crucial to understand "the connectivity of the various ore bodies and possible pathways for movement of the soluble reaction products during the ore recovery operation so that injection and recovery wells can be properly placed." *Id.* at ¶ 18. Without further information of the kind Dr. Sass emphasizes, Strata cannot meet the regulatory requirements.

Finally, Dr. Abitz observes that "the depositional environment is dynamic and the grain size of the sediments is highly variable horizontally and vertically. Therefore, it is not logical to expect a continuous mudstone or claystone to extend across the entire project area, and the data are absent to support such a hypothesis." Abitz Decl. at ¶ 12. He goes on to state that "there are hundreds of pathways between the OZ and other water horizons due to the nearly 2,000 exploration boreholes drilled in the project area" that Strata identifies in its application, which could allow for significant fluid migration. *Id*. at ¶ 13.

As this evidence shows, the application fails to provide an adequate site characterization of geology and hydrogeology, to establish the effective porosity of the affected aquifer, or to show that leaching fluids will be properly confined. Accordingly, the application contravenes 10 C.F.R. § 51.45 and 10 C.F.R. Part 40, Appendix A, Criteria 4(e) and 5G(2), and departs from the NRC's guidance in NUREG-1569 § 2.6 and 2.7. This Board has previously admitted a contention challenging an ER's failure to include adequate hydrogeological information at a proposed ISL site and to properly consider the potential impacts of fluid migration to the

adjacent surface water and groundwater. *Powertech* at 66–67. The Board should similarly admit Petitioners' Contention 3.

To the extent that the NRC staff's Draft SEIS repeats the flaws in the ER that violate 10 C.F.R. § 51.45(b)(1), (2) and (5), Petitioners expect to challenge the Draft SEIS directly under NEPA, which directly parallels NRC's implementing regulations. *See* 42 U.S.C. § 4332(C)(i), (ii), (v). Petitioners raise this issue at this time in order to preserve any future NEPA challenges they may wish to bring. Furthermore, unless Strata amends its application to provide sufficient information regarding hydrogeology or an adequate analysis of the likelihood and impacts of fluid migration, there can be no assurance that any license the Commission may issue will not be "inimical to the common defense and security or to the health and safety of the public." 42 U.S.C. § 2099; 10 C.F.R. § 40.32(d). Nor will there be any assurance that Strata's proposed "procedures are adequate to protect health and minimize danger to life or property." 10 C.F.R. § 40.32(c). Thus, if the Commission issues Strata a license in spite of these flaws in its application, it will have violated the AEA and its implementing regulations. Petitioners raise these concerns at this time in order to preserve any future challenges they may wish to bring under these authorities.

Contention 4: The application fails to adequately document negative impacts on groundwater quantity.

The application violates 10 C.F.R. § 51.45 and NEPA by failing to properly analyze the project's impacts on groundwater quantity. Furthermore, the application presents conflicting information on groundwater consumption, precluding accurate evaluation of the project's impacts in this area.

Basis and Discussion:

This contention is supported by the declaration of Dr. Moran at ¶¶ 59–63.

As discussed in earlier contentions, 10 C.F.R § 51.45(b)(1), (2), and (5) require an applicant to analyze a project's foreseeable impacts, negative environmental effects, and irretrievable commitment of resources, respectively. To that end, the applicant must provide sufficient data to facilitate a scientifically-defensible review of the project's impacts—including those to the aquifer's water quantity—and for the Commission to conduct an independent analysis of these effects. The application falls short of these requirements: its analysis of the project's impacts to groundwater quantity is inadequate, and it fails to provide reliable and accurate information as to groundwater consumption.

Dr. Moran describes in his declaration the application's flawed analysis of groundwater quantity impacts and its insufficient information on groundwater consumption. Crucially, the application fails to analyze how much water will be used by the Ross operations in the long term and instead only offers several partial and conflicting estimates of possible groundwater consumption. Moran Decl. at ¶¶ 58–59, 62–63 ("Consumptive amounts should be estimated for both operational periods and restoration, as needed to restore water to pre-mining quality as required by the NRC's primary restoration standards.") Regardless of the ER's faulty data, Dr. Moran states that there is sufficient information both in the application and from previous experiences at ISL mining sites to conclude that Strata's "ISL projects will be able to pump tremendous volumes of ground water rapidly," but that "with such low precipitation, recharging the aquifers and recovery of local water levels may require much longer periods of time than are predicted in the Application, especially if numerous other ISL projects are approved" in the area. *Id*. at ¶ 60.

Because of these failings, Strata's ER falls below the standard set forth in 10 C.F.R. § 51.45 for a proper environmental analysis. This Board has previously admitted a contention challenging an ER's inadequate evaluation of a proposed ISL uranium mining project's impacts to groundwater quantity, as well as its conflicting information on groundwater consumption. *Powertech* at 68–69. The Board should similarly admit Petitioners' Contention 4.

To the extent that the NRC staff's Draft SEIS repeats these flaws that appear in Strata's ER, Petitioners expect to challenge the Draft SEIS directly under NEPA, which directly parallels NRC's implementing regulations. *See* 42 U.S.C. § 4332(C)(i), (ii), (v). Petitioners raise this issue at this time in order to preserve any future NEPA challenges they may wish to bring. Furthermore, unless Strata amends its application to properly analyze the proejct's impacts on water quantity and sufficiently describe groundwater consumption, there can be no assurance that any license the Commission may issue will not be "inimical to the common defense and security or to the health and safety of the public." 42 U.S.C. § 2099; 10 C.F.R. § 40.32(d). Nor will there be any assurance that Strata's proposed "procedures are adequate to protect health and minimize danger to life or property." 10 C.F.R. § 40.32(c). Thus, if the Commission issues Strata a license in spite of these flaws in its application, it will have violated the AEA and its implementing regulations. Petitioners raise these concerns at this time in order to preserve any future challenges they may wish to bring under these authorities.

Contention 5: The application fails to adequately assess cumulative impacts of the proposed action in conjunction with other industrial activities in the area, and fails to evaluate adverse environmental effects resulting from an insufficient decommissioning bond and the disposal of 11e(2) byproduct material. It also does not properly consider impacts to visual resources at the nearby Devils Tower National Monument and improperly tiers to NRC's flawed GEIS for ISL uranium mining.

The application violates 10 C.F.R. § 51.45, NEPA, and the Council on Environmental Quality's (CEQ) implementing regulations for NEPA because it fails to consider cumulative impacts that may result from Strata's proposed ISL uranium mining operations in conjunction with oil and gas drilling and other ISL uranium mining operations, all of which exist in the project vicinity and are likely to continue and expand in the foreseeable future. The application also violates these authorities because it does not provide an adequate analysis of the foreseeable impacts and negative environmental effects that will result in the likely event that Strata's decommissioning bond is insufficient to achieve its purpose, as well as those impacts related to disposal of 11e(2) byproduct material. Finally, the application violates NEPA because the ER tiers to NRC's flawed and unsupportable GEIS for ISL uranium mining.

Basis and Discussion:

This contention is supported by the declaration of Dr. Moran at ¶¶ 7–8, 60, 69, 76–78, 96–98.

Under NEPA and CEQ regulations, an agency must address not only the individual impacts of the proposed activity, but also the cumulative impacts that the activity will have in combination with other factors affecting the local environment. *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379–80 (9th Cir. 1998) ("In accord with NEPA, [agencies] must consider cumulative impacts . . . [and may not] defer consideration of cumulative impacts to a future date. NEPA requires consideration of the potential impact of an action *before* the

action takes place.") (emphasis in original) (internal quotations omitted); *Davis v. Mineta*, 302 F.3d 1104, 1125 (10th Cir. 2002); 40 C.F.R. §§ 1508.7, 1508.25(c). 10 C.F.R. § 51.45, which mirrors NEPA, requires each NRC license applicant to include a similar analysis in its ER, and this Board has previously admitted contentions challenging an ER's inadequate cumulative impact analysis. *S. Nuclear Operating Co. (Early Site Permit for Vogtle ESP Site)*, 65 N.R.C. 237, 258–59 (2007).

Strata fails to include in its ER an analysis of the cumulative impacts that may result from the proposed action in conjunction with the many surface-disturbing industrial activities in the region that have previously occurred, are presently occurring, or are likely to occur in the future—namely, oil and natural gas drilling and other ISL uranium mining operations. Dr. Sass identifies two major shortcomings in the ER regarding cumulative impact analysis. First, the ER does not consider the impacts of past activities, including uranium exploration and ISL testing: "the application fails to adequately present the true extent of historical exploration drilling, borehole abandonment details, R&D testing, changes to groundwater water quality, and interconnections of geologic strata." Moran Decl. at ¶ 7. As Dr. Moran observes, "[t]hese are cumulative impacts that should be disclosed and analyzed" in the ER. *Id.*

Second, the ER does not consider the full cumulative scope of the Ross-Lance project contemplated by Strata. Dr. Moran states,

> The Ross permit area is only one small part of Strata Energy's proposed Lance Project. However, the application does not fully discuss the scope of the larger planned Lance Project and in doing so disregards cumulative impacts. For instance, the application states that "it is likely that the proposed Ross CPP [central processing plant] will serve as the central processing location for future Strata satellite facilities and, potentially, satellite facilities owned and/or operated by other uranium recovery companies or water treatment entities; however, for purposes of the current license application, Strata intends for the Ross CPP to service only ISR operations within the proposed Ross license boundary." ER pg. 1–20. Therefore, any reasonably foreseeable future cumulative impacts associated

> with using the Ross CPP facility for future Strata or other operator sites and the related cumulative impacts related to water and other resources from the ISL mining associated with those future Strata or other operator sites are not disclosed or analyzed in the application.

Id. at ¶ 8. Because it fails to consider the full scope of its planned ISL operations in the area, Strata ignores the cumulative impacts to water quantity and quality that will likely result from additional ISL mining projects. Dr. Moran states that the ER is deficient because it does not consider "information on cumulative volumes pumped and cumulative predicted water level declines with cumulative predicted aquifer recharge rates . . . assuming that several additional phases of ISL uranium development occur within the regions surrounding the Ross Project (i.e., the neighboring Lance areas)." *Id*. at ¶ 60; *see also id*. at ¶ 76 ("Strata's application carves up the potential impacts into pieces, preventing the public and regulators from realistically looking at long-term, cumulative impacts."). Dr. Moran also demonstrates in his declaration how Strata fails to consider cumulative impacts to water quality that are likely to result from the Ross project operations. *See, e.g., id*. at ¶ 69 ("The Application fails to present any evidence that such cumulative, long-term disposal of large volumes of wastes into these formations will not result in long-term negative impacts.")

Furthermore, as we have discussed in each of our previous contentions, 10 C.F.R § 51.45(b)(1), (2), and (5) require an applicant to analyze a project's foreseeable impacts, negative environmental effects, and irretrievable commitment of resources, respectively. In addition to the issues discussed in prior contentions, the ER violates these regulations by failing to evaluate impacts related to two other crucial issues: the likely insufficiency of Strata's decommissioning bond and the disposal of 11e(2) byproduct material.

As Dr. Moran explains, Strata's proposed decommissioning bond will almost certainly be insufficient to finance the necessary reclamation and restoration activities: since Strata's financial assurance estimates are made by the company itself— an entity with a financial interest in the result of those calculations—they are not likely to be an accurate representation of restoration and reclamation costs. Moran Decl. at ¶ 96(c). The calculations are also likely flawed because they do not consider the difficulty in restoring aquifers to pre-mining conditions and the actual restoration and reclamation costs incurred. *Id*. at ¶¶ 96–97. Put in the larger context, in their comments on NRC's Draft GEIS for ISL uranium mining, EPA states:

> Section 2.115 of the draft GEIS provides several examples of uranium mining facilities where the number of pore volumes needed for aquifer restoration were significantly underestimated during the planning or operations phases. Aquifer restoration efforts commonly take much more time and many more pore volumes than initially estimated.

Ex. 1, EPA Comments on Draft GEIS for ISL Uranium Milling Facilities (Nov. 6, 2008), at 5.

Regardless of whether Strata's methodology for calculating its decommissioning bond complies with the substantive requirements of 10 C.F.R. Part 40, Appendix A, Criterion 9, Strata must still, under 10 C.F.R. § 51.45, evaluate in its ER the environmental impacts and negative effects that will result if the bond is insufficient. As Dr. Moran has explained, this is a reasonably foreseeable possibility—in fact, it is more likely than not to occur. Thus, Strata's application contravenes section 51.45.

Similarly, Strata ignores crucial and foreseeable environmental impacts that may result from the disposal of 11e(2) byproduct material. More to the point, Strata fails to account for the possibility that it *may not locate* such a disposal site, but merely assumes for the sake of its application that its 11e(2) byproduct material will be disposed of when necessary. Strata and NRC staff may object that the former need not identify a specific disposal facility at this stage in

the process, but what it must surely do is account for the environmental impacts that may result in the foreseeable event that no such disposal facility is available in the near future. Until Strata fully analyzes this scenario, its application cannot satisfy the requirements of 10 C.F.R. § 51.45.

Strata also fails to properly consider in its ER the visual and aesthetic impacts that the project could have on Devils Tower National Monument, which is located just 10 miles due east of the proposed ISL uranium mining facility. *See* Viviano Decl., Fig. 1. The industrial activity at the project site could tarnish the Monument's viewshed and diminish the area's aesthetic qualities. Courts have previously ruled federally-approved projects unlawful due to inadequate prior analysis of impacts to visual resources. *See, e.g., LaFlamme v. FERC*, 852 F.2d 389, 399-403. (9th Cir. 1988). Strata must also address these concerns fully and adequately in its ER pursuant to 10 C.F.R. § 51.45.

Finally, Strata's ER tiers to (and relies heavily on) NRC's GEIS for ISL mining. *See, e.g.*, ER at 1-10, 1-14 to 1-17, 1-24, 1-26, 2-4, 2-11, 2-13, and 2-18 to 2-19 (referring to the GEIS). Petitioners have already registered their deep misgivings about the technical and legal adequacy of the GEIS in comments they submitted to the NRC. *See* Ex. 2, NRDC Comments on Draft GEIS for ISL Uranium Milling Facilities (Nov. 7, 2008); Ex. 3, NRDC Comments on Final GEIS for ISL Uranium Milling Facilities (Mar. 3, 2010); Ex. 4, Powder River Scoping Comments on NRC Notice of Intent to Issue Draft GEIS for ISL Uranium Milling Facilities (Sept. 4, 2007); Ex. 5, Powder River Comments on Draft GEIS for ISL Uranium Milling Facilities (Nov. 4, 2008); Ex. 6, Letter from Powder River, New Mexico Environmental Law Center, and Western Mining Action Project to NRC Chairman Gregory Jaczko Regarding the GEIS for ISL Uranium Mining (July 2, 2009). Petitioners hereby incorporate those comments by

reference, and contend that Strata's ER cannot meet 10 C.F.R. § 51.45's standards for environmental analysis by relying on a document that cannot withstand scrutiny under NEPA.

On account of the ER's shortcomings discussed above, the Board should admit Petitioner's Contention 5. To the extent that the NRC staff's Draft SEIS repeats these flaws, Petitioners expect to challenge the Draft SEIS directly under NEPA and CEQ regulations, which (as discussed above) requires a cumulative impact analysis and an evaluation of all other foreseeable impacts and deleterious environmental effects. Petitioners raise this issue at this time in order to preserve any future NEPA challenges they may wish to bring.

Furthermore, unless Strata amends its application to avoid the errors in Contention 5, any license the Commission may issue will not be "inimical to the common defense and security or to the health and safety of the public," 42 U.S.C. § 2099, 10 C.F.R. § 40.32(d), nor will there be any assurance that Strata's proposed "procedures are adequate to protect health and minimize danger to life or property." 10 C.F.R. § 40.32(c). Thus, if the Commission issues Strata a license in spite of these flaws in its application, it will have violated the AEA and its implementing regulations. Petitioners raise these concerns at this time in order to preserve any future challenges they may wish to bring under these authorities.

IV. CONCLUSION

For the foregoing reasons, the Petitioners have demonstrated that they have standing and that their contentions are admissible. Therefore, the Petitioners should be permitted to intervene in this proceeding and are entitled to a hearing on their contentions.

Respectfully submitted,

/s/ Geoffrey H. Fettus _____ /s/ Shannon Anderson_____

/s/ Andres J. Restrepo_____

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Date: Oct. 27, 2011

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Petition to Intervene and Request for Hearing in the captioned proceeding were served via the Electronic Information Exchange (EIE) on the 27th day of October 2011, which to the best of my knowledge resulted in transmittal of same to those on the EIE Service List for the captioned proceeding.

/s/ Geoffrey H. Fettus
Geoffrey H. Fettus

Date: Oct. 27, 2011