December 5, 2011

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* Uranium Recovery Site)	)	ASLBP No. 12-915-01-MLA
	)	

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

INTRODUCTION

The Staff of the Nuclear Regulatory Commission (NRC Staff) responds to the Natural Resources Defense Council (NRDC) and Powder River Basin Resource Defense Council's (PRBRC) (collectively the Joint Petitioners or Petitioners) October 27, 2011 Petition to Intervene and Request for Hearing. On November 2, 2011, an Atomic Safety and Licensing Board (Board) was designated to preside in this proceeding.[1] The Joint Petitioners request a hearing on Strata Energy, Inc.'s (Strata or Applicant) Application for an NRC license to be used in connection with a proposed *in situ* uranium recovery (ISR) project to be located in Crook County, Wyoming (the Ross project or Ross site). Because the Petitioners have not demonstrated standing to intervene, the Board should deny the Petition.[2]

BACKGROUND

On January 4, 2011, Strata submitted its Application for a combined NRC source and

[1] 76 Fed. Reg. 69295 (November 8, 2011).

[2] Should the Board grant standing, the proceeding should be limited to the issues raised in contention 4 and a portion of contention 5, as specified below. All other contentions are inadmissible.

11e.(2) byproduct material license.[3] Strata seeks a license to construct and operate a uranium recovery and processing facility in Crook County, Wyoming. Uranium recovery involves the extraction of uranium by *in situ* recovery (ISR) methods and on-site processing to yellowcake. Specifically, Strata's proposed uranium recovery method, ISR, involves injecting lixiviant (typically containing water mixed with oxygen and/or hydrogen peroxide, as well as sodium carbonate or carbon dioxide) through a series of wells into an underground geological formation containing uranium deposits, also known as the "ore zone," to dissolve the uranium. The lixiviant is then collected in a series of recovery wells, through which it is pumped to a central processing plant (CPP), where the uranium is extracted from the solution through an ion-exchange process. The uranium extract is then further purified, concentrated, and dried to produce a material that is called "yellowcake." The CPP will also include a circuit to separate and package vanadium oxide through a precipitation process. Technical Report (TR) at 1-8. Finally, the yellowcake is packed in 55-gallon drums to be transported to a uranium conversion facility, where it is processed through the stages of the nuclear fuel cycle to produce fuel for use in nuclear power reactors. After the uranium is extracted, the residual lixiviant is recharged with oxygen and carbon dioxide and re-injected into the ore zone to repeat the cycle.

In order to conduct its ISR operations, the proposed project includes ISR well fields, uranium processing facilities, and associated infrastructure. ISR well fields consist of geometric-shaped patterns of injection and production wells, along with monitor wells that surround the well field areas. Figure 1.7-1 in Strata's Technical Report (TR) provides a view of proposed well field patterns for the Ross site. TR at 1-18.

As is typical of ISR operations, Strata will inject less groundwater through its injection wells than it extracts through its production wells. This average 1.25 percent difference,

[3] "Letter from Strata Energy, Inc. Submitting Combined Source and 11e.(2) Byproduct Material License Application Requesting Authorization to Construct and Operate Proposed Ross In Situ Leach Uranium Recovery Project Site" (ADAMS Accession No. ML110120055) (January 4, 2011). The Application's supporting documentation can be found in ADAMS by searching under Docket No. 04009091.

referred to as “bleed,” creates and maintains a cone of depression in the pressure surface of the aquifer. TR at 1-8. The cone of depression forces groundwater to flow continually to the center of the production zone. This procedure is used in order to maintain a flow of groundwater into the well field and prevent the flow of lixiviant to the monitor wells surrounding the ore zone. This procedure is also designed to prevent “excursions,” *i.e.*, the migration of lixiviant toward the surrounding aquifer. *Id*. The ore zone from which Strata proposes to extract uranium is situated in the Lance and Fox Hills Formations at depths between 250 and 700 feet. TR at 2-96. Except in the easternmost portion, the Lance Formation has been mapped at ground surface through the project area and it is mantled by up to several feet of soil or several tens of feet of recent alluvium located in the valley floors of the Little Missouri River and Deadman Creek. The Fox Hills Formation has been mapped at ground surface in the extreme eastern portion of the proposed project area. TR at 2-144.

As with other uranium recovery applications, the NRC Staff will conduct a detailed technical review of Strata’s Application. The Staff’s review will include both a safety review and an environmental review. The Staff’s safety review will focus on the TR that Strata submitted with its Application, while the environmental review will focus on Strata’s Environmental Report (ER). The Staff will conduct its safety review to determine whether Strata’s Application meets applicable requirements in the Atomic Energy Act, 42 U.S.C. § 2011, *et seq.* (AEA) and, 10 C.F.R. Part 20 and Part 40. In particular, the Staff will determine whether the Application meets applicable requirements in Appendix A of Part 40, “Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material from Ores Processed Primarily for Their Source Material Content.” The Staff will conduct its environmental review in accordance with the National Environmental Policy Act of 1969, 42 U.S.C. § 4321 *et seq.* (NEPA), and the NRC’s NEPA-implementing regulations at 10 C.F.R. Part 51. For Strata’s Application, the Staff will satisfy the requirements of NEPA and Part 51 by preparing a supplemental environmental impact statement (SEIS). The SEIS will

supplement the analysis in NUREG-1910, "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities" (GEIS).

DISCUSSION

In order for a hearing request to be granted, a petitioner must demonstrate that it has standing to intervene in the proceeding and submit at least one admissible contention. 10 C.F.R. § 2.309(a).

I. Standing

A. Legal Standards Governing Standing to Intervene

Under the NRC's Rules of Practice:

> [a]ny person whose interest may be affected by a proceeding and who desires to participate as a party must file a written request for hearing or petition for leave to intervene and a specification of the contentions which the person seeks to have litigated in the hearing.

10 C.F.R. § 2.309(a). NRC regulations further provide that the designated Board "will grant the request [for a hearing] if it determines that the requestor has standing under the provisions of [10 C.F.R. § 2.309(d)] and has proposed at least one admissible contention that meets the requirements of [10 C.F.R. § 2.309(f)]." *Id.*

Under the general standing requirements in 10 C.F.R. § 2.309(d)(1), a request for hearing must state:

> (i) The name, address and telephone number of the requestor or petitioner;
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> (ii) The nature of the requestor's/petitioner's right under the [Atomic Energy Act (AEA) of 1954, 42 U.S.C. § 2011 *et seq.*] to be made a party to the proceeding;
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> (iii) The nature and extent of the requestor's/petitioner's property, financial or other interest in the proceeding; and
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> (iv) The possible effect of any decision or order that may be issued in the proceeding on the requestor's/petitioner's interest.

"At the heart of the standing inquiry is whether the petitioner has 'alleged such a personal stake in the outcome of the controversy' as to demonstrate that a concrete adverseness exists which

will sharpen the presentation of issues."[4] The Commission has long applied contemporaneous judicial concepts of standing to determine whether a party has a sufficient personal interest to intervene as a matter of right.[5] To establish standing, a petitioner must allege:

(1) an "injury in fact" that is

(2) "fairly traceable to the challenged action"; and

(3) is "likely" to be "redressed by a favorable decision."[6]

Additionally, a petitioner's claimed injury must arguably be within the zone of interests protected by the governing statute in the proceeding.[7] In order to determine whether an interest is within the "zone of interests" of a statute, the Board must determine both what interests are "arguably…to be protected" by the statute and whether the petitioner's interests affected by the proceeding are among them.[8] In this case, the AEA and NEPA are the statutes governing the proceeding before the Board.

Commission practice allows petitioners an alternate way of establishing standing, without an inquiry into traditional standing requirements, through presumptions based on geographical proximity. The Commission has historically presumed standing in power reactor construction permit and operating license proceedings based on a petitioner's 50-mile proximity to the facility.[9] In nuclear materials cases, however, "proximity alone does not suffice for

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[4] *Sequoyah Fuels Corp. and Gen. Atomics* (Gore, Oklahoma Site), CLI-94-12, 40 NRC 64, 71 (1994) (*citing Duke Power Co. v. Carolina Envtl. Study Group, Inc.*, 438 U.S. 59, 72 (1978), *and quoting Baker v. Carr*, 369 U.S. 186, 204 (1962)).

[5] *Calvert Cliffs 3 Nuclear Project, LLC & Unistar Nuclear Operating Servs., LLC* (Combined License Application for Calvert Cliffs, Unit 3), CLI-09-20, 70 NRC 911, 913 (2009).

[6] *Id.* at 915 (*citing Cleveland Elec. Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-93-21, 38 NRC 87, 92 (1993)).

[7] *Yankee Atomic Elec. Co.* (Yankee Nuclear Power Station), CLI-98-21, 48 NRC 185, 195-96 (1998).

[8] *U.S. Enrichment Corp.* (Paducah, Kentucky), CLI-01-23, 54 NRC 267, 272-73 (2001) (citing *Nat'l Credit Union Admin. v. First Nat'l Bank*, 522 U.S. 479, 492 (1998)).

[9] *Florida Power & Light, Co.* (St. Lucie, Units 1 & 2), CLI-89-21, 30 NRC 325, 329 (1989); *Calvert Cliffs 3*, CLI-09-20, 70 NRC 911, 915 (2009).

standing, absent an 'obvious' potential for offsite harm."[10] "[W]hether a petitioner could be affected by the licensing action must be determined on a case-by-case basis, taking into account the petitioner's distance from the source, the nature of the activity, and the significance of the radioactive source."[11] For instance, "a presumption based on geographical proximity (albeit at distances much closer than 50 miles) may be applied where there is a determination that the proposed action involves a significant source of radioactivity producing an obvious potential for offsite consequences."[12]

"Where there is no 'obvious' potential for radiological harm at a particular distance frequented by a petitioner, it becomes the petitioner's 'burden to show a specific and plausible means' of how the challenged action may harm him or her."[13] "Conclusory allegations about potential radiological harm," however, are not sufficient to establish standing.[14] Although the Commission has applied a "proximity-plus" theory to evaluate claims of standing in materials licensing actions, a presumption of standing based on geographical proximity to the proposed facility is only applied "where there is a determination that the proposed action involves a significant source of radioactivity producing an obvious potential for offsite consequences."[15] In licensing decisions involving ISR projects, petitioners have demonstrated standing by showing

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[10] *Nuclear Fuel Servs., Inc.* (Erwin, Tennessee), CLI-04-13, 59 NRC 244, 248 (2004).

[11] *U.S. Army Installation Command* (Schofield Barracks, Oahu, Hawaii, and Pohakuloa Training Area, Island of Hawaii, Hawaii), CLI-10-20, 72 NRC ___ (Aug. 12, 2010) (slip op. at 2).

[12] *Sequoyah Fuels Corp.*, CLI-94-12, 40 NRC at 75 n.22.

[13] *USEC, Inc.* (American Centrifuge Plant), CLI-05-11, 61 NRC 309, 311-12 (2005) (*quoting Nuclear Fuel Servs., Inc.*, CLI-04-13, 59 NRC at 248).

[14] *Nuclear Fuel Services, Inc.* (Erwin, Tennessee) CLI-04-13, 59 NRC 244, 248 (2004).

[15] *Georgia Institute of Technology* (Georgia Tech Research Reactor), CLI-95-12, 42 NRC 111, 116 (1995) (citing *Sequoyah Fuels Corporation* (Gore, Oklahoma Site), CLI-94-12, 40 NRC 64, 75 n.22 (1994)).

that they use a substantial quantity of water from a source that is "reasonably contiguous" to the ISR injection or processing sites.[16]

B. Representational and Associational/Organizational Standing

An organization does not have independent standing to intervene in a licensing proceeding merely because it asserts an interest in the litigation.[17] An organization may meet the injury-in-fact test for standing in one of two ways: by demonstrating an effect upon its organizational interest, or by demonstrating that one of its members is suffering immediate or threatened harm from the proposed action.[18] "[A]n association has standing to bring suit on behalf of its members when: (a) its members would otherwise have standing to sue in their own right; (b) the interests it seeks to protect are germane to the organization's interests; and (c) neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit."[19] The organization must identify the member who has standing, and it must show that the member has authorized the organization to represent him or her and request a hearing on his or her behalf.[20] An organization seeking to intervene in its own right must demonstrate a palpable injury-in-fact to its organizational interests that is within the scope of interests of the AEA or NEPA.[21] An organization cannot assert injury-in-fact to itself based upon

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[16] *See Powertech (USA), Inc.* (Dewey-Burdock In Situ Uranium Recovery Facility), LBP-10-16, 72 NRC __ (2010), (slip op. at 13-21); *see also Crow Butte Resources, Inc.* (In Situ Leach Facility, Crawford, Nebraska), LBP-08-24, 68 NRC 691, 704–05 (2008); *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), LBP-98-9, 47 NRC 261, 275 (1998), *rev'd on other grounds*, CLI-98-16, 48 NRC 119 (1998).

[17] *Puget Sound Power and Light Co.* (Skagit/Hanford Nuclear Power Project, Units 1 & 2), LBP-82-74, 16 NRC 981, 983 (1982), citing *Allied General Nuclear Services* (Barnwell Fuel Receiving and Storage Station), ALAB-328, 3 NRC 420, 422 (1976).

[18] *See, e.g., Hydro Resources, Inc.,* LBP-98-9, 47 NRC at 271.

[19] *Hunt v. Wash. State Apple Advertising Comm'n*, 432 U.S. 333, 343 (1977); *See also Friends of the Earth v. Laidlaw Environmental Serv. (TOC), Inc.*, 528 U.S. 167, 168-69 (2000).

[20] *Consumers Energy Co.* (Palisades Nuclear Plant), CLI-07-18, 65 NRC 399, 409 (2007); *Vermont Yankee Nuclear Power Corp. and AmerGen Vermont, LLC* (Vermont Yankee Nuclear Power Station), CLI-00-20, 52 NRC 151, 163 (2000).

[21] *Florida Power and Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), ALAB-952, 33 NRC

nothing more than a broad, unparticularized interest—shared with many others—in the preservation of the environment, no matter how longstanding the interest or how qualified the organization may be in evaluating the problem.[22]

C. The PRBRC and NRDC have not adequately demonstrated standing to intervene

The Joint Petitioners rely on one member of both of their organizations to establish representational standing, Ms. Pamela Viviano. The Petitioners have complied with NRC regulations by submitting documentation in which Ms. Viviano authorizes the PRBRC and NRDC to represent her in this proceeding. The Petitioners have also explained that the interests or missions of their organizations include "improving the environment, and health and safety conditions at nuclear facilities," Petition at 3, and "addressing impacts from uranium mining and milling." Petition at 4. The interests Petitioners raise in their contentions are germane to the organizations' interests. Thus, if Ms. Viviano demonstrates standing in her own right, the PRBRC and NRDC have standing to intervene. The Joint Petitioners have not, however, demonstrated that Ms. Viviano has standing to intervene.

Ms. Viviano lives relatively close to the Ross site, but that does not automatically mean that she is suffering threatened harm by the construction or operation of the site. The main argument that the Joint Petitioners make to establish the injury-in-fact and causation prongs of standing relies on the fact that Ms. Viviano owns two properties with three wells within ten miles of the Ross site. Joint Petitioners state that Ms. Viviano is concerned about contamination and depletion of the water in her wells. Petition at 5-6. The Petitioners also provide declarations from three witnesses discussing the potential for contamination to escape the ore zone at the Ross site. But they do not address how or whether migration of contamination could occur between the Ross site and Ms. Viviano's wells. The declarations also discuss the potential for drawdown of the aquifers within the Ross site, but as with the contamination argument, they fail

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521, 528-530 (1991).

[22] *Sierra Club v. Morton*, 405 U.S. 727, 734-35, 739 (1972).

to establish a connection between the Ross site and Ms. Viviano's wells. What's more, they fail to identify what aquifer Ms. Viviano's wells draw from, which is essential to determining whether a connection exists.

For its discussion here, the Staff is relying on the map attached to Ms. Viviano's affidavit as showing the actual locations of her properties. Viviano Decl. at Figure 1. There are discrepancies among the Petition, Ms. Viviano's affidavit, and its accompanying map. The Petition states that Ms. Viviano lives ten miles southeast of the Ross site, Petition at 5, but the affidavit and map state that she lives ten miles northeast of the Ross site. Viviano Decl. at ¶ 3 & Figure 1. The Petition and affidavit state that Ms. Viviano's other property is seven miles southwest of the Ross site, Petition at 6 and Viviano Decl. at ¶ 12, while the map shows the property seven miles southeast of the Ross site. Viviano Decl. at Figure 1.

The Ross project's operations would be conducted within the Lance/Fox Hills aquifer. Based on the map provided by the Petitioners, Ms. Viviano's properties and well sites are not in the Lance/Fox Hills aquifer. Rather, they are separated from the Lance/Fox Hills aquifer by the Pierre Shale Formation, a massive formation that effectively isolates groundwater in the basin above it. TR at 2-9.

The Petitioners have not described a plausible pathway by which ISR operations in the Lance/Fox Hills aquifer would affect Ms. Viviano's wells.[23] "Locally, the upper Pierre Shale is void of any permeable water-bearing strata. Due to its thickness and low permeability, the Pierre Shale is considered the lower groundwater confining unit within the proposed Ross ISR Project area." TR at 2-91. As Petitioners' own exhibit shows, the Pierre Shale crops up to the surface approximately one quarter mile to the east of the Ross site boundary. Petition at Decl. 118, Figure 1. Further, Strata's ER shows both the surface of the Ross site and a cross section,

[23] Compare other ISR proceedings where intervenors were admitted because of a showing of connected aquifers, *e.g.*, *Powertech,* LBP-10-16, 72 NRC __ (2010) (slip op. at 13-21); *see also Crow Butte Resources,* LBP-08-24, 68 NRC at 703–10 (2008).

which clearly depicts the Pierre Shale Formation as well as the general groundwater flow. ER, Figure 4.4-2 at 4-75.[24]

The Petitioners have not shown, and the Staff is not aware of any evidence that suggests that the Pierre Shale Formation is permeable. Rather, as the Application points out, the Pierre Shale is considered a regionally confining layer. TR at 2-91. As such, Ms. Viviano's concerns that the boreholes located on Strata's property will cause cross contamination from the Lance/Fox Hills aquifer to her well, located east of the impermeable Pierre Shale Formation upcrop, are not supported. Viviano Decl. at ¶¶ 4-5.

The same is true for Ms. Viviano's concern that the Lance/Fox Hills aquifer will be depleted by Strata's operations, in turn depleting the aquifers in which her wells are located, causing her to be forced to haul water or redrill deeper wells. *Id.* at ¶ 6. Additionally, Ms. Viviano is concerned that after operations have ceased, Strata will be unable to restore the groundwater or to stop the leaching process into the Lance/Fox Hills aquifer. *Id.* at ¶¶ 7-8. But that aquifer is not connected to the aquifers her wells draw from, so again Petitioners have not demonstrated an injury-in-fact through a groundwater connection. Consequently, the Petitioners have not demonstrated that Ms. Viviano will be harmed by groundwater contamination or depletion caused by operations at the Ross site.

While the Petition itself does not discuss deep injection wells as they pertain to standing, the standing argument in the Petition cites paragraph 69 of Dr. Moran's declaration. Paragraph 69 briefly discusses the five wells that Strata will use to dispose of non-hazardous liquid waste into the Deadwood and Flathead Formations, which lie under the Pierre Shale Formation. Those five wells are Class I underground injection control (UIC) deep injection wells to be used for the disposal of industrial non-hazardous waste, for which Strata has obtained a Wyoming

[24] *See also,* TR at 2-120, which shows the thickness of the Pierre Shale Formation and other shale layers in the area.

Department of Environmental Quality (DEQ) permit. TR Addendum 4.2-A.[25] Dr. Moran does not say that Strata itself will degrade those formations in a measurable way, but instead asserts that Strata must address the cumulative impacts of Strata's disposal with oil and gas companies disposing of brine in the same formations. More importantly for the standing demonstration, Dr. Moran does not address how Ms. Viviano's wells might be affected by Strata's deep injection wells. Strata's deep injection wells will be more than 8,100 feet deep, TR at 4-22, while Ms. Viviano's wells, seven and ten miles away, are 298, 300, and 710 feet deep, respectively. Petition at Viviano Decl. ¶¶ 1 and 12. The Petitioners have not proposed a plausible pathway between Strata's deep injection wells and Ms. Viviano's wells. As such, the Petitioners have not demonstrated an injury-in-fact and causation through a connection between Strata's deep injection wells and Ms. Viviano's wells.

In addition to harm to groundwater, the Petitioners assert that Ms. Viviano will be harmed by increased traffic and resulting dust, light pollution, and, generally, the proximity of the Ross site to her properties. Petition at 6. However, the Petitioners fail to specifically describe how these harms could occur. First, while there would be an increase in traffic near the Ross site, the Petitioners do not connect any travel routes to Ms. Viviano's properties. It is unclear from the affidavit and map how far Ms. Viviano's house is from roads that Ross traffic will use. The TR at 3-26 to 3-38 discusses the traffic and transportation routes Strata plans for its construction and operations. The Petitioners do not address how those proposed routes would affect Ms. Viviano; without more, the unsupported assertion of harm from traffic and dust is insufficient to demonstrate standing.

Second, the Petitioners fail to provide a basis for harm caused by lights at the Ross site. As part of its environmental review, Strata completed a Viewshed Analysis, which found that only two of eleven residences within two miles of the site will be able to see the tallest buildings

[25] TR Addendum 4.2-A is Strata's application for the WYDEQ permit. The WYDEQ permit is available at ADAMS Accession No. ML111380015.

at the site. ER 4-107. The ER also states that from Devils Tower, which is eleven miles east of the Ross site, situated between Ms. Viviano's properties, the Ross site cannot be seen from the visitors center or hiking trails at Devils Tower. ER at 4-105. The Petitioners do not provide any evidence to suggest that the Ross site can be seen from her properties, which are approximately the same distance from the Ross site as Devils Tower. In addition, Strata states that it will use mitigation techniques to lessen the effects of its lights at night. It plans to minimize the amount of nighttime drilling it conducts, and when it does drill at night, it will turn the lights away from nearby residents. ER 5-58. The Petitioners do not provide any support beyond a bare assertion that Ms. Viviano's scenic and visual interests will be affected by the Ross project, and so have not demonstrated standing.

Finally, the Petitioners assert that Ms. Viviano will suffer an economic harm simply because the proximity of an ISR project to her properties will be unattractive to potential buyers. Petition at 6 and Viviano Decl. at ¶ 9. Again, the Petitioners provide no basis for a decline in Ms. Viviano's property value beyond assuming that potential buyers will pay less for her property. First, a solely economic harm without a radiological or environmental harm, is not within the zone of interests of the AEA or NEPA. Moreover, if the NRC were to assume a legally cognizable harm based purely on proximity to an NRC licensee, the Commission would not have developed the "proximity plus" standard for materials applications.[26] As such, Ms. Viviano's claim of economic harm does not establish standing in the proceeding.

The Petitioners bear the burden of providing sufficient facts to support standing, and they have not done that here.[27] In sum, the Petitioners have not demonstrated that Ms. Viviano

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[26] *U.S. Army Installation Command*, CLI-10-20, 72 NRC ___ (Aug. 12, 2010) (slip op. at 2).

[27] *Id.* (slip op. at 4), *citing PPL Bell Bend, LLC* (Bell Bend Nuclear Power Plant), CLI-10-7, 71 NRC 133, 139 (2010); *see also*, *U.S. Enrichment Corp*. (Paducah, Kentucky Gaseous Diffusion Plant), DD-01-3,54 NRC 305, 308 (2001); *citing Commonwealth Edison Co*. (Zion Nuclear Power Station, Units 1 & 2), CLI-00-05, 51 NRC 90, 98 (2000).

has standing to intervene in this proceeding, which in turn means that the Petitioners' organizations do not have standing to intervene.

At the end of their standing discussion, the Petitioners briefly offer an "additional basis for standing to intervene in this proceeding." Petition at 8. They assert that their organizations have members who have visited and plan to visit Devils Tower National Monument, who are interested in preserving the viewshed and aesthetic integrity of the site. *Id.* This argument for standing falls short. First, as a factual matter, the ER states that the Ross site cannot be seen from the Devils Tower visitor center or hiking trails, ER at 4-105, and the Petitioners have not put forth any evidence to dispute that. As a legal matter, the Petitioners appear to be arguing for representational standing of the unnamed members who visit Devils Tower, but they have not provided documentation from the members stating their interests and authorizing the Petitioners' organizations to represent them in this proceeding.[28] Furthermore, preserving the aesthetic integrity of the area surrounding a national monument is a generalized interest held by many individuals, and is not a particularized organizational interest of either the NRDC or PRBRC that might be used to establish associational standing.[29] The Petitioners must establish that they will suffer a concrete, particularized harm from the proposed action, and they have not done that here.[30]

The Petitioners have not demonstrated standing to intervene in this proceeding, and so the Petition to Intervene must be denied.

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[28] *Palisades*, CLI-07-18, 65 NRC at 409; *Vermont Yankee*, CLI-00-20, 52 NRC at 163.

[29] *See Morton*, 405 U.S. at 734-35.

[30] *See Morton*, where it was not enough for the Sierra Club to plead an organizational interest in protecting and conserving the Sierra Nevada Mountains to establish organizational standing. 405 U.S. at 735 n.8.

II. Contentions

A. Legal Requirements for Contentions

The legal standards governing admissibility of contentions are set forth in the NRC's Rules of Practice at 10 C.F.R. § 2.309(f)(1). In order to be admissible, a contention must:

> (i) Provide a specific statement of the legal or factual issue sought to be raised or controverted;
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> (ii) Provide a brief explanation of the basis for the contention;
>
> (iii) Demonstrate that the issue raised is within the scope of the proceeding;
>
> (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
>
> (v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue and on which the petitioner intends to rely at the hearing, together with references to the specific sources and documents, which the petitioner intends to rely to support its position on the issue; and
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> (vi) Provide sufficient information to show that a genuine dispute with the applicant/licensee exists on a material issue of law or fact. This information must include references to specific portions of the application (including the applicant's environmental report and safety report) that the petitioner disputes and the supporting reasons for each dispute, or, if the petitioner believes that the application fails to contain information on a relevant matter as required by law, the identification of each failure and the supporting reasons for the petitioner's belief.

The purpose of the Commission's contention pleading requirements is to "focus litigation on concrete issues and result in a clearer and more focused record for decision."[31] The Commission "should not have to expend resources to support the hearing process unless there is an issue that is appropriate for and susceptible to, resolution in an NRC hearing." *Id*. The "contention admissibility 'requirements are deliberately strict, and [the Commission] will reject any contention that does not satisfy the requirements.'"[32] Mere "notice pleading" does not

[31] *Changes to Adjudicatory Process (Part II)*, 69 Fed. Reg. 2182, 2202 (January 14, 2004).

[32] *Progress Energy Carolinas, Inc.* (Shearon Harris Nuclear Power Plant, Units 2 & 3), CLI-10-09, 71 NRC 245, 253 (2010) (quoting *USEC, Inc.* (American Centrifuge Plant), CLI-06-9, 63 NRC 433, 437 (2006)).

suffice.[33] Further, the petitioner bears the burden of meeting the pleading standards—the Board may not supply missing information or draw inferences on the petitioners' behalf.[34]

A contention must be rejected where, rather than raising an issue that is concrete or litigable, it reflects nothing more than a generalization regarding the petitioner's view of what the applicable policies ought to be.[35] "Requiring the substance and presentation of contentions to be concrete and specific to the license application helps ensure that individual license applicants are not put into the position of defending the policies and decisions of the Commission itself."[36] Therefore, a contention must demonstrate a genuine dispute with the applicant because "[i]t is the license application, not the NRC staff review, that is at issue in [NRC] adjudications."[37] Petitioners are likewise required to raise environmental contentions on the applicant's ER.[38] When a contention challenging the ER is admitted, the Staff can then request additional information from the applicant in order to resolve any deficiencies as the Staff develops its EIS. *Id.* "If the EIS addresses the concerns alleged in the contention, the original contention becomes moot and the intervenor must raise a new contention if it claims the EIS discussion is still inaccurate or incomplete." *Id.*

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[33] *See Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Unit 3), CLI-09-5, 69 NRC 115, 120 (2009) (citing *Consumers Energy Co.* (Palisades Nuclear Plant), CLI-07-18, 65 NRC 399, 414 (2007)).

[34] *See Duke Cogema Stone & Webster* (Savannah River Mixed Oxide Fuel Fabrication Facility), LBP-01-35, 54 NRC 403, 422 (2001) (*citing Statement of Policy on Conduct of Adjudicatory Proceedings,* CLI-98-12, 48 NRC 18, 22 (1998) "[a] contention's proponent, not the licensing board, is responsible for formulating the contention and providing the necessary information to satisfy the basis requirement for the admission of contentions[.]").

[35] *Private Fuel Storage, L.L.C.*, (Independent Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 129 (2004) (citing *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 & 3), ALAB-216, 8 AEC 13, 20–21 (1974)); *see also* 10 C.F.R. § 2.335.

[36] *Id.* at 130.

[37] *Florida Power & Light Co.* (Turkey Point Nuclear Plant, Units 3 and 4), CLI-01-17, 54 NRC 3, 25 (2001) (citing *Baltimore Gas & Elec. Co.* (Calvert Cliffs Nuclera Power Plant, Units 1 and 2), CLI-98-25, 48 NRC 325, 350 (1998), *aff'd sub nom Nat'l Whistleblower Ctr v. NRC*, 208 F.3d 256 (D.C. Cir. 2000), *cert. denied*, 121 S.Ct. 758 (2001).

[38] *Private Fuel Storage,* CLI-04-22, 60 NRC at 130.

B. The Joint Petitioners' Contentions

The Joint Petitioners proffer five contentions covering a range of issues. Only contention 4 and a portion of contention 5 are admissible. As a threshold matter, the Staff notes that in each contention the Petitioners state that they are challenging the Staff's review of the SEIS if the SEIS relies on the same information as the Application. The Petitioners are essentially preserving their claims against the NRC for a later date. Claims against the Staff's review are not ripe for adjudication, and "preservation of claims" is not appropriate here. Assuming a contention challenging the ER is admitted, if the Staff's SEIS addresses the contention, the contention becomes moot, and the Petitioners would have to raise a new contention if they believe the SEIS is still inaccurate or incomplete.[39] As such, the last basis put forth for each contention challenging the Staff's SEIS is inadmissible.

1. Contention 1 Is Inadmissible

Contention 1:

> 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).

The Petitioners rely upon declarations from Drs. Moran, Sass, and Abitz as support for this contention. The issues raised by Petitioners in contention 1, however, are quite broad and the declarations of Drs. Moran, Sass, and Abitz lack the requisite support to demonstrate a failure to meet applicable regulations and fail to demonstrate that there is a genuine issue as to whether Strata needs to provide additional information on baseline water conditions for the pre-operation monitoring program. In addition, the Petitioners incorrectly rely on 10 C.F.R. Part 40, Appendix A, Criterion 5. The correct standards for the pre-operational monitoring program are

[39] *Private Fuel Storage,* CLI-04-22, 60 NRC at 130.

contained in Criterion 7.[40] Accordingly, contention 1 should be dismissed. 10 C.F.R. § 2.309(f)(1)(v), (vi).

a. The Petitioners Fail to Adequately Support Their Assertion that the Application Lacks an Adequate Description of the Present Baseline Groundwater Quality.

The Petitioners claim that the 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 to review." Petition at 11. As the basis for their claims, the Petitioners cite to NRC guidance in NUREG-1569, sections 2.7.1(4) and 2.7.3(4) that specifies that "assessments of available ground-water resources and ground-water quality . . . including a quantitative description of chemical and radiological characteristics of the ground water and potential changes in water quality caused by operations," as well as "reasonably comprehensive chemical and radiochemical analysis of water samples . . . ." Petition at 11.

NRC guidance, such as NUREG-1569, describes programs acceptable to NRC Staff for typical uranium extraction facilities, including programs for establishing baseline water quality. Such guidelines, however, are not requirements, and the acceptability of programs proposed in applications are instead determined by NRC Staff on a case-by-case basis during the individual licensing review.[41] Accordingly, the Petitioners have failed to provide any support for their

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[40] Criterion 7 establishes two monitoring programs. The first program consists of a preoperational monitoring program, which is used to provide baseline data on the milling site and its environs. The second program consists of an operational monitoring program to measure or evaluate compliance with applicable standards and regulations; to evaluate performance of control systems and procedures; to evaluate environmental impacts of operation; and to detect potential long-term effects. Baseline data for detection monitoring programs will be established for a specific wellfield as it is established, and will be reviewed by NRC staff in the future.

[41] An applicant may put forth alternative programs for consideration by the NRC staff. When such alternatives to the guidance are proposed by an applicant, the NRC staff will review the justification provided for such deviation from the guidance, and the acceptability of the proposed alternative program will be determined on a case-by-case basis. *See, Curators of the University of Missouri*, CLI-95-8, 41 NRC 386, 397 (1995).

claims that the information provided in the Application is not a "quantitative description," or "reasonably comprehensive." Rather, the Petitioners appear to have created a new standard for what they believe constitutes the "true baseline," Petition at 12, but have failed to provide a basis in regulatory requirements to support their more expansive standard.

Neither 10 C.F.R. § 51.45 nor NUREG-1569 sections 2.7.1(3) and 2.7.3(4) require an applicant to define baseline groundwater conditions as those conditions that existed "prior to the beginning of any significant industrial activities." Moran Decl. at ¶ 40. Dr. Moran has failed to provide any specific citations of the NUREG to support his claim that additional baseline data is necessary for Staff review, or that a specific regulation has not been satisfied. Rather, the information provided in the TR describes baseline conditions existing just prior to the proposed action. TR at 2-145; Figures 2.7-14 through 2.7-20; Addendum 2.6-C and 2.7-F; Table 2.7-21. Estimating the groundwater quality that existed before industrial activity would be just that, an estimate, with little data to rely on. All monitoring and restoration requirements applicable to Strata must be measured from the state of the groundwater when operations begin, so the current state of the groundwater is the appropriate standard.

b. <u>The Petitioners Fail to Adequately Support Their Assertion that the Application Fails to Demonstrate that Groundwater Samples Were Collected in a Scientifically Defensible Manner, Using Proper Sampling Methodologies</u>.

The Petitioners claim that the Application "fails to properly characterize current water conditions" because the testing data is not analyzed "in a meaningful statistical manner." Moran Decl. at ¶ 42; Petition at 12.

Consistent with the guidance in NUREG-1569 § 2.7.2, applicants should document individual sampling results in order for the NRC Staff to evaluate the quality of that data and establish that the data are consistent with the applicant's conceptual model. Strata reports field sampling data and laboratory reports for all samples, TR at Addendum 2.7-J, summarizes the data in tables for each sampling location, TR at Addendum 2.7-I, provides a range of values for

each parameter grouped per the Applicant's conceptual model of the aquifer, graphically displays the average value for the major or chemical constituent per well/aquifer, and compares the data to established standards. TR at Addendum 2.7-K. Although Strata did not provide a tabulated average value in its data sets, the Petitioners do not provide support as to why the information provided is not statistically meaningful. Staff will be able to use the information provided to independently verify the Applicant's conceptual model and analyses.

The Petitioners also claim that the Application is deficient in that it does not 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. But section 2.2.1 of NUREG-1569 addresses the use of adjacent lands and waters, not baseline water quality. The two-mile radius is not a standard that the NRC uses to evaluate the baseline water quality provided by applicants. The Petitioners do not provide any additional support for a two-mile standard beyond citing the inapplicable section of NUREG-1569.

Dr. Moran also states that the Application is insufficient because the baseline measures "do not contain unfiltered samples." Moran Decl. at ¶¶ 43, 45; Petition at 12. Dr. Moran states that only filtered samples are presented in the Application, resulting in a "body of data having artificially low concentrations when compared to water actually used and consumed," and that unfiltered samples must be collected and analyzed for baseline groundwater evaluation. Moran Decl. at ¶¶ 43, 45. Petitioners have not shown that this is material to any finding that the NRC Staff must make. For purposes of determining baseline, whether the samples are filtered or not is irrelevant; what matters is consistency in sampling technique, and that future samples are made using the same filter, *e.g.*, an "apples-to-apples" comparison. In fact, the sampling protocols employed by the Applicant are consistent with the guidelines of the Wyoming DEQ, which are acceptable to the NRC Staff.[42]

[42] RIS 2004-9, *Status on Deferral of Active Regulation of Ground-Water Protection at In Situ Leach Uranium Extraction Facilities*, June 7, 2004 (ADAMS Accession No. ML041540558).

The Petitioners further claim that the Application does not sufficiently detail the ore zone and does not provide enough information on the exploratory boreholes to fully characterize baseline water quality. Petition at 13; Sass Decl. at ¶¶ 8-9, 15. Through Dr. Sass's affidavit, the Petitioners allege that the "thousands" of drill holes that are on the Ross-Lance site, "have served as a conduit among the four aquifers through which groundwater, including dissolved substances, could freely move from one aquifer to another." Sass Decl. at ¶ 11. Dr. Sass also opines that these boreholes "may have been open to the surface," Sass Decl. at ¶ 11, and thus may have introduced surface waters into the aquifers. Petition at 13.

With respect to the presence of abandoned boreholes, Strata has committed in its Application to seal all the boreholes in the area of a wellfield prior to the commencement of operations. TR at 5-83, 5-87 and TR Addendum 2.7F at 14. However, the fact that the boreholes may act as a conduit for oxygen introduction to the aquifers is moot because the baseline is based on current conditions. The boreholes, though potentially improperly sealed, do have cement caps at the surface to prevent the introduction of surface water to the subsurface with a majority of the historical boreholes having a metal tag in the cap for identification purposes. TR at 2-87. Finally, as Strata identifies improperly abandoned boreholes, it will be required to seal the boreholes per requirements of the State of Wyoming. TR at 3-20, 7-19; Addendum 2.6E at 1; Addendum 2.7F at 14.

Dr. Abitz asserts that the Applicant's proposed six cluster wells are insufficient to "provide a representative sample of the groundwater quality in the Ross permit area." Abitz Decl. at ¶ 16. Dr. Abitz provides an alternative approach to establishing baseline water quality, but his testimony does not explain how or why the Applicant's approach does not satisfy the applicable requirements in 10 C.F.R. 51.45(b) and 10 C.F.R. Part 40 Appendix A, Criterion 7.

The requirements for pre-operational baseline water quality require that "[a]t least one full year prior to any major site construction, a preoperational monitoring program must be conducted to provide complete baseline data on a milling site and its environs . . . ." 10 C.F.R.

Part 40, Appendix A, Criterion 7. Dr. Abitz does not explain how or why the Applicant's preoperational monitoring program fails to meet these requirements, and he does not address section 2.7.3.5.2.1 of the TR and Table 2.7-11, which describe the sample collection and analysis methods to be implemented at the Ross site.

Petitioners also assert that the Applicant should have investigated and accounted for "injection problems which eventually led to the premature shutdown of the [Nubeth] test." Sass Decl. at ¶ 22. NRC Staff will evaluate the information provided by the Applicant on injection problems related to the Nubeth project, and may seek further information in support of Applicant's conceptual model, or a demonstration that injection will not be a problem. The injection problems may hamper the efficiency of the operations, but Petitioners have not specified in their contention any safety-related issue or an issue affecting baseline water quality.

The Petitioners have failed to identify any requirement that Strata must provide additional information on baseline water quality, and the supporting declarations of Drs. Moran, Sass, and Abitz similarly fail to address relevant sections of Strata's Application. The Petitioners' contention therefore is not admissible. 10 C.F.R. §§ 2.309(f)(1)(v) and (vi).

2. Contention 2 Is Inadmissible

> 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.

In contention 2, Petitioners rely upon the declarations of Drs. Moran and Abitz as support for this claim. The issues raised by Petitioners in contention 2, however, are quite broad and the declarations of Drs. Moran and Abitz lack the requisite support to demonstrate a failure to meet applicable regulations. Accordingly, contention 2 must be rejected. 10 C.F.R. § 2.309 (f)(1)(v), (vi).

In raising this contention, the Petitioners claim that the operators of the proposed Strata ISR project "will be no more likely to achieve primary or secondary groundwater restoration standards during decommissioning than any of their predecessors." Petition at 17. Petitioners

base this assertion on broad, conclusory statements that "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." Petition at 17.

The standard for restoring groundwater is set forth in 10 C.F.R. Part 40, Appendix A, Criterion 5B(5)(a), which states that the concentration of a hazardous constituent must not exceed (a) the Commission-approved background concentration of that constituent in the ground water; (b) the respective value given in the table in paragraph 5C if the constituent is listed in the table and if the background level of the constituent is below the value listed; or (c) an alternate concentration limit (ACL) established by the Commission. Criterion 5B(5) thus sets a primary standard of background concentration and a secondary standard of an ACL.

Petitioners' claims, and the supporting declarations of Drs. Moran and Abitz, fail to provide specifics on how the Applicant's plan to restore groundwater to primary or secondary limits will not be met.[43] Dr. Abitz states that the Applicant's proposed six-month restoration period is insufficient when, by comparison, the Nubeth restoration project was carried out over a two-year period. Abitz Decl. at ¶ 28. Dr. Abitz concludes that because the Nubeth project "fail[ed] to restore to pre-mining conditions after two years for a short pilot ISL operation (6 months), it is inappropriate to propose a 6 month restoration period for a full-scale mining operation of 2-3 years per wellfield." Abitz Decl. at ¶ 28. Dr. Moran states that "[t]he technical and regulatory literature amply documents the numerous *failures to restore aquifer water quality at other ISL sites to pre-mining conditions*" Moran Decl. at ¶ 72 (emphasis in original). Neither of these statements, however, provides a reasonable basis upon which one could conclude that this particular Applicant will act contrary to the stated regulatory requirement. In ER 4-67 to 4-

[43] An ACL is a risk-based concentration limit. For an ACL to be considered by the NRC, a license amendment application that meets the requirements listed in 10 C.F.R. Part 40, Appendix A, Criterion 5B(6) must be submitted to the NRC for approval. Under Criterion 5B(6), only alternate concentration limits that present no significant hazard may be proposed.

69 and TR at 6-2 of the Application, the Applicant has committed to meet the NRC regulatory standards for groundwater restoration. For the NRC to approve a restoration, the Applicant must demonstrate that the requirements in Criterion 5B(5) have been met. Strata has made this commitment, and the Petitioners have not provided a technical basis supporting the assertion that the Applicant cannot restore the wellfields to the primary and secondary standards.

Furthermore, it is well settled that where a contention assumes a violation of NRC requirements, a petitioner must make some particularized demonstration that there is a reasonable basis to believe that the applicant will act contrary to the requirement.[44] The statements of Drs. Moran and Abitz fail to provide a particularized statement to support their assertion that the Applicant will violate the applicable regulatory requirements at some point in the future and fail to raise a genuine dispute with Strata. Accordingly, the contention must not be admitted. 10 C.F.R. § 2.309(f)(1)(iv) and (v).

3. Contention 3 is Inadmissible

Contention 3:

> 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.

In contention 3, Petitioners rely upon the declarations from Drs. Moran, Sass, and Abitz as support for their claims. The issues raised by Petitioners in contention 3, however, are quite broad and the declarations of Moran, Sass, and Abitz lack the requisite support to demonstrate a failure to satisfy applicable regulations. Accordingly, contention 3 should be dismissed. 10 C.F.R. § 2.309(f)(1)(iv), (v), (vi).

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[44] *General Public Utilities Nuclear Corp.* (Oyster Creek Nuclear Generating Station), LBP-96-23, 44 NRC 143, 164 (1996); *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant), LBP-99-25, 50 NRC 25, 34 (1999).

The Petitioners state that the data and models proffered by the Applicant must demonstrate "with scientific confidence" that the area hydrogeology will confine the extraction fluids and permit the expected operational and restoration performance. Petition at 20-21. Petitioners do not, however, provide the basis for what "scientific confidence" requires, nor do they tie such a standard to the requirements in 10 C.F.R. § 51.45 or 10 C.F.R. Part 40, Appendix A. Rather, as discussed below, the Petitioners disagree with the manner in which the Applicant characterizes the site hydrogeology, but fail to provide detailed support for how Strata's methodology does not meet applicable regulatory requirements.

Petitioners first argue that the Applicant has failed to satisfy 10 C.F.R. § 51.45. Section 51.45 requires an application for an ISR facility to include a description of the affected environment, as well as a discussion of the proposed project's impact on the environment, any adverse effects, and any irretrievable or irreversible commitment of resources. Petitioners next cite Part 40, Appendix A, Criteria 4(e) and 5G(2) in support of contention 3. 10 C.F.R. Part 40, Appendix A, Criterion 4(e), prohibits the siting of a uranium processing facility near any fault that could cause impoundment failure; and Criterion 5G(2) requires that in support of a tailings disposal system proposal, the application include a description of the "characteristics of the underlying soil and geologic formations particularly as they will control transport of contaminants and solutions." In short, Criteria 4(e) and 5G(2), are specific to surface impoundments, which are not specifically challenged in this contention.

Dr. Sass claims that additional information is necessary to determine the proper placement of injection and recovery wells, for example, the amount of ore present in the deposits, concentration data and chemical analysis of the core segments, and the interrelation of the ore deposits to any other location in the ore body. Sass Decl. at ¶ 18. NRC does not regulate the specific placement of injection and recovery wells within a license area. NRC staff evaluates the processes that an applicant proposes and establishes bounds that ensure the operations can be conducted in a manner that is protective of human health and the

environment. If a license is issued, the licensee must develop specific plans to delineate each ore body, plans that include the detailed information sought by Dr. Sass. That detailed information will be reviewed by the Staff immediately prior to start of operations. The information that was provided in the Application is sufficient for the Staff to analyze and characterize impacts for the project area. TR at § 2.6.3. In fact, requiring such detailed data as suggested by Dr. Sass at an early stage in the process would be counter to NRC policy in RIS 2009-12 which prohibits the installation of injection, recovery and monitoring wells at a specific ore body prior to the issuance of a license, because those activities are considered "construction" under 10 C.F.R. § 40.32(e).[45]

The Petitioners raise the possibility of fluid migration resulting from unplugged or improperly plugged boreholes from the Nubeth project. Petition at 22. Dr. Abitz challenges the Applicant's description of potential pathways through which significant fluid migration could occur between aquifers, and claims that the boreholes "provide[] compelling evidence that there are numerous flow pathways between the aquifers." Abitz Decl. at ¶¶ 12-13. Similarly, Dr. Moran alleges that the number of open boreholes in the region result in potential pathways for fluid migration, and as such, "there is much less certainty that Ross site ground waters and leach solutions can be as completely contained as is alleged throughout the Application." Moran Decl. at ¶ 22. The Applicant's commitment in the Application to seal all boreholes prior to operation, however, addresses the Petitioners' concerns regarding fluid migration due to the presence of boreholes. TR at 5-83, 5-87, and TR Addendum 2.7-F at 14. The Staff will analyze the potential effects of the boreholes on the Applicant's ability to control the fluid migration to ensure compliance with requirements of 10 C.F.R. § 40.41(c). NRC staff will memorialize the Applicant's commitment to seal all boreholes as a license condition, should a license be issued. Furthermore, the Staff will require detailed information on the sealing of boreholes and other

[45] NRC Regulatory Issue Summary 2009-12 Uranium Recovery Policy Regarding Site Preparation Activities at Proposed, Unlicensed Uranium Recovery Facilities. (September 23, 2009). ADAMS Accession No. ML092090353.

related information (*e.g.*, pre- and post-sealing pumping tests) in the future wellfield packages to be submitted for the Staff to review after a wellfield is constructed.

The Petitioners also allege that the Application fails to establish that "leaching fluids will be properly confined." Petition at 23. Dr. Abitz challenges the presence of confining layers between aquifers, stating that "the presence of the confining layer across the project site has not been demonstrated with the geophysical logs in Addendum 2.6-C." Abitz Decl. at ¶ 10. He further concludes that "it is not logical to expect a continuous mudstone or claystone to extend across the entire project area." Abitz Decl. at ¶ 12. Part 40, Appendix A, Criterion 7 requires a preoperational monitoring program to provide baseline data for the site. The data presented must provide evidence of reasonable assurance that the Applicant will have control over fluid migration. Strata has included information addressing control over fluid migration in TR Addendum 2.7-H, which Petitioners do not challenge.

The Petitioners raise additional claims regarding whether Strata conducted sufficient pump tests to confirm or deny the connection of the aquifers. Petition at 21. Dr. Moran concludes that the short-duration, low-yield pumping tests that were performed by Strata did not sufficiently stress the aquifer to "determine whether leakage occurs between the water-bearing units." Moran Decl. at ¶ 29. In order to determine whether the aquifers are hydrologically connected and can result in fluid leakage and migration, Dr. Moran states that the water quality measurements and samples should have been taken in a combined manner with the pump testing. Moran Decl. at ¶ 29. NUREG-1569 § 2.7.3(3) states that any number of commonly used aquifer pumping tests may be used to estimate the aquifer hydraulic properties. Dr. Moran's testimony does not provide any further detail on what additional pump tests are necessary to meet the NRC requirements. In addition, the information provided in the numeric groundwater flow model provides additional data that, when taken into consideration with the pump testing data, provides information consistent with NUREG-1569. TR at Addendum 2.7-H.

Accordingly, Drs. Abitz, Sass, and Moran fail to raise a genuine dispute with Strata, and

their claims should not be admitted. 10 C.F.R. § 2.309(f)(1)(iv), (v), (vi).

4. Contention 4 is Admissible in Part

> Contention 4: The application fails to adequately document negative impacts on groundwater quantity.
>
> The Petition goes on to say that:
>
> 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.

Petition at 24. Petitioners have provided a specific statement of the factual issue they are raising, and have provided a basis for the contention. 10 C.F.R. §§ 2.309(f)(1)(i)-(ii). The Petition relies upon Dr. Moran's declaration, paragraphs 59-63. Paragraph 60 states, in part:

> Similar information on cumulative volumes pumped and cumulative predicted water level declines with cumulative predicted aquifer recharge rates should also be presented assuming that several additional phases of ISL uranium development occur within the regions surrounding the Ross Project (i.e. neighboring Lance areas).

Dr. Moran further challenges the Applicant's Figure 4.4-2 as being an insufficient estimate of impacts on groundwater quantity. Moran Decl. at ¶ 60 n.7. Figure 4.4-2 and the accompanying analysis project the cumulative impacts of drawdown of the wells within the project area's aquifers. The analysis includes one other current operation in the area, Merit Energy Oil, which draws from wells in the ore zone aquifer and deeper Fox Hills Formation sandstones, as well as the deep monitoring aquifer. ER at 4-64.

While the Staff does not entirely agree with contention 4, it believes that the contention is admissible in part. As a legal matter, the Applicant has not violated Part 51, and an Applicant cannot violate NEPA. But the Staff will need more information about Strata's groundwater use in order to complete its environmental review. While materials license applicants are not explicitly required by § 51.45 to address cumulative impacts, the Staff's guidance for environmental reports, NUREG-1748, calls for an analysis of cumulative effects to include "past,

present, or reasonably foreseeable future actions that would result in cumulative impacts when combined with the proposed project." NUREG-1748, § 6.2.3.

Strata has indicated that it will likely develop more uranium recovery sites within the Lance District. TR at 1-7 to 1-8. Because those future ISR projects are reasonably foreseeable, the Staff must evaluate their cumulative impacts in its SEIS. The Staff will need more information about groundwater consumption of reasonably foreseeable activities in the Lance District in order to fully assess the cumulative environmental impacts of the Ross project. Thus, the portion of contention 4 disputing the cumulative impacts of Strata's groundwater consumption is within the scope of the NRC's review and is material to its decision whether or not to issue a license. 10 C.F.R. §§ 2.309(f)(1)(iii)-(iv). The Petitioners have also provided an expert opinion detailing the portions of the Application that they dispute. 10 C.F.R. §§ 2.309(f)(1)(v)-(vi).

While the Staff agrees with Petitioners that more information is needed regarding the cumulative impacts of groundwater usage, the Staff does not agree with all of the Petitioners' assertions in contention 4. For instance, the Petition cites paragraph 63 of Dr. Moran's declaration, which challenges Strata's use of computer models to determine groundwater quantity impacts. The NRC does not prescribe any particular method for calculating groundwater impacts, and the Petitioners have not specifically addressed what inaccuracies Strata's computer model creates. Rather, the issue raised is with computer models generally. Also in paragraph 63, Dr. Moran states that he would like to know what the declines in wells would be out to a two-mile radius around the Ross site. While Dr. Moran asserts that Strata is required to discuss drawdown of wells within a two-mile radius of the site, there is no NRC requirement for ISR applicants to perform modeling of wells to that distance. Without more, the Petitioners' assertion has no basis.[46]

[46] The cumulative impacts from future ISR expansion is the only basis for contention 4 that is admissible. All other bases, including past and current activities in the area and Strata's methodology for calculating

5. Contention 5 is Admissible in Part

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 nearby Devils Tower National Monument and improperly tiers to the NRC's flawed GEIS for ISL uranium mining.

Petition at 27. The Petition goes on to state that the "application violates 10 C.F.R. § 51.45, NEPA, and the Council on Environmental Quality's (CEQ) implementing regulations" for the reasons stated in the contention. Contention 5 contains five distinct elements, each of which the Staff will address in turn. At the outset, however, the Staff points out that while the NRC must comply with NEPA, the Applicant is not bound by NEPA. And neither the Staff nor the Applicant is bound by CEQ's regulations.[47] The NRC's NEPA-implementing regulations are found in 10 C.F.R. Part 51, and closely follow CEQ's regulations. *Id.* The Applicant must comply with 10 C.F.R. Part 51, but because the Applicant is not required to comply with NEPA or CEQ regulations, it cannot violate those requirements.

a. The application fails to adequately assess cumulative impacts of the proposed action in conjunction with other industrial activities in the area.

The Staff agrees that it has the responsibility of analyzing cumulative impacts in its SEIS for the Ross project. While materials license applicants are not explicitly required by § 51.45 to address cumulative impacts, the Staff's guidance for environmental reports, NUREG-1748, calls for an analysis of cumulative effects to include "past, present, or reasonably foreseeable future actions that would result in cumulative impacts when combined with the proposed project." NUREG-1748, § 6.2.3.

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water use, should not be admitted.

[47] *See* 10 C.F.R. § 51.10; *see also* 49 Fed. Reg. 9,352 (Mar. 12, 1984).

First, the Petition asserts that "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." Petition at 28, citing Moran Decl. at ¶ 7. In paragraph 7 of his declaration, Dr. Moran simply states his opinion that these historical issues are not properly addressed in the Application, but he does not cite anything specific in the Application that is lacking. Strata provides an extensive description of past actions in the area of the Ross site throughout its Application. The Petitioners have not provided a specific basis for their dispute with the cumulative analysis of past actions at the Ross site.

Second, the Petition asserts that the Application fails to consider the full scope of Strata's proposed Lance project, which might involve using the Ross central processing plant (CPP) as a central processing location for future Strata satellite facilities as well as for other companies' uranium recovery. Petition at 28. The Petition states that because expansion of ISR projects and the use of the CPP for more than just the Strata site are reasonably foreseeable future actions, the cumulative impacts must be addressed in the ER. Here the Petitioners point to a specific analysis that they believe is missing from the Application, although they do not reference the discussion in the TR regarding the CPP, which is informative here. The TR states that Strata intends to build the CPP with excess capacity in order to process uranium-loaded resins from future ISR facilities operated by Strata and other uranium-loaded resin generators. Strata states that the life of the CPP could be 10 to 20 years or more. TR at 1-7 to 1-8.

The portion of contention 5 addressing cumulative impacts goes on to essentially reiterate part of contention 4 by stating that the Application does not adequately address cumulative impacts to groundwater and referencing the same paragraphs of Dr. Moran's declaration as were relied upon in contention 4. Petition at 29. Finally, this portion of contention 5 asserts that Strata has not adequately addressed the cumulative impacts of its proposed deep injection wells. *Id.* The Petition cites two pages in the ER that state that liquid waste will be

disposed of in deep injection wells, but fails to cite any portions of TR Addendum 4.2-A, which is Strata's application for Class I UIC wells with the Wyoming DEQ.[48] That document, which the Staff will review as part of its NEPA analysis, contains a thorough description of the Deadwood and Flathead Formations. It points out that the groundwater in those formations is "unusable and unsuitable for use," citing Wyoming water quality regulations to describe that groundwater classification:

> (A) Due to excessive concentrations of total dissolved solids or specific constituents; or
> (B) Is so contaminated that it would be economically impractical to make the water usable; or
> (C) Is located in such a way, including depth below the surface, so as to make use economically and technologically impractical.

TR at Addendum 4.2-A page 22. Notwithstanding the unusability of the groundwater, Strata provides additional groundwater data to support its permit application. The Petitioners, however, have not referenced any portion of Addendum 4.2-A that they dispute, and so have not supported this basis for contention 5. 10 C.F.R. § 2.309(f)(1)(vi).

In sum, a narrow portion of the first element of contention 5 is admissible—the element of contention 5 that disputes Strata's analysis of cumulative impacts involving future expansion of ISR projects in the Lance District and the use of the Ross CPP for those projects. The Petitioners have set forth an issue that is material to the Staff's determination in this proceeding and have supported the issue by citing specific portions of the Application that lack information material to the NRC's evaluation of the environmental impacts of the proposed action. The other portions of the first element of contention 5 are inadmissible.

b. The application fails to evaluate adverse environmental effects resulting from an insufficient decommissioning bond.

In support of this portion of contention 5, the Petitioners rely on Dr. Moran's opinion that "Strata's proposed decommissioning bond will almost certainly be insufficient to finance the

[48] The WYDEQ permit has been issued and is available at ADAMS Accession No. ML111380015.

necessary reclamation and restoration activities." Petition at 30. The bases for their argument are that, for one, Strata cannot accurately calculate the bond because it has a financial interest in the project. And two, Dr. Moran believes that the calculations are "likely flawed" because they do not consider how difficult restoring the aquifers will be. *Id*. Finally, the Petitioners cite a comment made by the EPA during the drafting of the GEIS stating that there had been several ISR projects that had underestimated pore volumes needed for restoration. *Id.*

First, the Petitioners have not demonstrated that Dr. Moran has expertise in the calculation of decommissioning bonds. He is a hydrogeologist/geochemist, which might qualify him to testify on the technical aspects of the project, but he has not demonstrated any experience with calculating financial instruments. Moran Decl. at ¶¶ 1-5. Thus the Petitioners cannot rely on Dr. Moran's opinion that Strata's decommissioning bond will "almost certainly" be insufficient. In any case, he has not challenged the methodology Strata used to determine its proposed estimate in section 5.1 of the TR. His declaration assumes that Strata is intentionally underestimating restoration costs without any basis for the assertion. Dr. Moran further discusses financial assurance in his declaration, ¶¶ 96-98, but does not cite any portion of the Application that is lacking. Instead he simply states that other ISR sites have failed to restore groundwater quality to baseline conditions, and that Strata cannot be trusted to accurately estimate the financial assurance because it stands to profit from the project and because it is foreign-owned. These bare assertions fail to support this portion of contention 5.

Additionally, the Commission has previously addressed surety arrangements and has determined that they are appropriately addressed after issuance of the license, and even after completion of a hearing. "Criterion 9 [of 10 C.F.R. Part 40, Appendix A] makes clear that a surety arrangement is necessary as a prerequisite to operating, not as a prerequisite to licensing."[49] Essentially, the heart of the Petitioners' argument is that regardless of whether the

[49] *HRI*, CLI-00-8, 51 NRC 227, 240 n.15 (2000); *see also Powertech (USA), Inc.* (Dewey-Burdock In Situ Uranium Recovery Facility), LBP-10-16, __ NRC __ (Aug.5, 2010), (slip op. at 71-72) (finding a similar

bond calculation was proper, the Applicant must assume that the bond will be insufficient, thus making the inability to restore the site reasonably foreseeable. This is too much of a leap. It assumes a violation of NRC requirements, which is inappropriate for evaluating a license application. If a contention assumes a violation of NRC requirements, the petitioner must make some particularized demonstration that there is a reasonable basis to believe that the applicant will act contrary to the requirement.[50] The only support the Petitioners provide for their argument that Strata will fail to finance its restoration activities is that other, unconnected ISR companies have failed. That is not enough. Because the Petitioners have not made a particularized demonstration here, this portion of contention 5 is inadmissible.

c. The application fails to evaluate adverse environmental effects resulting from the disposal of 11e(2) byproduct material.

The third portion of contention 5 is a one-paragraph assertion that Strata's Application is flawed because it does not analyze the environmental impacts that would result if there were no 11e(2) byproduct material disposal site available in the near future. The Petitioners simply state that this is inadequate for 10 C.F.R. § 51.45, but do not provide a basis or cite to the portion of the Application they believe is deficient. Moreover, the Petitioners have not cited a regulation that requires a disposal plan be included in the Application. In fact, it is consistent with NRC guidance for the Applicant to supply an 11e(2) waste disposal plan prior to operations rather than in the Application. Strata states in its TR that it will provide the NRC with that agreement prior to operations and lists four potential disposal sites. TR at 1-11 and 4-37. The Staff considers memorializing the waste disposal plan in a license condition after issuance of the license acceptable, and all ISR licensees have a license condition requiring that they maintain a disposal agreement.

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contention inadmissible).

[50] *General Public Utilities Nuclear Corp.* (Oyster Creek Nuclear Generating Station), LBP-96-23, 44 NRC 143, 164 (1996); *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant), LBP-99-25, 50 NRC 25, 34 (1999).

Guidance for what should be included in the ER regarding waste disposal is contained in NUREG-1748, § 6.4.13, but that guidance does not suggest the Applicant analyze the environmental impacts of the lack of a disposal site. Following the NUREG guidance is especially reasonable where the Applicant has proposed four potential disposal sites, as Strata does here. The Staff must, under NEPA and Part 51, analyze the foreseeable environmental impacts of waste disposal.[51] If during the development of the SEIS the Staff determines that the lack of an 11e(2) byproduct material disposal site is reasonably foreseeable, it would analyze the environmental impacts associated with that potential event.

The Petitioners have not provided a basis for this portion of contention 5, nor have they identified a dispute on an issue material to the findings the Staff must make on the Application. 10 C.F.R. §§ 2.309(f)(ii) and (iv). Further, the Petitioners have not provided a statement of the facts or expert opinions they intend to rely on to support this portion of the contention, and they have failed to provide sufficient information to show that a genuine dispute exists in regard to a material issue of law or fact by referencing specific portions of the Application. 10 C.F.R. §§ 2.309(f)(v) and (vi). Thus, this portion of contention 5 is inadmissible.

d. The application does not properly consider impacts to visual resources at the nearby Devils Tower National Monument.

The fourth portion of contention 5 is similar to the third portion in that it consists of one conclusory paragraph that fails to provide an adequate basis or reference specific sections of the Application. This portion of the contention simply states that Strata "fails to properly consider in its ER the visual and aesthetic impacts that the project could have on Devils Tower National Monument." Petition at 31. The only factual support cited is a map attached to Ms. Viviano's declaration, which shows Devils Tower approximately 10 miles east of the proposed Ross site.

[51] *See Powertech*, LBP-10-16, 72 NRC __, (slip op. at 77-78) (finding a similar contention inadmissible).

The Staff agrees with Petitioners that visual environmental impacts must be included in a NEPA analysis. But the Petitioners do not point to any sections of the Application that are inadequate. The ER discusses the Ross site's visual and scenic resources impacts in section 4.9, and states that "the project area is not visible from the visitor's center or hiking trails around the [Devils Tower] monument." ER at 4-105. The Petitioners do not provide any information to dispute Strata's statement or to suggest that the visual and scenic resources discussion is inadequate. Thus, this portion of contention 5 is inadmissible because it does not satisfy 10 C.F.R. § 2.309(f)(ii), (v), or (vi).

e. The application improperly tiers to NRC's flawed GEIS for ISL uranium mining.

The final portion of contention 5 asserts that Strata's ER improperly tiers to and relies heavily on the NRC's GEIS for ISRs, NUREG-1910. This portion of contention 5 must fail because it challenges the NRC's generic findings without identifying a genuine dispute with the Application before this Board. The Petitioners do nothing more than incorporate by reference the comments they submitted on the GEIS. While they do not agree with NRC's conclusions in the GEIS, the Petitioners do not allege that Strata misapplied the GEIS to its ER. In other words, the Petitioners have not set forth concrete or particularized ways in which the GEIS is inapplicable to Strata's Application, and so have not demonstrated that tiering to it is improper.

As a procedural matter, it is not the Board's responsibility to sift through the exhibits submitted by the Petitioners in order to determine whether there is a material dispute with the Applicant.[52] The Petitioners bear the burden of pleading an admissible contention. *Id.* The Petitioners attach to their Petition 142 pages of comments they submitted to the NRC in 2008 and 2009, including scoping comments, comments on the Draft GEIS, comments on the Final

[52] *See, Duke Cogema Stone & Webster,* LBP-01-35, 54 NRC at 422 (*citing Statement of Policy on Conduct of Adjudicatory Proceedings,* CLI-98-12, 48 NRC at 22 "[a] contention's proponent, not the licensing board, is responsible for formulating the contention and providing the necessary information to satisfy the basis requirement for the admission of contentions . . . .").

GEIS, and EPA's comments on the Draft GEIS. The Petitioners' scoping comments were submitted before the Draft GEIS was written, and the comments on the Draft GEIS were addressed in the Final GEIS. The only comments that might be relevant to the current proceeding would be comments on the Final GEIS, if they were tied to the Strata Application, to the extent that they clearly articulate what specific deficiencies the Petitioners believe exist in the GEIS. The comments on the Final GEIS submitted by the Petitioners are in a 20-page document outlining the NRDC's concerns about both the GEIS and three site-specific EISs that were issued in 2008 and 2009; and that document, like the Petition, incorporates comments on the Draft GEIS by reference. Petition at Exh. 3. Neither the Petitioners nor their expert witnesses tie the comments to the Application at hand, and it is not for the Board to connect the dots for the Petitioners.[53]

More importantly, "[r]equiring the substance and presentation of contentions to be concrete and specific to the license application helps ensure that individual license applicants are not put into the position of defending the policies and decisions of the Commission itself."[54] If this contention were admitted, rather than defending its own ER, Strata would be asked to defend the NRC's generic environmental findings for ISR projects.

The NRC has adopted the CEQ's approach of "tiering" environmental documents. Appendix A of 10 C.F.R. Part 51 reiterates the CEQ's encouragement of tiering:

> 40 CFR 1502.20 states:
>
> "Agencies are encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (§ 1508.28). Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared on an action included within the entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement

[53] *Id.*

[54] *Private Fuel Storage,* CLI-04-22, 60 NRC at 130.

> and incorporate discussions from the broader statement by reference and shall concentrate on the issues specific to the subsequent action. . . ."

In this case, tiering is appropriate because the NRC has prepared a generic or "programmatic" EIS for ISR projects, and the Ross project is a subsequent, site-specific action included within the broader ISR program that the GEIS addresses. The Petitioners do not assert that the Ross project is somehow not an ISR that falls within the broad analysis in the GEIS; nor do they demonstrate that Strata misapplied the GEIS's generic findings to its ER. Thus, the Petitioners have failed to demonstrate a genuine dispute with the Application, making this portion of contention 5 is inadmissible. 10 C.F.R. § 2.309(f)(1)(vi).

CONCLUSION

The Petitioners have failed to demonstrate standing to intervene in this proceeding, and so this Petition should be denied. In the event that the Board finds that the Petitioners have demonstrated standing, the contentions should be limited to issues the Staff identifies above, in contention 4 and a portion of contention 5 addressing the cumulative impacts that might occur if Strata expands its Lance District ISR projects in the future.

Respectfully submitted,

/Signed (electronically) by MBM/
Molly Barkman Marsh
Carrie M. Safford
Counsel for NRC Staff

Dated at Rockville, Maryland
this 5th day of December, 2011.

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* Uranium Recovery Site)	)	ASLBP No. 12-915-01-MLA
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the NRC Staff Response to the Petition to Intervene and Request For Hearing by the Natural Resources Defense Council & Powder River Basin Resource Defense Council have been served via the Electronic Information Exchange (EIE) this 5th day of December, 2011, which to the best of my knowledge resulted in transmittal of the copies to those on the EIE Service List for this proceeding.

Respectfully submitted,

/Signed (electronically) by/
Molly Barkman Marsh
Counsel for the NRC Staff

Dated in Rockville, Maryland
this 5th day of December, 2011.