LBP-15-16

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

William J. Froehlich, Chairman
Dr. Mark O. Barnett

In the Matter of	Docket No. 40-9075-MLA
POWERTECH USA, INC.	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery Facility)	April 30, 2015

PARTIAL INITIAL DECISION

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I. INTRODUCTION

Today, the Licensing Board rules on seven contentions raised by the Oglala Sioux Tribe and the Consolidated Intervenors that were the subject of an evidentiary hearing held on August 19, 20 and 21, 2014, at the Hotel Alex Johnson in Rapid City, South Dakota. The evidentiary record in this proceeding consists of the written direct testimony of 22 witnesses, 430 exhibits that were admitted into evidence, and the examination under oath of the witnesses by the Licensing Board, as recorded in the transcript of the evidentiary hearing. The parties were also afforded an opportunity to file initial and reply proposed findings of fact and conclusions of law after the hearing. This Partial Initial Decision upholds the NRC Staff issuance of Source Materials License No. SUA-1600, while imposing additional license conditions.

II. BACKGROUND

On February 25, 2009, Powertech (USA), Inc. (Powertech) submitted an application for a combined source[1] and 11e.(2) byproduct material license[2] to construct and operate the proposed Dewey-Burdock in-situ leach (ISL or ISR) uranium recovery facility[3] in Custer and Fall River Counties, South Dakota.[4] Powertech withdrew that application in June 2009 and revised it

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[1] The Atomic Energy Act of 1954, as amended [hereinafter AEA] defines "source material" at Section 11(z). 42 U.S.C. § 2014(z); see also 10 C.F.R. § 40.4. "Source material" in this decision refers to the uranium being extracted through the ISL process.

[2] The AEA defines "byproduct material" at Section 11(e)(2). 42 U.S.C. § 2014(e)(2); see also 10 C.F.R. §§ 30.4 and 40.4. "Byproduct material" in this decision refers to "the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed for its source material content." 42 U.S.C. § 2014(e)(2).

[3] ISL facilities are designed to remove underground uranium without physical mining. An aqueous solution, called a lixiviant, is injected into a naturally occurring underground aquifer through an injection well, dissolving the uranium. When pumped back to the surface, the uranium is removed from the lixiviant. This same lixiviant is then reinjected into the ground to dissolve more uranium, and the cycle is repeated until all the economically recoverable uranium in the ore body has been removed. See LBP-10-16, 72 NRC 361, 378–80 (2010) for further details on this process.

[4] [Powertech's] Submission of an Application for a Nuclear Regulatory Commission Uranium Recovery License for its Proposed Dewey-Burdock In-Situ Leach Uranium Recovery Facility in

to provide additional information requested by the NRC Staff on hydrology/site characterization, waste disposal, location of extraction operations, protection of water resources, and operational issues.[5] On August 10, 2009 Powertech resubmitted its Dewey-Burdock license application with additional data and information, including its Environmental Report.[6] The NRC Staff accepted Powertech's application for docketing on October 2, 2009,[7] and on January 5, 2010 published a notice of opportunity to request a hearing on the application, which included instructions on how to gain access to sensitive unclassified non-safeguards information (SUNSI) associated with the application.[8]

Two groups submitted requests for access to SUNSI material. On January 15, 2010 the Oglala Sioux Tribe requested access to SUNSI in this proceeding,[9] and was granted access by

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the State of South Dakota, Letter from Richard Blubaugh, Vice-President of Environmental Health and Safety Resources, Powertech, to Charles Miller, Director, Office of Federal and State Materials and Environmental Management Program, NRC (Feb. 25, 2009) (ADAMS Accession No. ML091030707).

[5] Dewey-Burdock Project Supplement to Application for NRC Uranium Recovery License Dated February 2009 (Aug. 2009) (ADAMS Accession No. ML092870155).

[6] Exs. NRC-008-A-1 through NRC-008-B-2, Office of Federal and State Materials and Environmental Management Programs, Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Final Report, NUREG-1910 (Supp. 4 Jan. 2014), Ex. NRC-008-A-1 at 1-1 (ADAMS Accession Nos. ML14024A477 (Chapters 1–5) and ML14024A478 (Chapters 6–11 and Appendices)) [hereinafter FSEIS, Exs. NRC-008-A-1 through NRC-008-B-2]; see also Exs. APP-040-A through APP-040-EE, Powertech Application for NRC Uranium Recovery License Proposed Action Fall River and Custer Counties South Dakota Environmental Report (Feb. 2009).

[7] Results of Acceptance Review, Powertech (USA), Inc.'s Proposed Dewey-Burdock Facility, Fall River and Custer Counties, South Dakota, Letter from Ronald Burrows, Project Manager, NRC, to Richard Blubaugh, Vice-President of Environmental Health and Safety Resources, Powertech (Oct. 2, 2009) (ADAMS Accession No. ML092610201).

[8] Notice of Opportunity for Hearing, License Application Request of Powertech (USA) Inc. Dewey-Burdock In Situ Uranium Recovery Facility in Fall River and Custer Counties, SD, and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information (SUNSI) for Contention Preparation, 75 Fed. Reg. 467 (Jan. 5, 2010).

[9] The Oglala Sioux Tribe asserted that the water resources within the area to be mined were "known to have been favored camping sites of indigenous peoples, both historically and

the NRC Staff on January 25, 2010.[10] As a result, a Protective Order granting access to the requested information was issued by the Chief Administrative Judge of the Atomic Safety and Licensing Board Panel on March 5, 2010.[11] The Oglala Sioux Tribe filed its Hearing Request and Petition for Leave to Intervene on April 6, 2010.[12] Powertech and the NRC Staff filed answers to the Oglala Sioux Tribe Petition on May 3, 2010,[13] and the Oglala Sioux Tribe filed its reply to the Powertech and NRC Staff answers on May 14, 2010.[14]

Also on January 15, 2010, six individuals and two organizations sharing common counsel (Consolidated Petitioners) submitted a request for access to SUNSI material,[15] which was denied by the NRC Staff.[16] Consolidated Petitioners then joined a motion filed by the Oglala Sioux Tribe for a ninety-day extension of time to file a hearing request, which was

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prehistorically, and the likelihood that cultural artifacts and evidence of burial grounds exist in these areas is strong." Oglala Sioux Tribe Request for Sensitive Unclassified Non-Safeguards Information (Jan.15, 2010) (ADAMS Accession No. ML100210203).

[10] See NRC Staff Response to Grace Dugan Granting Access to SUNSI Information (Jan. 25, 2010) (ADAMS Accession No. ML100252221).

[11] Licensing Board Order (Protective Order Governing the Disclosure of Sensitive Unclassified Non-Safeguards Information (SUNSI)), (Mar. 5, 2010) (unpublished) (ADAMS Accession No. ML100640405).

[12] Ex. OST-010, Petition to Intervene and Request for Hearing of the Oglala Sioux Tribe at 22–23 (Apr. 6, 2010) [hereinafter Oglala Sioux Tribe Petition, Ex. OST-010].

[13] Applicant Powertech (USA) Inc.'s Response to Petitioner Oglala Sioux Tribe's Request for a Hearing/Petition for Intervention (May 3, 2010) (ADAMS Accession No. ML101230722); NRC Staff's Response to Oglala Sioux Tribe's Hearing Request (May 3, 2010) (ADAMS Accession No. ML101230726).

[14] Reply to NRC Staff and Applicant Responses to the Petition to Intervene and Request for Hearing of the Oglala Sioux Tribe (May 14, 2010) (ADAMS Accession No. ML101340870).

[15] Email Request from David Cory Frankel, Legal Director for Aligning for Responsible Mining, et al. for Access to Sensitive Unclassified Non-safeguards Information (SUNSI) (Jan. 15, 2010) (ADAMS Accession No. ML100192098).

[16] NRC Staff Response to David Frankel Denying Request for Access to SUNSI Information (Jan. 25, 2010) (ADAMS Accession No. ML100252219).

opposed by both Powertech and the NRC Staff, and was subsequently denied by the Commission on March 5, 2010.[17] On March 8, 2010, Consolidated Petitioners filed their Request for Hearing and Petition for Leave to Intervene,[18] and this Licensing Board was established on March 12, 2010.[19] After requesting and being granted an extension of time by this Licensing Board,[20] Powertech and the NRC Staff filed their answers to the Consolidated Petition on April 12, 2010,[21] and Consolidated Petitioners filed their reply to the Powertech and NRC Staff answers on April 22, 2010.[22]

On April 30, 2010, Consolidated Petitioners filed a new contention, Contention K, based on SUNSI material provided to Consolidated Petitioners' expert by the NRC Staff on April 1, 2010.[23] Answers to Contention K were timely filed by the NRC Staff and Powertech on May 21,

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[17] Order of the Secretary (Mar. 5, 2010) (unpublished) (ADAMS Accession No. ML100640426).

[18] Ex. INT-016, Consolidated Request for Hearing and Petition for Leave to Intervene (Mar. 8, 2010) [hereinafter Consolidated Intervenors' Petition, Ex. INT-016]. David Frankel, Esq., filed the Petition on his own behalf and on behalf of the following persons and organizations: Theodore P. Ebert, Gary Heckenlaible, Susan Henderson, Dayton Hyde, Lilias C. Jones Jarding, the Clean Water Alliance, and Aligning for Responsible Mining. Id. at 1.

[19] Establishment of Atomic Safety and Licensing Board (Mar. 12, 2010) (unpublished); see also Powertech (USA), Inc.; Establishment of Atomic Safety and Licensing Board, 75 Fed. Reg. 13,141 (Mar. 18, 2010).

[20] See Joint Motion for Extension of Time for Late-Filed Contentions and to Respond to Request for Hearing (Mar. 31, 2010) (ADAMS Accession No. ML100900058); Licensing Board Order (Granting Motion for Extension of Time) (Apr. 1, 2010) (unpublished) (ADAMS Accession No. ML100910251). This Order also granted Consolidated Petitioners additional time to file new or amended contentions based on information recently released by the NRC Staff. Id. at 2.

[21] Applicant Powertech (USA) Uranium Corporation's Response to Consolidated Petitioners' Request for a Hearing/Petition for Intervention (Apr. 12, 2010) (ADAMS Accession No. ML101020722); NRC Staff Response to Hearing Request of Consolidated Petitioners (Apr. 12, 2010) (ADAMS Accession No. ML101020723).

[22] Petitioners' Consolidated Reply to Applicant and NRC Staff Answers to Hearing Request/Petition to Intervene (Apr. 19, 2010) (ADAMS Accession No. ML101100001) [hereinafter Consolidated Intervenors' New Petition].

[23] Petitioners' Request for Leave to File a New Contention Based on SUNSI Material (Apr. 30, 2010) (ADAMS Accession No. ML101200675).

2010, and May 23, 2010 respectively.[24] The Consolidated Petitioners did not file a reply to these answers.[25]

The Board held oral argument on standing and contention admissibility in Custer, South Dakota on June 8 and 9, 2010.[26] On August 5, 2010 the Board ruled on both petitions to intervene and requests for hearings,[27] admitting the Oglala Sioux Tribe and the Consolidated Petitioners (re-designated Consolidated Intervenors) as Intervenors.[28] The Board also admitted four of the contentions proposed by the Oglala Sioux Tribe[29] and three of the contentions proffered by the Consolidated Intervenors.[30]

In the meantime, the NRC Staff began preparing the environmental and safety reviews related to the Powertech application. The NRC Staff issued a Safety Evaluation Report (SER) in March 2013[31] and an SER (Revised) in April 2014.[32]

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[24] NRC Staff's Response to Consolidated Petitioners' Contention filed April 30, 2010 (May 21, 2010) (ADAMS Accession No. ML1014105410); Applicant Powertech (USA) Uranium Corporation's Response to Consolidated Petitioners' Request for Leave to File a New Contention Based on SUNSI Material (May 23, 2010) (ADAMS Accession No. ML1014300009).

[25] Tr. at 381.

[26] Tr. at 1–405.

[27] LBP-10-16, 72 NRC at 361.

[28] Id. at 376.

[29] Id. at 444.

[30] Id. at 443.

[31] Ex. NRC-135, Office of Federal and State Materials and Environmental Management Programs, Safety Evaluation Report for the Dewey-Burdock Project (Mar. 2013) [hereinafter SER (Mar. 2013), Ex, NRC-135].

[32] Ex. NRC-134, Office of Federal and State Materials and Environmental Management Programs, Safety Evaluation Report (Revised) for the Dewey Burdock Project (Apr. 2014) [hereinafter SER (Revised) (Apr. 2014) Ex. NRC-134]. This revised SER corrected certain technical references.

The NRC Staff issued requests for additional information (RAIs) to Powertech on environmental matters,[33] and on November 26, 2012, the NRC Staff issued a Draft Supplemental Environmental Impact Statement (DSEIS) for public comment.[34] On January 25, 2013, both the Oglala Sioux Tribe and the Consolidated Intervenors filed proposed contentions relating to the DSEIS.[35] On March 7, 2013, the NRC Staff filed its response to the proposed contentions,[36] followed on March 11, 2013, by the Powertech response.[37] On March 25, 2013, both the Oglala Sioux Tribe and the Consolidated Intervenors submitted replies in support of their respective motions for new contentions.[38]

On July 22, 2013, the Board concluded that three new contentions proposed in response to the DSEIS were admissible, and that seven of the original contentions were admissible because of the migration tenet.[39]

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[33] Ex. APP-050, Letter from Richard Blubaugh, Vice-President of Environmental Health and Safety Resources, Powertech, to Ron Burrows, Project Manager, NRC (Aug. 12, 2010); see also Powertech (USA) Inc.'s Response to the Request for Additional Information to Support the Environmental Review of its Application (Aug. 26, 2010) (ADAMS Accession No. ML102380530); Powertech (USA), Inc.'s Responses to the U.S. Nuclear Regulatory Commission (NRC) Staff's Verbal and Email Requests for Clarification of Selected Issues Related to the Dewey-Burdock Uranium Project Environmental Review (Nov. 4, 2010) (ADAMS Accession No. ML103140318).

[34] Exs. NRC-009-A-1 through NRC-009-B-2, Office of Federal and State Materials and Environmental Management Programs, Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Draft Report for Comment, NUREG-1910 (Supp. 4 Nov. 2014) [hereinafter DSEIS, Exs. NRC-009-A-1 through NRC-009-B-2].

[35] See List of Contentions of the Oglala Sioux Tribe Based on the [DSEIS] (Jan. 25, 2013); Consolidated Intervenors' New Contentions Based on DSEIS (Jan. 25, 2013).

[36] NRC Staff's Answer to Contentions on the [DSEIS] (Mar. 7, 2013).

[37] Applicant Powertech (USA) Uranium Corporation's Response to Consolidated Petitioners' Request for a Hearing/Petition for Intervention (Mar. 11, 2013).

[38] Consolidated Intervenors' Consolidated Reply Re: DSEIS (Mar. 25, 2013); Consolidated Reply of the Oglala Sioux Tribe (Mar. 25, 2013).

[39] LBP-13-9, 78 NRC at 37, 43 (2013). The migration tenet applies when the information in the DEIS is sufficiently similar to the information in the applicant's environmental report, and allows

On September 19 and 20, 2013, the Board conducted a site visit of the Dewey-Burdock site to which all parties and other interested participants were invited. Details regarding the site visit were made public before and after the visit.[40] At the site visit, the Board and other attendees viewed the Dewey-Burdock site, the entrance to one property owned by Intervenor Dayton Hyde, another by Intervenor Susan Henderson, and the exterior of the operational Cameco Crow Butte ISL facility in Crawford, Nebraska.[41]

On January 29, 2014 the NRC Staff issued a notice of public availability[42] of the Final Supplemental Environmental Impact Statement (FSEIS),[43] updating the information in the DSEIS. The FSEIS added an Appendix E, which presents the public comments received on the DSEIS and the NRC Staff's responses. On March 17, 2014, both the Oglala Sioux Tribe and the Consolidated Intervenors filed "Statements of Contentions" with proposed contentions relating to the FSEIS.[44] The Oglala Sioux Tribe filed ten contentions and the Consolidated Intervenors filed five contentions. On April 4, 2014 Powertech and the NRC Staff filed answers

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previously admitted contentions challenging the environmental report to apply to relevant portions of the DSEIS. See id.; see also Progress Energy Fla. Inc. (Levy County Nuclear Power Plant, Units 1 and 2), LBP-11-01, 73 NRC 19, 26 (2011).

[40] See Licensing Board Order (Site Visit Information and Schedule) (Sept. 17, 2013) (unpublished); Licensing Board Order (Amending Site Visit Schedule) (Sept. 5, 2013) (unpublished); Licensing Board Order (Scheduling Site Visit) (Aug. 21, 2013) (unpublished); Licensing Board Memorandum (Memorializing Site Visit) (Sept. 24, 2013) (unpublished).

[41] Licensing Board Memorandum (Memorializing Site Visit) (Sept. 24, 2013) at 2–3 (unpublished).

[42] In the Matter of Powertech (USA) Inc., Letter from Patricia Jehle, Counsel for NRC Staff, to Administrative Judges and Parties (Jan. 29, 2014).

[43] FSEIS, Exs. NRC-008-A-1 through NRC-008-B-2.

[44] Statement of Contentions of the Oglala Sioux Tribe Following Issuance of [FSEIS] (Mar. 17, 2014); Consolidated Intervenors' Statement of Contentions (Mar. 17, 2014).

opposing the proposed contentions.[45] On April 11, 2014 the Oglala Sioux Tribe and the Consolidated Intervenors filed replies to the NRC Staff and Powertech answers.[46] The Board concluded that the previously admitted contentions that referred to the DSEIS migrated to the FSEIS, and that the additional proposed FSEIS contentions were inadmissible.[47]

Meanwhile, on April 8, 2014 the NRC Staff issued NRC Source Materials License No. SUA-1600 to Powertech.[48] The license allows Powertech to possess and use source and byproduct material in connection with the Dewey-Burdock Project.[49] Pursuant to 10 C.F.R. § 2.1213 the Oglala Sioux Tribe and Consolidated Intervenors filed motions to stay the license.[50] The Oglala Sioux Tribe also filed an answer in support of the Consolidated Intervenors' stay motion.[51] On April 24, 2014 the NRC Staff and Powertech filed oppositions to

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[45] Applicant Powertech (USA) Inc's Response to Consolidated Petitioners' Request for Admission of New or Amended Contentions on NUREG-1910, Supplement 4 (Apr. 4, 2014); NRC Staff's Answer to Contentions on [FSEIS] (Apr. 4, 2014).

[46] Reply of the Oglala Sioux Tribe Regarding Contentions Following Issuance of [FSEIS] (Apr. 11, 2014); Consolidated Intervenors' Consolidated Reply to Applicant and NRC Staff Answers to Contentions on [FSEIS] (Apr. 11, 2014).

[47] LBP-14-5, 79 NRC 377, 401 (2014).

[48] Ex. NRC-012, SUA-1600 Materials License, NRC Form 374 (Apr. 8, 2014) [hereinafter Powertech Materials License, Ex. NRC-012]; see also, ADAMS Accession Package Number ML14043A052, which includes the license transmittal letter, the license, and the Final Safety Evaluation Report. The NRC Staff also issued its Record of Decision for the Dewey-Burdock Uranium In-Situ Recovery (ISR) Project at ADAMS Accession No. ML14066A466. The Final Programmatic Agreement was executed April 7, 2014 and is available in ADAMS Accession Package No. ML14066A344.

[49] Powertech Materials License, Ex. NRC-012 at 1.

[50] Oglala Sioux Tribe's Motion for Stay of Effectiveness of License (Apr. 14, 2014); Consolidated Intervenors' Application for a Stay of the Issuance of License No. SUA-1600 Under 10 CFR Section 2.1213 (Apr. 14, 2014).

[51] Oglala Sioux Tribe's Answer in Support of Consolidated Intervenors' Motion for Stay of Effectiveness of License (Apr. 24, 2014).

Intervenors' motions.[52] Pending oral argument on the motions, the Board temporarily granted the stay request.[53] On May 13, 2014 the Board held a telephonic oral argument on the stay motion.[54] A week later, on May 20, 2014 the Board lifted its temporary stay and denied Intervenors' stay motions.[55]

On April 11, 2014, both the NRC Staff and the Oglala Sioux Tribe filed motions for summary disposition.[56] On April 25, 2014, responses to the motions for summary disposition were filed by all parties.[57] The Board denied both parties' motions on June 2, 2014.[58]

On June 20, 2014 the Oglala Sioux Tribe voluntarily withdrew Contentions 14A and 14B.[59] On July 15, 2014, the Board dismissed these contentions based on this voluntary

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[52] NRC Staff's Opposition to Application for a Stay (Apr. 24, 2014); Powertech (USA) Inc's Response to Consolidated Intervenors and the Oglala Sioux Tribe Motions for Stay of the Effectiveness of NRC License No. SUA-1600 (Apr. 24, 2014).

[53] Licensing Board Order (Temporarily Granting Stay of Materials License Number SUA-1600) (Apr. 30, 2014) (unpublished).

[54] Tr. at 578–637.

[55] Licensing Board Order (Removing Temporary Stay and Denying Motions for Stay of Materials License Number SUA-1600) (May 20, 2014) at 6–8 (unpublished).

[56] NRC Staff's Motion for Summary Disposition on Safety Contentions 2 and 3 (Apr. 11, 2014) (seeking summary disposition on the safety aspects of Contentions 2 and 3); Oglala Sioux Tribe's Motion for Summary Disposition National Environmental Policy Act Contentions 1A and 6 – Mitigation Measures (Apr. 11, 2014) (seeking summary disposition of NEPA issues in Contentions 1A and 6).

[57] NRC Staff's Response to Oglala Sioux Tribe's Motion for Summary Disposition (Apr. 25, 2014); Powertech (USA) Inc's Response to Oglala Sioux Tribe and NRC Staff Motions for Summary Disposition (Apr. 25, 2014); Oglala Sioux Tribe's Response to NRC Staff's Motion for Summary Disposition (Apr. 25, 2014); Consolidated Intervenors' Response to NRC Staff's Motion for Summary Disposition on Contentions 2 and 3 (Apr. 25, 2014).

[58] Licensing Board Order (Denying Motions for Summary Disposition) (June 2, 2014) at 7 (unpublished).

[59] Oglala Sioux Tribe's Statement of Position on Contentions (June 20, 2014) at 41–42 [hereinafter Oglala Sioux Tribe Statement of Position].

withdrawal.[60] On August 18, 2014, the Board held a Limited Appearance Session[61] to allow members of the public who were not parties to the adjudication to provide the Board with oral statements setting forth their positions on matters related to the admitted contentions.[62] On August 19, 20 and 21, 2014, the Board held an evidentiary hearing at the Hotel Alex Johnson in Rapid City, South Dakota concerning the seven contentions raised by the Oglala Sioux Tribe and the Consolidated Intervenors.[63] At the hearing the Board heard argument from counsel and testimony from witnesses for each party, and admitted party exhibits into the evidentiary record, with an exhibit list bound into the hearing transcript.[64]

On August 16, 2014, just prior to the evidentiary hearing, the Oglala Sioux Tribe filed a motion[65] seeking disclosure of certain data logs referred to by Powertech in an August 7, 2014 email[66] and other documents referenced in a filing required by Canadian securities laws. At the hearing the Board heard argument from counsel and asked each party's geologic witnesses

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[60] Licensing Board Order (Granting Request to Withdraw and Motion to Dismiss Contentions 14A and 14B) (July 15, 2014) (unpublished).

[61] Atomic Safety and Licensing Board Hearing in the Matter of Powertech USA, Inc. (Dewey-Burdock In Situ Uranium Recovery Facility), 79 Fed. Reg. 39,413 (July 10, 2014).

[62] At the morning session 36 people made oral limited appearance statements. Transcript of Limited Appearance Session (Aug. 18, 2014) (ADAMS Accession No. ML14234A068). During the evening session 29 people addressed the Board. Transcript of Limited Appearance Session (Aug. 18, 2014) (ADAMS Accession No. ML14234A067). Fifty-three written limited appearance statements were received.

[63] Notice of Evidentiary Hearing, 79 Fed. Reg. 42,836 (July 23, 2014).

[64] Tr. at 692–1,328.

[65] Oglala Sioux Tribe's Motion to Enforce Mandatory Disclosure Duties Under 10 C.F.R. § 2.336 (Aug. 16, 2014).

[66] Email from Christopher Pugsley, Powertech Counsel, to Licensing Board Judges, RE: NRC Proceeding "Powertech USA 40-9075-MLA," (Aug. 7, 2014); see also Ex. OST-019, Powertech Press Release, Powertech Uranium (Azarga Uranium) Enters into Data Purchase Agreement for Dewey-Burdock Project (July 16, 2014).

questions regarding the relevancy of Powertech's newly acquired data logs.[67] The Board then ruled that the data logs were relevant to Contention 3 and that an "opportunity for this data to be viewed by all parties to the case" must be given by Powertech to fulfill its mandatory disclosure duties.[68] In a post hearing Order ruling on this dispute, the Board reiterated its conclusion that the logs and certain other information was relevant and must be made available to the Intervenors and the NRC Staff immediately.[69]

On October 9, 2014, the Oglala Sioux Tribe and Consolidated Intervenors jointly moved to extend the deadline for filing new contentions relative to the data log materials.[70] On October 14, 2014 the Oglala Sioux Tribe submitted new exhibits,[71] and the NRC Staff submitted supplemental testimony and exhibits.[72] On October 22, 2014 the Board granted Intervenors a 30-day extension to file any additional testimony/exhibits on Contention 3.[73] On November 7, 2014 the Oglala Sioux Tribe submitted two new contentions and further additional exhibits.[74] On November 13, 2014 the Board admitted the Oglala Sioux Tribe's and NRC Staff's new

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[67] Tr. at 880–966.

[68] Tr. at 967.

[69] Licensing Board Post Hearing Order (Sept. 8, 2014) at 7–8, 11–12 (unpublished).

[70] Oglala Sioux Tribe and Consolidated Intervenors' Motion to Extend Deadline for Submission of Testimony and Amend or File New Contentions (Oct. 9, 2014) [hereinafter Motion to Extend].

[71] Oglala Sioux Tribe Motion to Admit Additional Exhibits (Oct. 14, 2014).

[72] NRC Staff's Motion to Admit Testimony and Exhibits Addressing Powertech's September 14, 2014 Disclosures (Oct. 14, 2014) (submitting testimony and exhibits addressing the information disclosed by Powertech on September 14, 2014).

[73] Licensing Board Order (Granting in Part Motion to Extend Deadline) (Oct. 22, 2014) (unpublished).

[74] Motion for Leave to File New or Amended Contention on Behalf of the Oglala Sioux Tribe (Nov. 7, 2014); Oglala Sioux Tribe Unopposed Motion to Admit Additional Exhibits (Nov. 7, 2014). The admission of both these contentions is denied in Part G1 and G2 of this Order. See Licensing Board Notice (Pursuant to 10 C.F.R. § 2.309(j)(1)) (Jan. 14, 2015) (unpublished).

exhibits, and closed the record as it pertained to Contentions 1A, 1B, 2, 4, 6 and 9.[75] On November 21, 2014 the Oglala Sioux Tribe submitted its additional testimony and exhibits on Contention 3.[76] Powertech filed a response and additional exhibits/testimony on December 4, 2014,[77] and the NRC Staff filed its response and additional exhibits/testimony on December 9, 2014.[78] On December 10, 2014 the Board admitted all exhibits, requested further memoranda of law on whether any or all of the Oglala Sioux Tribe's exhibits should be accorded non-public status, and closed the evidentiary record on Contention 3.[79] The parties filed their memoranda on the non-public status of exhibits on December 19, 2014,[80] and the Board subsequently ruled that newly submitted supplemental testimony would be made public, while other Oglala Sioux Tribe exhibits should remain non-public.[81]

On January 9, 2015 the parties submitted their Proposed Findings of Fact and Conclusions of Law,[82] and on January 29, 2015 their Replies to these post-hearing filings.[83] On

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[75] Licensing Board Order (Admitting New Exhibits and Closing the Evidentiary Record on Contentions 1A, 1B, 2, 4, 6 and 9) (Nov. 13, 2014) (unpublished).

[76] Oglala Sioux Tribe Motion to Admit Additional Testimony and Exhibits (Nov. 21, 2014).

[77] Powertech (USA), Inc. Response to the Oglala Sioux Tribe's November 21, 2014, Motion to Admit Additional Testimony and Exhibits (Dec. 4, 2014).

[78] NRC Staff's Brief in Support of Answering Testimony (Dec. 9, 2014).

[79] Licensing Board Order (Admitting Additional Exhibits, Closing the Record on Contention 3 and setting Briefing Dates) (Dec. 10, 2014) (unpublished).

[80] NRC Staff's Response to Board's December 10, 2014 Order (Dec. 19, 2014); Powertech (USA), Inc. Response to the Atomic Safety and Licensing Board's Request for Argument on Potential Non-Public Status of Oglala Sioux Tribe's Exhibits (Dec. 19, 2014); Oglala Sioux Tribe's Memorandum of Law in Response to the Board's December 9, 2014 Order in Regarding Public Disclosure of Admitted Testimony and Exhibits (Dec. 19, 2014).

[81] Licensing Board Order (Ruling on Confidentiality of Exhibits OST-029 through OST-041) (Jan. 12, 2015) (unpublished).

[82] NRC Staff's Proposed Findings of Fact and Conclusions of Law (Jan. 9, 2015); NRC Staff's Response to Post-Hearing Order (Jan. 9, 2015); Powertech (USA), Inc's Proposed Findings of Fact and Conclusions of Law (Jan. 9, 2015) [hereinafter Powertech Initial Findings of Fact and

March 9, 2015 the Board issued a Notice that it anticipated issuing an Initial Decision no later than April 30, 2015.[84]

This Partial Initial Decision makes a determination regarding the merits of the seven contentions that were the subjects of the evidentiary hearing in August 2014, and rules on the admissibility of two additional contentions proposed by the Oglala Sioux Tribe on November 7, 2014. In addressing each of the concerns raised by the Intervenors in their contentions, this Partial Initial Decision upholds the NRC Staff issuance of Source Materials License No. SUA-1600, albeit with the imposition of additional license conditions.

III. LEGAL STANDARDS

Contentions 1A, 1B, 2, 3, 4, 6, and 9 raise challenges to the Powertech ISL license application under the Atomic Energy Act of 1954, as amended (AEA), the National Environmental Policy Act of 1969 (NEPA),[85] the National Historic Preservation Act (NHPA)[86] and the NRC regulations implementing the agency's responsibilities pursuant to these Acts.[87] Together, these statutes and the corresponding agency regulations govern an applicant's and

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Conclusions of Law]; Consolidated Intervenors' Proposed Findings of Fact and Conclusions of Law and Response to Post-Hearing Order (Jan. 9, 2015); Oglala Sioux Tribe's Post-Hearing Initial Brief with Findings of Fact and Conclusions of Law (Jan. 9, 2015) [hereinafter Oglala Sioux Tribe Post-Hearing Initial Brief].

[83] Consolidated Intervenor's Reply to Post-Hearing Briefs (Jan. 29, 2015); NRC Staff's Reply Brief (Jan. 29, 2015) [hereinafter NRC Staff's Post-Hearing Reply Brief]; Errata to NRC Staff's Post-Hearing Briefs (Feb. 2, 2015); Powertech (USA), Inc's Reply to Proposed Findings of Fact and Conclusions of Law (Jan. 29, 2015); Oglala Sioux Tribe's Post-Hearing Reply Brief (Jan. 29, 2015) [hereinafter Oglala Sioux Tribe Post-Hearing Reply Brief].

[84] Licensing Board Notice (Regarding Expected Issuance of Initial Decision) (Mar. 9, 2015) (unpublished).

[85] 42 U.S.C. § 4321 et seq.

[86] 16 U.S.C. § 470 et seq. While the NHPA was previously codified at title 16 of the U.S. Code, effective December 19, 2014, it was moved to title 54. See 54 U.S.C. § 300101 et seq.

[87] 10 C.F.R. Part 51.

the NRC Staff's roles in considering the safety and environmental effects of a proposed agency ISL licensing action under 10 C.F.R. Part 40. The NRC has a statutory obligation to assess each site-specific license application to ensure it complies with NRC regulations before issuing a license.

Additionally, the Council on Environmental Quality (CEQ) and the Advisory Council on Historic Preservation (ACHP) have issued regulations that provide guidance on agency compliance with NEPA[88] and the NHPA,[89] that, while not binding on the NRC when the agency has not expressly adopted them, are entitled to considerable deference.[90]

A. AEA Requirements

The AEA and the Uranium Mill Tailings Radiation Control Act of 1978[91] authorize the NRC to issue licenses for the possession and use of source material and byproduct material.[92] These statutes require the NRC to license facilities that meet NRC regulatory requirements developed to protect public health and safety from radiological hazards. To operate, ISL uranium recovery facilities must meet NRC regulatory requirements and obtain a source materials license.

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[88] See 40 C.F.R. Part 1500.

[89] 36 C.F.R. § 800 et seq.

[90] Limerick Ecology Action, Inc. v. NRC, 869 F.2d 719, 725, 743 (3d Cir. 1989); Dominion N. Anna, LLC (Early Site Permit for N. Anna ESP Site), CLI-07-27, 66 NRC 215, 222 n.21 (2007) (giving CEQ's regulations and guidance "substantial deference").

[91] AEA, 42 U.S.C. 2011 et seq.; Uranium Mill Tailings Radiation Control Act of 1978 42 U.S.C. §§ 2022 et seq., 7901 et seq.

[92] Section 11e.(2) byproduct material is regulated by the NRC under 10 C.F.R. Part 40. In 10 C.F.R. § 40.4, the NRC clarified the definition of byproduct material by adding the clause "including discrete surface wastes resulting from uranium solution extraction processes." In simpler terms, it is the waste and tailings generated by the processing of ore for its uranium or thorium content.

The AEA also provides hearing rights in licensing actions concerning "the granting . . . of any license . . . upon the request of any person whose interest may be affected by the proceeding."[93] Given that the licensing action in dispute here is the grant of Powertech's combined source and 11e.(2) byproduct materials license, AEA hearing rights attach. ISL license applications require a safety review to determine if a license applicant has met all relevant criteria in 10 C.F.R. Parts 20 and 40. These safety requirements include certain criteria in Appendix A to Part 40, which provides specific standards for operating uranium mills and disposing of waste material. However, because the Dewey-Burdock Project is not a conventional uranium mill, not all criteria in Appendix A must be met.[94]

B. NEPA Requirements

NEPA requires that federal agencies prepare a detailed environmental impact statement for proposed actions "significantly affecting the quality of the human environment."[95] The adverse environmental effects that must be assessed under NEPA include "aesthetic, historic, cultural, economic, social, or health" effects.[96] While reviewing any adverse effects, federal agencies must take a hard look at the environmental impacts of a proposed action.[97] This hard look is intended to foster both informed agency decision-making and informed public participation so as to ensure that the agency does not act upon incomplete information.[98] The

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[93] AEA, Section 189(a)(1)(A), 42 U.S.C. § 2239a(1)(a).

[94] See Hydro Res., Inc. (2929 Coors Road Suite 101 Albuquerque, New Mexico 87120), CLI-99-22, 50 NRC 3, 9 (1999) ("We agree that those requirements in Part 40, such as many of the provisions in Appendix A, that, by their own terms, apply only to conventional uranium milling activities, cannot sensibly govern ISL mining.").

[95] 42 U.S.C. § 4332(2)(C).

[96] 40 C.F.R. § 1508.8(b) (2014).

[97] See La. Energy Servs., L.P. (Claiborne Enrichment Ctr.), CLI-98-3, 47 NRC 77, 87–88 (1998).

[98] The NEPA hard look must emerge from an engagement in informed and reasoned decision making, as the agency "obtains opinions from its own experts, obtains opinions from experts

NRC Staff must provide "a reasonably thorough discussion of the significant aspects of the probable environmental consequences."[99] However, the hard look is subject to a "rule of reason," and consideration of environmental impacts need not address all theoretical possibilities, but only those that have some reasonable possibility of occurring.[100] As the Commission has emphasized, "an environmental impact statement is not intended to be 'a research document.'"[101]

In an NRC adjudicatory proceeding, even if a Board finds an Environmental Impact Statement [EIS] prepared by the NRC Staff inadequate in certain respects, the Board's findings, as well as the adjudicatory record, "become, in effect, part of the [final EIS]."[102] Thus, the Board's ultimate NEPA judgments are made on the basis of the entire adjudicatory record in addition to the NRC Staff's FSEIS.[103] In this proceeding, the NRC Staff issued the license after it issued the FSEIS, but before the evidentiary hearing.[104]

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outside the agency, gives careful scientific scrutiny and responds to all legitimate concerns that are raised." Hughes River Watershed Conservancy v. Johnson, 165 F.3d 283, 288 (4th Cir. 1999) (citing Marsh v. Or. Natural Res. Council, 490 U.S. 360, 378–85 (1989)).

[99] Trout Unlimited v. Morton, 509 F.2d 1276, 1283 (9th Cir. 1974); Warm Springs Dam Task Force v. Gribble, 621 F.2d 1017, 1026–27 (9th Cir. 1980); see also La. Energy Servs., L.P. (Nat'l Enrichment Facility), CLI-05-20, 62 NRC 523, 536 (2005) ("NEPA also does not call for certainty or precision, but an estimate of anticipated (not unduly speculative) impacts.").

[100] Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), ALAB 156, 6 AEC 831, 836 (1973); see also Exelon Generation Co. (Early Site Permit for Clinton ESP Site), CLI-05-29, 62 NRC 801, 807 (2005); Duke Energy Corp. (McGuire Nuclear Energy Station, Units 1 and 2), CLI-02-17, 56 NRC 1, 7 (2002). The NRC Staff must have some discretion to draw the line and move forward with decisionmaking. Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010) (citation omitted).

[101] Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station), CLI-10-22, 72 NRC 202, 208 (2010) (citation omitted). NEPA does not require the NRC Staff to analyze every conceivable aspect of the proposed project. Private Fuel Storage, LLC (Indep. Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 349 (2002).

[102] Claiborne, CLI-98-3, 47 NRC at 89.

[103] See La. Energy Servs., L.P. (Nat'l Enrichment Facility), LBP-05-13, 61 NRC 385, 404 (2005), aff'd, CLI-06-22, 64 NRC 37 (2006); see also S. Nuclear Operating Co. (Early Site Permit for

C. NHPA Requirements

The NHPA, like NEPA, is a procedural statute requiring government agencies to "stop, look, and listen" before proceeding with agency action.[105] Under the NHPA, a federal agency must make a reasonable and good faith effort to identify historic properties,[106] determine whether identified properties are eligible for listing on the National Register based on the criteria in 36 C.F.R. § 60.4, assess the effects of the undertaking on any eligible historic properties found,[107] determine whether the effect will be adverse,[108] and avoid or mitigate any adverse effects.[109] The federal agency must confer with a State Historic Preservation Officer and seek the approval of the ACHP.[110]

Vogtle ESP Site), LBP-09-7, 69 NRC 613, 733 (2009), petition for review denied, CLI-10-5, 71 NRC 90 (2010).

[104] 10 C.F.R. § 2.1202(a) instructs the NRC Staff "to promptly issue its approval or denial of the application" consistent with its findings, despite the pendency of a hearing. Nonetheless, the issued license can be revoked, conditioned, modified or affirmed based on the evidence reviewed at the evidentiary hearing. See 10 C.F.R. § 40.41(e)(2) ("The Commission may incorporate in any license at the time of issuance, or thereafter, by appropriate rule, regulation or order, such additional requirements and conditions with respect to the licensee's receipt, possession, use, and transfer of source or byproduct material as it deems appropriate or necessary in order to . . . protect health or to minimize danger of life or property."); see also Pub. Serv. Co. of N.H. (Seabrook Stations, Units 1 and 2), ALAB-422, 6 NRC 33, 68 (1977) (quoting CLI-77-8, 5 NRC 503, 530 (1977) ("In granting a proposed license, the Board may condition it upon some precautionary measures required at the chosen site.").

[105] Ex. NRC-048, Council on Environmental Quality, Executive Office of The President, and Advisory Council On Historic Preservation, NEPA and NHPA: A Handbook for Integrating NEPA and Section 106 at 4 (Mar. 2013) [hereinafter NEPA and NHPA Handbook, Ex. NRC-048]; see also 16 U.S.C. § 470 et seq.

[106] 36 C.F.R. § 800.4(b).

[107] 36 C.F.R. §§ 800.4(c), 800.5, 800.9(a).

[108] 36 C.F.R. §§ 800.5(c), 800.9(b).

[109] 36 C.F.R. §§ 800.8(c), 800.9(c).

[110] Muckleshoot Indian Tribe v. U.S. Forest Serv., 177 F.3d 800, 805 (9th Cir. 1999); see also 36 C.F.R. § 800.8(c)(1)(v) (An agency must "develop in consultation with identified consulting parties alternatives and proposed measures that might avoid, minimize or mitigate any adverse

Section 106 of the NHPA requires federal agencies, prior to approving any "undertaking," such as the Dewey-Burdock project, to "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register."[111] If an undertaking "may affect" an eligible site, the agency must make a reasonable and good faith effort to seek information from consulting parties, other members of the public, and Native American tribes to identify historic properties in the area of potential effect. The NHPA also requires that federal agencies "consult with any Indian tribe . . . that attaches religious and cultural significance" to the sites.[112] Consultation must provide the tribe "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects."[113] The NHPA further requires that consultation with Indian tribes "recognize the government-to-government relationship between the Federal Government and Indian tribes."[114]

Agencies are directed by presidential memoranda and Executive Orders to undertake meaningful consultation with Indian tribes. In 1994 President Clinton called for agencies "to ensure that the Federal Government operates within a government-to-government relationship with federally recognized Native American tribes[,] . . . reflecting respect for the rights of self-

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effects of the undertaking on historic properties and describe them in the [environmental assessment] EA or DEIS.").

[111] 16 U.S.C. § 470f.

[112] 16 U.S.C. § 470a(d)(6)(B).

[113] 36 C.F.R. § 800.2(c)(2)(ii)(A).

[114] 36 C.F.R. § 800.2(c)(2)(ii)(C).

government due the sovereign tribal governments."[115] In 2000, President Clinton issued an Executive Order "to establish regular and meaningful consultation and collaboration with tribal officials" through "an accountable process" at each agency.[116] In 2009 President Obama issued a memorandum commenting that a lack of consultation with tribes "has all too often led to undesirable and, at times, devastating and tragic results," but that "meaningful dialogue between Federal officials and tribal officials has greatly improved Federal policy toward Indian tribes."[117]

An agency may fulfill its NHPA review responsibilities through several means, one of which includes the issuance of a Programmatic Agreement. A Programmatic Agreement may be used to implement the Section 106 process in situations where the effects to historic properties cannot be fully determined prior to the approval of an undertaking, such as where an applicant proposes a phased approach to developing its project.[118] In such cases, the Programmatic Agreement establishes a phased process for consultation, review, and compliance with the NHPA.

The ACHP guidance on consultation reiterates that consultation must begin at the earliest possible time in an agency's consideration of an undertaking, framing such early

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[115] Memorandum on Government-to-Government Relations with Native American Tribal Governments, 30 Weekly Comp. Pres. Doc. 936 (May 2, 1994).

[116] Exec. Order No. 13,175, 65 Fed. Reg. 67,249, 67,250 (Nov. 6, 2000). Independent regulatory agencies, including the NRC, were "encouraged to comply with the provisions of this order." Id. at 67,251. The NRC has created a Tribal Protocol Manual, and stated that it would act in a manner consistent with the fundamental precepts expressed in the Executive Order. Division of Material, Safety, States, Tribal, and Rulemaking Programs, Office of Nuclear Material Safety and Safeguards, Tribal Protocol Manual, NUREG-2173, at 4 (Dec. 2014) (ADAMS Accession No. ML14274A014) [hereinafter Tribal Protocol Manual].

[117] Memorandum on Tribal Consultation, 74 Fed. Reg. 57,881 (Nov. 5, 2009).

[118] 36 C.F.R. § 800.13, 800.14(b)(1).

engagement with Indian tribes as an issue of respect for tribal sovereignty.[119] Agencies must ensure that a tribe has "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, . . . articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects."[120] Federal policy, as reflected in the American Indian Religious Freedom Act of 1978[121] and the 1996 Executive Order on Indian Sacred Sites[122] also supports special consideration where tribal religious exercise is threatened.

D. NRC Regulations

The NRC's environmental protection regulations, which implement NEPA, are found in Title 10, Part 51 of the Code of Federal Regulations. Issuance of a license to possess and use source material for uranium milling and ISL mining requires an EIS or a supplement to an EIS, and the NRC has prepared a Generic Environmental Impact Statement (GEIS) for ISL mining, NUREG-1910, to help fulfill this requirement.[123] The GEIS assesses the potential environmental impacts associated with the construction, operation, aquifer restoration, and decommissioning of an ISL uranium recovery facility in four specified regions in the western United States. The intent of the GEIS is to determine which impacts would be essentially the same for all ISL

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[119] Advisory Council on Historic Preservation, Consultation with Indian Tribes in the Section 106 Review Process: A Handbook, at 3, 7, 12, 29 (Nov. 2008).

[120] 36 C.F.R. §§ 800.2(c)(2)(ii)(A).

[121] Am. Indian Religious Freedom Act, Pub. L. No. 95-341, 92 Stat. 469 (1978) (codified at 42 U.S.C. § 1996 (2012)).

[122] Exec. Order No. 13,007, 61 Fed. Reg. 26,771 (May 24, 1996), reprinted in 42 U.S.C. § 1996 (2012).

[123] Issuing a license to possess and use source material to a uranium milling facility is identified as a major federal action. 10 C.F.R. § 51.20(b)(8); see also Ex. NRC-010-A-1 through NRC-010-B-2, Office of Federal and State Materials and Environmental Management Programs, Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, NUREG-1910 (May 2009).

facilities and which ones would result in varying levels of impacts for different facilities, thus requiring further site-specific information to determine the potential impacts. As such, the GEIS provides a starting point for the NRC's NEPA analyses for site-specific license applications for new ISL facilities, as well as for applications to amend or renew existing ISL licenses.

E. Burden of Proof

As the proponent of the agency action, an applicant generally has the burden of proof in a licensing proceeding.[124] The statutory obligation of complying with NEPA, however, rests with the NRC.[125] Consequently, when NEPA contentions are involved, the burden shifts to the NRC Staff.[126] Nonetheless, because "the Staff, as a practical matter, relies heavily upon the Applicant's Environmental Report in preparing the EIS, should the Applicant become a proponent of a particular challenged position set forth in the EIS, the Applicant, as such a proponent, also has the burden on that matter."[127] And relative to factual matters, to carry that burden, the NRC Staff and/or Powertech[128] must establish that its position is supported by a preponderance of the evidence.[129]

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[124] See 10 C.F.R. § 2.325.

[125] See, e.g., Duke Power Co. (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041, 1049 (1983).

[126] See Progress Energy Fl., Inc. (Levy County Nuclear Power Plant, Units 1 and 2), CLI-10-2, 71 NRC 27, 34 (2010); see also S. Nuclear Operating Co. (Early Site Permit for Vogtle ESP Site), CLI-07-17, 65 NRC 392, 395 (2007) (stating that "NRC hearings on NEPA issues focus entirely on the adequacy of the NRC Staff's work").

[127] La. Energy Servs., L.P. (Claiborne Enrichment Ctr.), LBP-96-25, 44 NRC 331, 339 (1996) (citing Pub. Serv. Co. of N.H. (Seabrook Station, Units 1 and 2), ALAB-471, 7 NRC 477, 489 n.8 (1978)), rev'd on other grounds, CLI-97-15, 46 NRC 294 (1997).

[128] On April 8, 2014 the NRC Staff issued NRC Source Materials License No. SUA-1600 to Powertech (USA), Inc. pursuant to 10 C.F.R. § 2.1202(a).

[129] See Pac. Gas & Elec. Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-763, 19 NRC 571, 577 & n.22.

IV. DISCUSSION

Contentions 1A and 1B challenge the adequacy of the NRC Staff's FSEIS discussion of the protection of Native American religious and cultural resources.[130] In Contention 1A, the Intervenors allege that the NRC Staff's FSEIS does not adequately address the environmental effects of the Dewey-Burdock project on Native American cultural, religious and historic resources. In Contention 1B the Oglala Sioux Tribe challenges the consultation process employed, and alleges the NRC Staff failed to fulfill its responsibilities regarding consultation with Native American tribes.

Contentions 2, 3 and 4 question the adequacy of the FSEIS analysis of baseline groundwater quality (Contention 2), the potential for fluid migration and its impact on groundwater quality (Contention 3), as well as a failure to adequately analyze groundwater quantity impacts (Contention 4).

Contentions 6 and 9 allege an inadequate description and analysis of mitigation measures (Contention 6) and a failure to consider connected actions in the FSEIS (Contention 9).

A. Contentions 1A and 1B: Historical and Cultural Resources and Consultation

Based on the intertwined nature of Contentions 1A and 1B, the Board will consider these contentions jointly. For Contentions 1A and 1B at the evidentiary hearing, the Oglala Sioux Tribe offered witnesses Wilmer Mesteth[131] and Michael CatchesEnemy.[132] Consolidated Intervenors offered witness Louis Redmond.[133] Powertech offered witnesses Lynn Sebastian,[134]

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[130] Originally, this contention challenged the discussion of this subject in Powertech's ER. However, with the release of the NRC Staff's NEPA documents, the contention subsequently migrated into a challenge of the discussion of this subject in the NRC Staff's FSEIS.

[131] Ex. OST-015, Declaration of Wilmer Mesteth (Apr. 1, 2010).

[132] Ex. OST-014, Declaration of Michael CatchesEnemy (Apr. 14, 2014).

[133] Ex. INT-003, Louis Redmond Curriculum Vitae.

Adrien Hannus[135] and Michael Fosha.[136] The NRC Staff offered witnesses Haimanot Yilma,[137] Kellee Jamerson,[138] Po-Wen (Kevin) Hsueh[139] and Hope Luhman.[140]

1. Contention 1A: Failure to Meet Applicable Legal Requirements Regarding Protection of Historical and Cultural Resources

Contention 1A was originally submitted as part of the Oglala Sioux Tribe's Contention 1 and Consolidated Intervenors' Contention K.[141] The current form of Contention 1A challenges the NRC Staff's FSEIS.[142]

2. Contention 1B: Failure to Involve or Consult All Interested Tribes as Required by Federal Law

The Board first addressed the adequacy of the consultation process in 2010, when the Board held, in LBP-10-16, that "the issue of the alleged failure to consult with the Tribe . . . is

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[134] Ex. APP-002, Lynne Sebastian Curriculum Vitae.

[135] Ex. APP-004, L. Adrien Hannus Curriculum Vitae.

[136] Ex. APP-011, Michael R. Fosha Curriculum Vitae.

[137] Ex. NRC-003-R, Revised Statement of Professional Qualifications of Haimanot Yilma.

[138] Ex. NRC-004-R, Revised Statement of Professional Qualifications of Kellee L. Jamerson.

[139] Ex. NRC-002-R, Revised Statement of Professional Qualifications of Po-Wen (Kevin) Hsueh.

[140] Ex. NRC-152, Statement of Professional Qualifications of Hope E. Luhman.

[141] Contention 1, as filed, read in full, "Failure to meet applicable legal requirements regarding protection of historical and cultural resources, and failure to involve or consult the Oglala Sioux Tribe as required by Federal law." Oglala Sioux Tribe Petition, Ex. OST-010 at 12; Consolidated Intervenors' New Petition at 1–2. Contention K read, "The Application is not in conformance with 10 C.F.R. § 40.9 and 10 C.F.R. § 51.45 because the Application does not provide analyses that are adequate, accurate, and complete in all material respects to demonstrate that cultural and historic resources . . . are identified and protected pursuant to Section 106 of the National Historic Preservation Act. As a result, the Application fails to comply with Section 51.60." Consolidated Intervenors' Petition, Ex. INT-016 at 1–2.

[142] LBP-14-5, 79 NRC at 401.

material and within the scope of this proceeding."[143] The Board found, however, that "the failure to consult" portion of the contention was not yet ripe and directed the Oglala Sioux Tribe to "wait until the [DSEIS] is issued by the NRC Staff to interpose the issue of the adequacy of the agency's consultation efforts."[144] The "failure to consult" contention was re-raised by the Oglala Sioux Tribe in response to the DSEIS, and admitted by the Board.[145] Thereafter, in LBP-14-5 the Board held that the contention migrated as a criticism of the FSEIS.[146]

3. Summary of Consultation Efforts and Cultural Surveys

The disposition of Contentions 1A and 1B largely flows from the specific steps taken throughout the consultation process. With this in mind, the Board begins by laying out the details of consultation efforts and tribal cultural surveys pursued during the NEPA process for the Dewey-Burdock project as described in the FSEIS.[147]

At the outset, the FSEIS notes that "the proposed action has the potential to affect certain sites of religious and cultural significance to Native American tribes; however, the impacts to such sites are expected to be reduced through mitigation strategies developed through the National Historic Preservation Act Section 106 consultation process."[148] Beginning in 2010 the NRC Staff began its efforts to address cultural, religious and historical Native

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[143] LBP-10-16, 72 NRC at 422; see also Crow Butte Res., Inc. (In Situ Leach Facility, Crawford, Nebraska), CLI-09-09, 69 NRC 331, 350–51 (2009) (discussing the licensing board's ruling that tribal consultation is within the scope of the proceeding).

[144] LBP-10-16, 72 NRC at 422.

[145] LBP-13-9, 78 NRC at 113.

[146] LBP-14-5, 79 NRC at 401.

[147] FSEIS, Ex. NRC-008-A-1 § 1.7.3.5.

[148] FSEIS, Ex. NRC-008-A-1 at executive summary, xliv. Quoting an earlier study of the area, the FSEIS states, "most of the tribal members interviewed knew their people had regular ceremonial, cultural, and religious activity in the Black Hills prior to the establishment of reservations; however, no one could pinpoint present cultural, ceremonial, or religious use in the proposed area (Sprague, 2008, p. 14)." Id. § 1.7.3.1.

American sites. The South Dakota State Historic Preservation Officer initially identified twenty Native American tribes that might attach historic, cultural, and religious significance to historic properties within the proposed Dewey-Burdock ISL Project area.[149] The NRC Staff contacted these twenty tribal governments by letters dated March 19, 2010, September 10, 2010 and March 4, 2011.[150] The NRC Staff invited the tribes to participate as consulting parties in the NHPA Section 106 process and requested assistance in identifying tribal historic sites or cultural resources that might be affected by the proposed action.

By letter dated January 31, 2011, the Oglala Sioux Tribe Tribal Historic Preservation Officer accepted the invitation to participate as a consulting party and stated that the proposed Dewey-Burdock Project represented a substantial potential threat to the preservation of cultural and historic resources of the Oglala Sioux Tribe.[151] The Oglala Sioux Tribal Historic Preservation Officer also declared that the proposed project site was located within an area about which various Sioux tribes, along with the Cheyenne, Arapahoe, Crow, and Arikara Tribes, possess intimate cultural knowledge.[152] The Tribal Historic Preservation Officer further stated that impacts that could result from the proposed project include not only site-specific physical impacts, but intangible impacts to the integrity of the area from cultural, historical, spiritual, and religious perspectives.[153]

The NRC Staff held an "informal information gathering meeting" on June 8, 2011, at the Prairie Winds Casino and Hotel on the Pine Ridge Reservation with representatives of six

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[149] The Cheyenne and Arapaho, Pawnee and Omaha tribes were contacted later in February 2013. FSEIS, Ex. NRC-008-A-1 § 1.7.3.5.

[150] Id.

[151] Id.

[152] Id.

[153] Id.

tribes.[154] At that meeting tribal officials expressed concerns about the identification and preservation of historic properties of traditional religious and cultural importance to tribes at the proposed Dewey-Burdock site and two Crow Butte ISL sites in Nebraska. Tribal officials stated that historic and cultural resource studies of the sites should be conducted with tribal involvement.[155] In conjunction with the June 8, 2011, informal information gathering meeting, Powertech hosted a visit to the project site on June 9, 2011.

The NRC Staff held a second meeting with representatives of thirteen Native American tribes[156] in Rapid City, South Dakota on February 14–15, 2012. The purpose of this meeting was to solicit the views of interested tribes about the general types and descriptions of historic properties of religious and cultural significance that may be affected by the proposed project and how these properties could be identified and evaluated as part of the ongoing consultations under Section 106 of the NHPA.[157] Tribal representatives requested another face-to-face meeting to review draft statements of work prepared by several tribes and applicants.[158] Although a follow-up meeting was scheduled for March 14–15, 2012, it was subsequently

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[154] The tribes with representatives in attendance were: the Oglala Sioux, Standing Rock Sioux, Flandreau-Santee Sioux, Sisseton-Wahpeton Oyate, Cheyenne River Sioux, and Rosebud Sioux. Id.

[155] Id.

[156] The tribes in attendance were: Cheyenne River Sioux, Crow Creek Sioux, Crow Tribe of Montana, Eastern Shoshone, Fort Peak Assiniboine Sioux, Northern Arapaho, Northern Cheyenne, Oglala Sioux, Rosebud Sioux, Yankton Sioux, Sisseton-Wahpeton Sioux, Santee Sioux Nation, and Standing Rock Sioux. See Id.

[157] Id.

[158] These statements of work were for the preparation of traditional cultural properties for three proposed ISL projects in the greater Black Hills area; Dewey-Burdock ISR, Crow Butte License Renewal ISR in Nebraska, and the Crow Butte North Trend expansion area.

cancelled. In lieu of this face-to-face meeting, the NRC Staff instead held a series of telephone conference calls and an exchange of letters and emails.[159]

On September 5, 2012, the NRC Staff met with representatives of seven tribes in Bismarck, North Dakota.[160] During this meeting, participants discussed how to proceed with the development of a statement of work to identify religious and cultural properties within the area of potential effects. All parties agreed a survey was necessary for historic property identification. All parties also agreed further consultation was needed to develop a statement of work that focused survey efforts on the identification of properties directly and indirectly affected by the proposed project.[161] Following this meeting, the NRC Staff asked participants from the September 5, 2012 meeting in Bismarck, North Dakota to designate a preferred contractor to submit a proposal to conduct a survey on their behalf. The NRC Staff requested that the contractor's proposal be based on the area of direct effect that might be disturbed during the initial phase of the Dewey-Burdock ISL Project, and that the proposal include a cost estimate.[162] The NRC Staff also indicated a Programmatic Agreement would need to be "developed to address the phased identification and evaluation of historic properties."[163]

On June 19, 2012, the tribes provided the NRC Staff with a preliminary tribal statement of work for identifying properties of religious and cultural significance at the Dewey-Burdock ISL Project site. On September 27, 2012, the NRC Staff received a proposal and cost estimate

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[159] FSEIS, Ex. NRC-008-A-1 § 1.7.3.5.

[160] Representatives of the Yankton Sioux, Sisseton-Wahpeton Oyate Sioux, Rosebud Sioux, Standing Rock Sioux, Northern Cheyenne, Oglala Sioux, and Crow Nation attended this meeting. Id.

[161] Id.

[162] Id.

[163] DSEIS, Ex. NRC-009-B-2 at App. A 298, Request for Proposal, Letter from Kevin Hsueh, NRC Branch Chief, to Tribal Historic Preservation Officer (Sept. 18, 2012).

from the tribes for a traditional cultural properties survey for the proposed Dewey-Burdock Project. The proposal and cost estimate were prepared by Makoche Wowapi/Mentz-Wilson Consultants, LLP, the contractor selected by the tribes to complete the cultural resources survey of the proposed project. On October 12, 2012 the NRC Staff informed the tribes of the significant differences between the Makoche Wowapi/Mentz-Wilson Consultants, LLP proposal and Powertech's proposal. The NRC Staff requested that the tribes propose alternative methods for identifying potential properties of traditional religious and cultural importance to the tribes. The NRC Staff suggested that alternative methods might include opening the site to interested tribal specialists over a period of several weeks with payment for survey costs made to individual tribes or seeking ethno-historic and ethnographic information from tribal specialists in interviews at tribal headquarters.[164]

Between October 15 and October 20, 2012, the NRC Staff received letters and emails from four tribes opposing the NRC Staff's request for alternative survey approaches.[165] These tribes maintained that the only level of effort sufficient for identifying historic properties would be an on-the-ground, 100 percent survey of the entire license boundary by tribal personnel from participating tribes.[166] On October 19, 2012, the NRC Staff received an alternative field survey proposal from four tribes (not including the Oglala Sioux Tribe) in collaboration with Kadramas, Lee, & Jackson (KLJ), a private consulting firm from North Dakota. This alternative field survey proposed investigation of previously recorded archaeological sites, use of light detection and ranging mapping technology to locate potential rock alignments, cairns, and other stone

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[164] Id. at 81.

[165] The four tribes were the Standing Rock Sioux Tribe, the Sisseton-Wahpeton Oyate, the Rosebud Sioux Tribe, and the Yankton Sioux Tribe. FSEIS, Ex. NRC-008-A-1 § 1.7.3.5.

[166] Id. The entire license boundary of the proposed Dewey-Burdock ISL project encompasses 10,580 acres. FSEIS, Ex. NRC-008-A-2 § 4.12.2.

features, and a systematic pedestrian survey of the 2,637 acres of the project.[167] The NRC Staff found that the proposed level of effort in the KLJ proposal was reasonable and appropriate to the project area and that the estimated costs were in line with the range of survey costs obtained in tribal surveys of other projects. On October 31, 2012, the NRC Staff endorsed the KLJ survey approach and invited all consulting tribes to participate in the survey with paid compensation for one representative per tribe. However, five tribes (including the Oglala Sioux Tribe) opposed the KLJ proposal.[168] KLJ subsequently withdrew its proposal.[169]

The NRC Staff issued the DSEIS in November 2012, stating that it was using the NEPA process to satisfy the public participation requirements of the NHPA.[170] The guidance in the NHPA Handbook, admitted into evidence as an NRC Staff exhibit, notes that the term "cultural resources" covers a wider range of resources than just "historic properties," and includes "sacred sites, archaeological sites not eligible for the National Register of Historic Places, and archaeological collections."[171] The NRC Staff explained that, consistent with this broader approach, after completion of the DSEIS it continued "working to facilitate a field survey of the Dewey-Burdock site in order to obtain additional information on historic properties. When the

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[167] FSEIS, Ex. NRC-008-A-1 § 1.7.3.5. These 2,637 acres represent the area of immediate direct effects. FSEIS, Ex. NRC-008-B-2 § E5.11.

[168] FSEIS, Ex. NRC-008-A-1 § 1.7.3.5. The other tribes that opposed this proposal were the Standing Rock Sioux Tribe, Rosebud Sioux Tribe, Sisseton-Wahpeton Oyate, and Yankton Sioux Tribe.

[169] Id.

[170] This approach, referred to as "substitution," is permitted under NHPA regulations. 36 C.F.R. § 800.8; see also NEPA and NHPA Handbook, Ex. NRC-048 at 29–33 (describing the substitution process).

[171] NEPA and NHPA Handbook, Ex. NRC-048 at 4.

survey is complete, the Staff will supplement its analysis in the DSEIS and circulate the new analysis for public comment."[172]

In December 2012 the NRC Staff invited all interested consulting parties to provide information relevant to the development of a Programmatic Agreement.[173] The NRC Staff also stated that it intended to move forward with an alternative field survey approach in the spring of 2013.[174]

On February 8, 2013, the NRC staff invited twenty-three tribes[175] to participate in a field survey between April 1 and May 1, 2013, and described procedures for site access, and compensation for survey participation. Tribes interested in participating in the field survey were advised to respond by March 12, 2013. On March 22, 2013, the Oglala Sioux Tribe objected to the terms of the survey proposal and indicated that the proposed April 1, 2013 date for the start of the field survey did not allow sufficient time for formal authorization from its Tribal Council and constituents. The Oglala Sioux Tribe expressed concern that 1) the scope of the work methodology was inadequate, 2) the funds allocated for the survey were insufficient, 3) the NRC Staff lacked cultural sensitivity on these issues, and 4) the NRC Staff was not fully addressing the direct and indirect effects on cultural resources and burial grounds, and the protection of intellectual property generated during the survey. The Oglala Sioux Tribe declared that the

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[172] NRC Staff's Answer to Contentions on the [DSEIS] (Mar. 7, 2013) at 13 (citation omitted).

[173] The prospect of a post-FSEIS Programmatic Agreement was raised during a series of teleconferences held in August 2012 and correspondence in September 2012. DSEIS, NRC-009-B-2 at App. A, A-86, Proposed Agenda, Email from Haimanot Yilma, NRC, to Tribal Historic Preservation Officers (Aug. 20, 2012).

[174] Id.

[175] The original twenty tribes were invited, as well as the Cheyenne and Arapaho, Pawnee, and Omaha Tribes.

existing NHPA section 106 consultation did not satisfy the required formal government-to-government consultation.[176]

Despite these objections from the Oglala Sioux Tribe, the field survey of the Dewey-Burdock site began on April 1, 2013, with three tribes subsequently submitting survey reports to the NRC Staff for inclusion in the FSEIS.[177] The survey reports documented sites of religious and cultural significance identified during site surveys, and included National Register of Historic Places eligibility recommendations as well as mitigation measures recommended for each identified site.

The NRC Staff later officially separated its NHPA Section 106 activities from its NEPA review, informing the tribes and the ACHP of this by letter dated November 6, 2013.[178] By separating the NHPA Section 106 process from the NEPA review the NRC Staff determined that a phased process for compliance with Section 106 was appropriate. From this point, the NRC Staff's evaluation and determinations of effects on historic properties and consultation concerning measures needed to avoid, minimize, or mitigate any adverse effects was carried out in phases, as set forth in the Programmatic Agreement.[179] In January 2014 the NRC Staff issued the FSEIS. The FSEIS contained the results of the field survey, which consisted of the

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[176] FSEIS, Ex. NRC-008-A-1 § 1.7.3.5. On May 23, 2013, the NRC Staff hosted a meeting in Rapid City, South Dakota concerning licensing actions associated with three proposed uranium recovery projects under NRC licensing review. The NRC Staff invited over thirty tribes currently in consultation on uranium recovery projects to this meeting with NRC management. Id.

[177] The Cheyenne and Arapaho, Northern Arapaho, and Northern Cheyenne tribes submitted survey reports to the NRC. The NRC Staff also received field notes from the Crow Tribe, although the Crow Tribe field notes did not contain NHPA eligibility recommendations.

[178] Ex. NRC-015, Project Summary of Tribal Outreach Timeline at 15 (Apr. 8, 2014) [hereinafter Tribal Outreach Timeline, NRC-015]; see also FSEIS, NRC-008-B-2 at App. A, A-161–66.

[179] Ex. NRC-018-A, Programmatic Agreement Among U.S. Nuclear Regulatory Commission, U.S. Bureau of Land Management, South Dakota State Historic Preservation Office, Powertech (USA), Inc., and Advisory Council on Historic Preservation Regarding the Dewey-Burdock In Situ Recovery Project Located in Custer And Fall River Counties South Dakota at 2 (Mar. 19, 2014) [hereinafter Programmatic Agreement, Ex. NRC-018-A].

three reports by Native American tribes with National Register of Historic Places eligibility recommendations.[180] The NRC Staff continued to consult with the Bureau of Land Management (BLM), the South Dakota State Historic Preservation Officer, and the tribes on issues arising under Section 106 of the NHPA, and finalized the Programmatic Agreement on April 7, 2014.[181] The ACHP noted that a consensus was not reached with the tribes relative to the Programmatic Agreement, but that the Programmatic Agreement was to incorporate "a path forward to continue working with consulting tribes to conclude the identification and evaluation process."[182]

4. Legal Standards

Under NEPA regulations, defining the scope of effects of a project requires engagement with the governments of affected tribes through an "early and open process," aimed at identifying concerns, potential impacts, relevant effects of past actions, and possible alternative actions.[183] The Commission's regulations at 10 C.F.R. § 51.71(b) require the NRC Staff to include in the FSEIS "an analysis of significant problems and objections raised by . . . any affected Indian tribes, and by other interested persons." The GEIS in this case determined the impacts for all ISL facilities in the region, but the FSEIS for each project must contain the site-specific information to determine potential impacts of a particular project.

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[180] Ex. NRC-019, Summary Report Regarding the Tribal Cultural Surveys Completed for the Dewey-Burdock Uranium in-Situ Recovery Project at 1–2 (Dec. 16, 2013) [hereinafter Report on Tribal Cultural Surveys, NRC-019]. Seven tribes participated in the field survey and three tribes (Northern Arapaho Tribe, Northern Cheyenne Tribe, Cheyenne and Arapaho Tribes of Oklahoma) submitted written reports. The Crow Nation provided the NRC Staff with a copy of field notes identifying several sites of interest to that tribe.

[181] Ex. NRC-018-D, Letter from Reid Nelson, Director, Office of Federal Agency Programs, Advisory Council on Historic Preservation, to Kevin Hsueh, Chief, Environmental Review Branch, NRC, at 1 (Apr. 7, 2014) (finalizing Section 106 review).

[182] Id.

[183] 40 C.F.R. § 1501.7.

5. Parties' Positions

In Contention 1A, Intervenors assert that the NRC Staff failed to adequately analyze cultural and historic resources under NEPA before the license was issued, and that the FSEIS and other environmental documents[184] contain insufficient analysis of cultural impacts. Specifically, Intervenors allege that while 10 C.F.R. §§ 51.71(d), 51.45(b) and NEPA require the FSEIS to include an analysis of cultural impacts, "neither [the applicant nor the NRC Staff] has conducted an adequate and competent cultural resources survey, impacts analysis, or mitigation review."[185]

The Oglala Sioux Tribe contends that because the Augustana College Level III level archaeological survey[186] performed at the behest of Powertech, and referenced in the FSEIS, left a significant number of archaeological, historical, and traditional cultural resources on the site unevaluated, the potential impacts to these resources have not been addressed.[187] As a result, the Oglala Sioux Tribe objects "that no NEPA environmental document contains a scientifically-defensible protocol and methodology for analysis of cultural resources."[188] The

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[184] An 'environmental document' includes the documents specified in 40 C.F.R. § 1508.9 (environmental assessment), § 1508.11 (environmental impact statement), § 1508.13 (finding of no significant impact), and § 1508.22 (notice of intent). 40 C.F.R. § 1508.10.

[185] Oglala Sioux Tribe Post-Hearing Initial Brief at 13.

[186] Ex. APP-009, A Level III Cultural Resources Evaluation of Powertech (USA) Incorporated's Proposed Dewey-Burdock Uranium Project Locality within the Southern Black Hills, Custer and Fall River Counties, South Dakota, Archeology Laboratory, Augustana College (Mar. 2008) [hereinafter Level III Cultural Resources Evaluation, Ex. APP-009].

[187] Oglala Sioux Tribe Post-Hearing Initial Brief at 13. Citing CEQ's NEPA regulations which state that "effects and impacts as used in these regulations are synonymous, the Oglala Sioux Tribe further notes that the regulations specifically require that the 'effects' that must be reviewed in a NEPA document include 'ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.'" Oglala Sioux Tribe Post-Hearing Reply Brief at 5–6 (quoting 40 C.F.R. § 1508.8).

[188] Oglala Sioux Tribe Post-Hearing Initial Brief at 14.

Oglala Sioux Tribe further contends that the FSEIS does not address cultural resources specific to the Sioux tribes, that the identification efforts were inadequate and that the NHPA measures in the Programmatic Agreement are insufficient to meet the NEPA requirements to review impacts on Native American historic, religious and cultural resources.

The Oglala Sioux Tribe further argues that the NHPA requires federal agencies to "consult with any Indian tribe . . . that attaches religious and cultural significance" to potentially impacted historic properties.[189] They contend the NRC Staff failed to comply with NHPA regulations to conduct government-to-government consultation "in a manner sensitive to the concerns and needs of the Indian tribe."[190] Consultation, they argue, encompasses providing the Oglala Sioux Tribe "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects."[191] The Oglala Sioux Tribe contends that conversations with the NRC Staff have been neither meaningful nor reasonable because the NRC Staff has refused to work through the problems identified by the Oglala Sioux Tribe and its representatives. The Oglala Sioux Tribe (as well as several other Sioux Tribes) objected to the NRC Staff's approach to date, arguing that the tribal field surveys conducted did not address their cultural, historic and religious concerns.[192] Specifically, the Oglala Sioux Tribe

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[189] 16 U.S.C. § 470(a)(d)(6)(B).

[190] 36 C.F.R. § 800.2(c)(2)(ii)(C).

[191] 36 C.F.R. § 800.2(c)(2)(ii)(A).

[192] Oglala Sioux Tribe Statement of Position at 17.

argues that of the twenty-three consulting tribes, only four participated in the field survey process and none were Sioux.[193]

The NRC Staff, on the other hand, represents to the Board that it complied with both NEPA and the NHPA and that it made "a reasonable and good faith effort—an effort that lasted almost four years—to obtain information on religious and cultural resources that are significant to the tribes."[194] The NRC Staff states that it "followed the joint guidance of the CEQ and the ACHP, the agencies charged with implementing NEPA and the NHPA, and the ACHP specifically approved of the Staff's NHPA review."[195] As part of its "reasonable and good faith effort" the NRC Staff explains that it initially invited twenty tribes, including the Oglala Sioux Tribe, to participate in identification efforts and provided all interested tribes a reasonable opportunity to identify historic properties, advise on the identification and evaluation of such properties, comment on the undertaking, and participate in resolving potential adverse effects.[196] The NRC Staff contends that it conducted a comprehensive review of cultural, archeological, and tribal resources at the Dewey-Burdock site and that the Oglala Sioux Tribe had the same opportunity to participate in each phase of the NRC Staff's review as all consulting tribes.

The NRC Staff defends its FSEIS analysis by stating that it first took appropriate steps to identify cultural resources that may be affected by the project, and then responded to input from consulting tribes by facilitating field surveys of the Dewey-Burdock site so that tribes could

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[193] The four tribes were the Northern Arapaho (Wyoming), Northern Cheyenne (Montana), and Cheyenne and Arapaho of Oklahoma. Ex. NRC-018-B, Final Programmatic Agreement for Powertech (USA) Inc. Dewey-Burdock Project, Appendix A at 14 [hereinafter Programmatic Agreement Appendix, Ex. NRC-018-B].

[194] NRC Staff's Post-Hearing Reply Brief at 5.

[195] Id.

[196] Id. at 7.

identify any traditional cultural properties.[197] The NRC Staff also states that since initiating consultation in March 2010, it has held three face-to-face meetings, conducted three teleconferences and exchanged many emails, letters, and telephone calls with tribal representatives. In addition, in April and May 2013, representatives from seven of the invited tribes conducted field surveys of the Dewey-Burdock site.[198] The NRC Staff concludes that it complied with NEPA by making repeated attempts to obtain information on cultural resources and by including mitigation measures in the Programmatic Agreement that will limit impacts to any unidentified resources.[199]

Powertech, which paid the costs of the various cultural surveys, argues that the Augustana College Level III archeological survey satisfied all applicable regulatory guidelines and that the tribal field surveys, held in April and May 2013, allowed each tribe to evaluate the entire project area in a manner culturally appropriate for each tribe. Powertech also argues that the NRC Staff appropriately evaluated archeological and tribal survey results as required by NEPA and the NHPA,[200] and that a phased approach to comply with the NHPA is allowed under federal regulations. Powertech asserts that the NRC Staff has met the applicable statutes' requirements, and that all tribes, including the Oglala Sioux Tribe, were afforded an opportunity to participate in a field survey, but the Oglala Sioux Tribe chose not to participate.[201]

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[197] Programmatic Agreement Appendix, Ex. NRC-018-B at 16–21.

[198] Report on Tribal Cultural Surveys, Ex. NRC-019.

[199] Programmatic Agreement Appendix, Ex. NRC-018-B at 13–24; see also Tribal Outreach Timeline, Ex. NRC-015 (listing Staff's efforts to obtain information for use in the Programmatic Agreement).

[200] Powertech Initial Findings of Fact and Conclusions of Law at 45–47.

[201] Id. at 41–44.

6. Board Ruling

a. Contention 1A

To fulfill the agency's NEPA and NHPA responsibilities to protect and preserve cultural, religious, and historical sites important to the Native American tribal cultures in the Powertech project area, the NRC Staff must conduct a study or survey of tribal cultural resources before granting a license. Haimanot Yilma, NRC Staff witness and project manager for the Staff's environmental review of the Dewey-Burdock application, testified that "under NEPA, we're supposed to be looking at cultural resources. Historical property is a subset of cultural resources and so therefore any information that are provided under the NHPA historical properties are a subset of NEPA review. So we have to consider them under the NEPA review."[202]

As part of its application, Powertech submitted a Class III archeological survey of the Dewey-Burdock site.[203] A Class III archeological survey involves a professionally conducted, pedestrian survey of an entire target area to identify properties that may be eligible for inclusion on the National Register of Historic Places.[204] This on-the-ground survey describes the distribution of properties in an area; determines the number, location and condition of properties; determines the types of properties actually present within the area; permits classification of individual properties; and records the physical extent of specific properties.[205] A Class III survey, however, is not the same as a cultural resources survey or a traditional cultural properties survey. A Class III survey can satisfy the requirements of the NHPA and identify a

[202] Tr. at 785.

[203] Level III Cultural Resources Evaluation, Ex. APP-009.

[204] Montana Wilderness Assn. v, U.S. Dep't of Interior, 725 F.3d 988, 1,005–06 (2013) (citing BLM Manual 8110 (Release 8–73, Dec. 3, 2004)).

[205] Id.

property's eligibility to be added to the National Register of Historic Places.[206] However, as the NRC Staff testified, a Class III survey "wouldn't necessarily identify all of the [Native American cultural and religious] resources primarily because some of the knowledge is not available to those conducting a Level 3 survey. That would be provided by the Native American groups themselves."[207] The category of 'cultural resources' "covers a wider range of resources than 'historic properties,' such as sacred sites, archaeological sites not eligible for the National Register of Historic Places, and archaeological collections."[208]

With respect to identifying historic properties, the NRC Staff has complied with the NHPA requirement to make a good faith and reasonable effort to identify properties that are eligible for inclusion in the National Register of Historic Places within the Dewey-Burdock ISL project area. The ACHP's guidance states that a reasonable and good faith effort may consist of "one or more methodologies" of identifying historic properties,[209] and the Staff used, to varying extents, four of the five methodologies specified in ACHP regulations: background research, consultation, field investigations, and field surveys.[210] The only methodology that the Staff did not use was oral history interviews.[211] We find that these efforts satisfy the NHPA with respect to historic properties.

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[206] Tr. at 762.

[207] Tr. at 762–63.

[208] NEPA and NHPA Handbook, Ex. NRC-048 at 4.

[209] Ex. NRC-047, Advisory Council on Historic Preservation, Meeting the "Reasonable and Good Faith" Identification Standard in Section 106 Review at 2 (Nov. 2011).

[210] Ex. NRC-001, NRC Staff's Initial Testimony (June 20, 2014) at 5–9 [hereinafter NRC Staff's Initial Testimony, Ex. NRC-001]; Ex. NRC-151, NRC Staff's Rebuttal Testimony (July 15, 2014) at 7–8 [hereinafter NRC Staff's Rebuttal Testimony, Ex. NRC-151].

[211] NRC Staff's Initial Testimony, Ex. NRC-001 at 8–9.

The more difficult question is whether the methodologies the NRC Staff employed to identify tribal cultural, religious and historic resources satisfied the NHPA and the NEPA hard look.[212] Although the NRC Staff points to the concurrence of the ACHP and the South Dakota State Historic Preservation Officer in the context of the NHPA Section 106 investigation as evidence that NEPA's hard look has been satisfied,[213] it does not follow that a review that satisfies the NHPA necessarily satisfies NEPA requirements to take a hard look at cultural resources affected by a project.[214] Although the NHPA and NEPA resemble each other in certain respects, compliance with the NHPA "does not relieve a federal agency of the duty of complying with the [environmental] impact statement requirement 'to the fullest extent possible.'"[215]

The Commission's regulations at 10 C.F.R. § 51.71(b) require the NRC Staff to include in an EIS "an analysis of significant problems and objections raised by . . . any affected Indian tribes and by other interested persons."[216] For a variety of reasons,[217] the FSEIS in this

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[212] 42 U.S.C. § 4321 et seq.

[213] Ex. NRC-018-E, Programmatic Agreement, Advisory Council on Historic Preservation Signature Page (Apr. 7, 2014); Ex. NRC-031, Letter from Advisory Council on Historic Preservation to Standing Rock Sioux Tribe on Dewey-Burdock Project at 3; Ex. NRC-018-G, Programmatic Agreement, South Dakota State Historic Preservation Officer Signature Page.

[214] Hydro Res., Inc. (P.O. Box 777, Crownpoint, New Mexico 87313), LBP-05-26, 62 NRC 442, 472 (2005) ("Although an agency may coordinate and, where practicable, integrate its NEPA and NHPA review efforts, the two statutes impose separate and distinct obligations.") (citation omitted); see also Te-Moak Tribe of Western Shoshone of Nevada v. U.S. Dep't of Interior, 608 F.3d 592, 606, 610 (9th Cir. 2010) (concluding that an agency failed to take a hard look at cumulative impacts on cultural resources under NEPA even though the agency had satisfied its obligations under NHPA to consult with the tribe).

[215] Pres. Coal., Inc. v. Pierce, 667 F.2d 851, 859 (9th Cir. 1982) (quoting 42 U.S.C. § 4332).

[216] The Oglala Sioux Tribe raised its cultural, historical, and religious problems and objections in a timely manner, and pursued these concerns throughout the NEPA process.

[217] Some of these reasons relate to difficulties encountered in the consultation efforts between the NRC Staff and the Native American Tribes, including the Oglala Sioux Tribe.

proceeding does not contain an analysis of the impacts of the project on the cultural, historical and religious sites of the Oglala Sioux Tribe and the majority of the other consulting Native American tribes.[218] The field surveys conducted in 2013 by members of seven tribes and the three sets of findings submitted do not satisfy this requirement.[219] Because the cultural, historical, and religious sites of the Oglala Sioux Tribe have not been adequately catalogued, the FSEIS does not include mitigation measures sufficient to protect this Native American tribe's cultural, historical, and religious sites that may be affected by the Powertech project.

Accordingly, as to Contention 1A, the Board finds and concludes that the FSEIS has not adequately addressed the environmental effects of the Dewey-Burdock project on Native American cultural, religious and historic resources. Without additional analysis as to how the Powertech project may affect the Sioux Tribes' cultural, historical, and religious connections with the area, NEPA's hard look requirement has not been satisfied, and potentially necessary mitigation measures have not been established. The NRC Staff did not give this issue its required hard look in the FSEIS, and therefore the Record of Decision is incomplete.

b. Contention 1B

With respect to Contention 1B, the NRC Staff/tribal consultation process broke down,[220] and the vast majority of the consulting tribal parties, including the Oglala Sioux Tribe, did not participate in the field survey opportunity provided by the NRC Staff and Powertech. The consulting parties and the NRC Staff could agree on neither the scope, techniques, or timing of

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[218] NEPA compels agencies to take a hard look at "preserv[ing] important historic [and] cultural . . . aspects of our national heritage." 42 U.S.C. § 4331(b)(4).

[219] While more comprehensive than the Powertech Class III survey because it included some tribal participation, the additional April 2013 survey done at the behest of the NRC Staff as part of the Staff's efforts to comply with NHPA and NEPA did not contain any tribal ethnographic studies, oral histories or a survey of sites of significance to the intervenor, the Oglala Sioux Tribe.

[220] See above Part IV(3) and (5) of this Partial Initial Decision.

the field surveys, nor alternatives to a field survey to address Native American cultural, religious and historic concerns.

Even after a thorough review of the record in this case, the Board is not able to decide definitively which party or specific actions led to the impasse preventing an adequate tribal cultural survey. But the Board does take note that witnesses for the Intervenors,[221] the NRC Staff,[222] and Powertech[223] all agreed that tribal representatives must prepare the cultural survey along with any archeological survey team.

The NRC Staff is at least partly at fault for the failed consultation process. For the past five years the Oglala Sioux Tribe has raised its concerns with the consultation process, and yet the NRC Staff has not held a single consultation session, on a government-to-government basis, solely with members of the Oglala Sioux Tribe. Instead, the NRC Staff has held three face-to-face sessions with multiple tribes concerning multiple ISL projects in both South Dakota and Nebraska.[224] The three meetings cited by the NRC Staff as government-to-government consultations were large group meetings, with members of many diverse tribes, all with varying degrees of attachment to the Black Hills area of South Dakota.[225] Though numerous letters were sent to the Oglala Sioux Tribe, as detailed above, quantity does not necessarily equate with meaningful or reasonable consultation, and "doesn't in itself show the NHPA-required

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[221] Tr. at 764.

[222] Tr. at 757.

[223] Tr. at 758.

[224] Tr. at 825–30.

[225] A large group meeting, run more as an information gathering session and less as a government-to-government consultation, is inconsistent with NRC Staff guidance "to encourage Tribes to participate in the NRC regulatory process." Tribal Protocol Manual at 10; see also Tr. at 827–30.

consultation occurred."[226] The Oglala Sioux Tribe has shown it has the most direct historical, cultural and religious ties to the area.[227] The Oglala Sioux Tribe's Pine Ridge reservation is located approximately 50 miles from the project site.[228] The Oglala Sioux Tribe is both a consulting party and an Intervenor in this proceeding. It is entitled to a meaningful, face to face, government-to-government consultation session with the NRC Staff regarding this specific project. To be sure, the Oglala Sioux Tribe does share some responsibility for the inadequacy of the FSEIS and the lack of meaningful consultation. While the Oglala Sioux Tribe argues that its input to the FSEIS is essential, some of its demands to engage with the NRC Staff were patently unreasonable.[229]

As to Contention 1B, the Board finds and concludes that the consultation process between the NRC Staff and the Oglala Sioux Tribe was inadequate.

c. Board Order on Contentions 1A and 1B

The FSEIS has not adequately addressed the environmental effects of the Dewey-Burdock project on Native American cultural, religious and historic resources, and the required meaningful government-to-government consultation between the Oglala Sioux Tribe and the NRC Staff has not taken place. Because of these facts, procedures must be put in place to

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[226] Quechan Tribe of Fort Yuma Indian Reservation v. U.S. Dep't of Interior, 755 F.Supp. 2d 1104, 1118 (S.D. Cal. 2010).

[227] Ex. OST-014, Declaration of Michael CatchesEnemy (Apr. 14, 2014); Ex. OST-015, Declaration of Wilmer Mesteth (Apr. 1, 2010); Ex. OST-017, Letter from Bryan Brewer, Sr., President of the Oglala Sioux Tribe, to Kevin Hsueh, NRC Environmental Review Branch Chief, (Mar. 22, 2013).

[228] FSEIS, NRC-008-A-1 at executive summary, xliv.

[229] These demands, outlined at the evidentiary hearing, include the definition of elected governmental representation, Tr. at 781–82, 850–51, and the funds requested to collect tribal cultural information, Tr. at 807, 810.

assure that the required NEPA hard look is taken, the NRC's Part 51 environmental regulations are satisfied, and an opportunity for meaningful consultation is provided.[230]

Though the license has already been issued, the land disturbance in the project area will proceed in stages,[231] and NEPA requires that agencies take a hard look at the environmental effects of actions even after a proposal has received initial approval.[232] Meaningful consultation between the NRC Staff and the Oglala Sioux Tribe may still be undertaken to identify and mitigate any potential harm to Sioux cultural, historical or religious sites, even though the Programmatic Agreement has been finalized.[233] We therefore conclude that additional consultation between the NRC Staff and the Oglala Sioux Tribe is necessary.[234] This additional consultation is required in order to 1) to satisfy the hard look at impacts required by NEPA and to supplement the FSEIS, if necessary, and 2) to satisfy the consultation requirements of the NHPA.

The NRC Staff can remedy this deficiency in the Record of Decision in this proceeding by promptly initiating a government-to-government consultation with the Oglala Sioux Tribe to identify any adverse effects to cultural, historic or religious sites of significance to the Oglala Sioux Tribe that may be impacted by the Powertech Dewey-Burdock project. This would then

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[230] NRC Staff guidance "supports meaningful consultation and collaboration with Tribal officials in the development of Federal policies that have Tribal implications [and] acknowledges the status of Tribes as domestic dependent sovereign nations." Tribal Protocol Manual at 9.

[231] Programmatic Agreement, Ex. NRC-018-A. "The NRC determined a phased process for compliance with Section 106 of the NHPA is appropriate for this undertaking, as specifically permitted under 36 CFR § 800.4(b)(2), such that completion of the evaluation of and determinations of effects on historic properties, and consultation concerning measures to avoid, minimize, or mitigate any adverse effects will be carried out in phases, as set forth in this Programmatic Agreement." See id. at 2.

[232] Marsh, 490 U.S. at 374.

[233] The Programmatic Agreement is, by its terms, "a condition on the NRC License." Programmatic Agreement, Ex. NRC-018-A at 4.

[234] The Oglala Sioux Tribe is both an intervenor in this case as well as a consulting party.

allow the adoption of mitigation measures, as necessary. The FSEIS and Record of Decision in this case must be supplemented, if necessary, to include any cultural, historic or religious sites identified and to discuss any mitigation measures necessary to avoid any adverse effects.

Finally, given our conclusion that the inadequate discussion of potential impacts to Sioux cultural, historical or religious sites in the FSEIS or Record of Decision is a significant deficiency in the NRC Staff's NEPA review, this Board could require the immediate suspension of the issued materials license.[235] However, the Board declines to do so because the Oglala Sioux Tribe bears some responsibility for lack of information on this issue, and did not participate in the April 2013 field survey effort.[236] Instead, the Board will retain jurisdiction of this case pending the NRC Staff's curing of the deficiencies in Contentions 1A and 1B. The NRC Staff will submit a monthly status report to the Board on the first business day of every month beginning June 2015 describing the consultations with the Oglala Sioux Tribe and the process being made in identifying Sioux tribal cultural, historic or religious sites impacted by the Powertech project.[237] In the interim, if the Oglala Sioux Tribe can identify specific cultural, historic or religious sites that are subject to immediate and irreparable harm by the Powertech

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[235] Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc (Vermont Yankee Nuclear Power Station), CLI-06-8, 63 NRC 235, 238 (2008) ("If the Board determines after full adjudication that the license amendment should not have been granted, it may be revoked (or conditioned).").

[236] An opportunity is being provided for the Oglala Sioux Tribe and the NRC Staff to consult in a meaningful manner as the project moves forward. If the Oglala Sioux Tribe refuses to engage in a meaningful consultation or makes unreasonable demands as a precondition for its cooperation in identifying cultural, historic or religious sites, such actions would be fundamentally unfair to the NRC Staff, Powertech, and incompatible with an orderly administrative process. All parties have an obligation to cooperate to resolve these contentions.

[237] These status reports should take the same form as the status reports the NRC Staff submitted to this Board, per a Board Order, starting in 2010. Licensing Board Order (Prehearing Conference Call Summary and Initial Scheduling Order) (Oct. 4, 2010) at 6 (unpublished) ("So as to keep the Board, the parties, and the public abreast of any changes in this schedule, we hereby direct the NRC Staff to submit a monthly status report on November 1, 2010, to be updated on the first business day of each month thereafter.").

project, they may, within 10 days of this Order, petition this Board for a stay of the license's effectiveness, as may be necessary to halt ground disturbing activities, with party responses to such a stay request due 10 days thereafter.[238]

B. Contention 2: The FSEIS Fails to Include Necessary Information for Adequate Determination of Baseline Groundwater Quality

1. Legal Standards

The NRC has issued numerous regulations and Staff guidance documents on groundwater quality standards at ISL facilities. Criterion 7 of 10 C.F.R. Part 40, Appendix A requires an applicant to establish "a preoperational monitoring program [that] must be conducted to provide complete baseline data on a milling site and its environs." These criteria were developed for conventional uranium milling facilities, but have been applied, in at least limited fashion, to ISL facilities.[239] In addition, background water quality data is used to establish existing hazardous constituent concentrations in an aquifer, which can then be used to set 10 C.F.R. Part 40, Appendix A, Criterion 5B(5) post-operational concentration limits. Both NUREG-1569[240] and Regulatory Guide 4.14[241] also discuss environmental monitoring. Although this Board is not bound to follow Staff guidance documents, which do not have the binding force of statutes or regulations, a Board must provide sufficient justification if it chooses not to accept

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[238] Licensing Board Order (Removing Temporary Stay and Denying Motions for Stay of Materials License Number SUA-1600) (May 20, 2014) at 2–4, 7–8 (unpublished).

[239] Hydro Res., CLI-99-22, 50 NRC at 8–9 ("While, as a general matter, Part 40 applies to ISL mining, some of the specific requirements in Part 40, such as many of those found in Appendix A, address hazards posed only by conventional uranium milling operations, and do not carry over to ISL mining.").

[240] Ex. NRC-013, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards, Standard Review Plan for In Situ Leach Uranium Extraction License Applications, NUREG-1569 (June 2003) [hereinafter NUREG-1569, Ex. NRC-013].

[241] Ex. NRC-074, Radiological Effluent and Environmental Monitoring at Uranium Mills, Regulatory Guide 4.14 (Rev. 1 Apr. 1980) [hereinafter Regulatory Guide 4.14, Ex. NRC-074]. From a regulatory standpoint, ISL facilities are considered uranium mills.

Staff guidance.[242] Notably, for the purposes of resolving this contention, neither 'baseline' nor 'background' are explicitly defined in 10 C.F.R. Part 40 Appendix A, Section 2.7.3 of NUREG-1569, or Regulatory Guide 4.14.

2. Parties' Positions

In Contention 2,[243] the Oglala Sioux Tribe alleges that:

> the FSEIS violates 10 C.F.R. Part 40, Appendix A, Criterion 7, 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act, and implementing regulations . . . in that it fails to provide an adequate baseline groundwater characterization or demonstrate that ground water samples were collected in a scientifically defensible manner, using proper sample methodologies.[244]

Further, the Oglala Sioux Tribe contends that "while the FSEIS contains data from 2007–2009, the background water quality for use in the actual regulatory process [e.g., Appendix A, Criteria 5B(5)] for the facility will be established [at] a future date, outside of the NEPA process, and outside of the public's review."[245] The Oglala Sioux Tribe contends that this approach is a prima facie violation of the NEPA process.[246]

As support, the Oglala Sioux Tribe cites 10 C.F.R. Part 40, Appendix A, Criterion 7 which states that "regulations require the applicant to provide 'complete baseline data on a milling site and its environs.'"[247] Further, the Oglala Sioux Tribe claims that NRC Regulatory Guide 4.14 is outdated and was not designed for ISL mining, and the NRC Staff's reliance on

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[242] Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3), CLI-15-6, 80 NRC __, __ (slip op. at 22) (Mar. 9, 2015) (finding Boards should accord "special weight" to Staff guidance).

[243] LBP-14-5, 79 NRC at 401.

[244] Oglala Sioux Tribe Post-Hearing Initial Brief at 38.

[245] Id.

[246] Oglala Sioux Tribe Post-Hearing Initial Brief at 39.

[247] Oglala Sioux Tribe Statement of Position at 21.

this guidance "to designate the boundary for which groundwater monitoring will be required'" is improper.[248] The Oglala Sioux Tribe also notes the lack of analysis of past mining impacts in the project area.[249]

The NRC Staff and Powertech both acknowledge that Powertech will collect the additional background groundwater quality information necessary to satisfy Appendix A, Criterion 5B(5) post-license issuance but pre-operation. In fact, Powertech asserts that installing the wells needed to establish Criterion 5 background concentrations prior to license issuance would be a violation of the "Construction Rule" and therefore automatic grounds for denial of the license.[250]

The NRC Staff defends the baseline groundwater quality analysis performed in the FSEIS as adequate under NEPA.[251] The NRC Staff first offers the explanation that there is a distinction between the groundwater quality terms "baseline" and "background" as used in the FSEIS.[252] "Baseline" data is submitted to the NRC under 10 C.F.R. § 51.45(b), and describes "the results of Powertech's preoperational or baseline groundwater quality sampling program provid[ing] data on project-wide groundwater conditions."[253] "Background" data carries a

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[248] Id.

[249] Oglala Sioux Tribe Post-Hearing Initial Brief at 39.

[250] Powertech (USA), Inc. Initial Statement of Position (June 20, 2014) at 39 [hereinafter Powertech Statement of Position]. The "Construction Rule" in 10 C.F.R. § 40.32(e) prohibits commencement of construction prior to a NEPA determination.

[251] NRC Staff's Initial Statement of Position at (June 20, 2014) at 25 [hereinafter NRC Staff Statement of Position].

[252] NRC Staff's Initial Testimony, Ex. NRC-001 at 30–31. We note, however, that neither "baseline" nor "background" is explicitly defined in the FSEIS. This contention might have been rendered moot, or at the very least more easily resolved, had the NRC Staff documents explicitly and clearly defined these important words.

[253] Id. at 30. Baseline data is later "used to evaluate future impacts on facility operations or accidental or unplanned releases." Id. See also NRC Staff Statement of Position at 25.

separate meaning, and describes the groundwater quality in certain designated wells to "establish standards for aquifer restoration after uranium recovery is complete" but not to characterize the groundwater quality in the ISL environment generally.[254] Background values must be established before beginning ISL uranium production "in accordance with Criterion 5B(5) in Appendix A."[255] Although baseline data must be submitted to the NRC in an application, the NRC Staff argues that background data need not be submitted as part of the initial application.[256] The NRC Staff views obtaining background data as a monitoring requirement, and thus argues that "the EIS is sufficient as long as it adequately describes the process by which the monitoring data will be obtained."[257]

The NRC Staff also rejects any claims that necessary information related to past activities was excluded from the NEPA review process. For example, the NRC Staff argues that it was unnecessary to account for past mining activity in its baseline groundwater quality data.[258] The NRC Staff asserts that the purpose of baseline data is to describe the existing environmental conditions, including any impacts past mining had on the Dewey-Burdock site.[259] The NRC Staff further asserts that the impact of past mining on the site (i.e., relative to "pre-baseline" conditions) is considered in the "cumulative impacts" section of the FSEIS, and is outside the scope of Contention 2.[260] The NRC Staff also defends some groundwater chemical

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[254] NRC Staff's Initial Testimony, Ex. NRC-001 at 31; see also NRC Staff Statement of Position 26.

[255] NRC Staff's Initial Testimony, Ex. NRC-001 at 31.

[256] NRC Staff Statement of Position at 26.

[257] Id. at 26. The NRC Staff further asserts that it "describes this process in Condition 11.3 of Powertech's license, thereby complying with NEPA." Id.

[258] Id. at 27.

[259] Id. at 27.

[260] Id. at 27–28.

constituents lacking a reference in the FSEIS.[261] The NRC Staff states that all relevant environmental information was considered, as required by NEPA, but that NEPA does not also "require the Staff to repeat all this information in the FSEIS."[262] The NRC Staff maintains that references to Powertech documents, which do analyze the chemical constituents not mentioned in the FSEIS, satisfies the "obligation to disclose relevant information."[263] Finally, the NRC Staff defends the methods used by Powertech to collect data as "consistent with Staff guidance" in Section 2.7.3 of NUREG-1569 and Regulatory Guide 4.14.[264] The NRC Staff believes the guidance describes data collection methods which will sufficiently describe the environment and evaluate groundwater quality.[265]

Powertech concurs with the NRC Staff's interpretation of the required "baseline" and "background" data and cites the process outlined in NUREG-1569:

> Reviewers should keep in mind that the development and initial licensing of an in situ leach facility is not based on comprehensive information. This is because in situ leach facilities obtain enough information <u>to generally locate the ore body and understand the natural systems involved</u>. More detailed information is developed as each area is brought into production. . . . [R]eviewers should ensure that sufficient information is presented to reach only the conclusion necessary for initial licensing.[266]

Powertech also defends the use of NRC guidance documents in setting the specific groundwater sampling program.[267]

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[261] Id. at 29.

[262] Id. at 29.

[263] Id. at 29.

[264] Id. at 31.

[265] Id. at 32.

[266] Powertech Statement of Position at 39, quoting NUREG-1569, Ex. NRC-013 at 40 (emphasis added by Powertech).

[267] Id. at 42–43.

3. Summary of Key Evidence

In addition to the legal arguments in support of Contention 2, the Oglala Sioux Tribe also relies on the testimony of Robert Moran.[268] Dr. Moran raised technical concerns relative to this contention due to 1) the lack of analysis of impacts of past mining activities on baseline groundwater quality; 2) the lack of detailed existing water quality information necessary to develop reliable and scientifically defensible baseline analysis; and 3) analytical results that rely solely on data provided by the project proponent to the exclusion of data available from external agencies.[269] Much of Dr. Moran's written testimony was relatively general, and Dr. Moran acknowledged that his experience with ISL facility licensing was limited.[270] Questioned at the evidentiary hearing on what specific detailed water quality information he alleged was missing, Dr. Moran mentioned data for the elements strontium and lithium.[271]

Regarding the lack of analysis of the impacts of past mining activities, NRC Staff witnesses James Prikryl[272] and Thomas Lancaster[273] testified regarding the NRC Staff's interpretation of preoperational baseline groundwater quality, which is assessed "so that

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[268] Ex. OST-001, Opening Written Testimony of Dr. Robert E. Moran, Curriculum Vitae (June 20, 2014) at 29 [hereinafter Moran Testimony, Ex. OST-001].

Despite the Oglala Sioux Tribe and Consolidated Intervenors' mention of Dr. Richard Abitz in their post-hearing briefs, we were unable to locate anything in the record from Dr. Abitz addressing the proposed Dewey-Burdock ISL facility. A letter from Dr. Abitz appears to address a site characterization plan for a proposed Powertech facility in Weld, County, CO. Ex. INT-002, Geochemical Consulting Services LLC Comments on Powertech's Proposed Baseline Plan (Oct. 31, 2009).

[269] Several items, like the "chemical compositions and volumes of all solid and liquid wastes" listed in support of Contention 2 of Dr. Moran's opening testimony are outside the scope of the admitted contention. Moran Testimony, Ex. OST-001 at 17.

[270] Tr. at 1,000–01.

[271] Tr. at 1,007–08.

[272] Ex. NRC-006, James Prikryl Statement of Professional Qualifications.

[273] Ex. NRC-005-R, Thomas R. Lancaster Revised Statement of Professional Qualifications.

corrective actions can be taken if adverse water quality conditions resulting from the proposed action are detected."[274] Witnesses Mr. Prikryl and Mr. Lancaster further testified that "[u]nder regulations issued by the Council on Environmental Quality . . . the environmental impacts that result from past actions are assessed as 'cumulative effects'" [and that] the NRC Staff "appropriately discussed this information in the context of cumulative impacts, rather than in the context of preoperational water quality."[275]

Further, Powertech witness Errol Lawrence[276] testified that a "comparison between historical and recent data sets provided in Sec. 2.7.3.2.2 of the revised [Technical Report] (Exhibit APP-015-B at 2-217 through 2-230b) shows very little variation in groundwater quality between the data sets" and that "table 2.7-40 (Exhibit APP-015-B at 2-223) provides a statistical comparison between the historical and recent data sets and shows that the concentrations of alkalinity, specific conductance, pH and total dissolved solids (TDS) are very similar" and "do not provide any indication of widespread groundwater quality degradation within or near the project area as a result of historical mining and exploration activities."[277]

In regards to a lack of detailed existing water quality information necessary to develop a reliable and scientifically defensible baseline analysis, NRC Staff witnesses Mr. Prikryl and Mr. Lancaster further testified that Powertech followed NUREG-1569, used sampling methods that were consistent with standard industry practice, and analyzed chemical constituents and

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[274] NRC Staff's Initial Testimony, Ex. NRC-001 at 19.

[275] Id. at 20.

[276] Ex. APP-038, Errol Lawrence Curriculum Vitae.

[277] Ex. APP-066, Answering Testimony of Errol Lawrence at 3 (July 15, 2014) [hereinafter Lawrence Answering Testimony, Ex. APP-066].

parameters using appropriate Environmental Protection Agency (EPA) and American Society for Testing and Materials (ASTM) standard methods."[278]

NRC Staff witnesses Mr. Prikryl and Mr. Lancaster also testified that the FSEIS data on quarterly groundwater samples from wells located within 2 kilometers (1.2 miles) of the site show that the preoperational baseline water quality meets Criterion 7 in 10 C.F.R. Part 40 Appendix A, and is adequate to assess how the Dewey-Burdock Project may affect groundwater quality.[279]

The NRC Staff witnesses Mr. Prikryl and Mr. Lancaster also testified that the approach of sampling within 2 kilometers of the site is consistent with NRC Regulatory Guide 4.14,[280] which the NRC Staff developed because conventional mill 'tailings areas' have the potential to be a source of contamination to groundwater. Mr. Prikryl and Mr. Lancaster further testified that the use of the two kilometer guideline was validated in NUREG/CR-6705, 'Historical Case Analysis of Uranium Plume Attenuation.'[281] This report concluded that the average radiological plume dispersion at Uranium Mill Tailings Remedial Action sites is less than 2 kilometers.[282] However, the NRC Staff apparently did not consider that NUREG/CR-6705 specifically excludes ISL facilities from this 2 kilometer rule of thumb ("uranium plumes . . . [e]xceed roughly 2 km in length only in special cases e.g. where in situ leaching has been carried out").[283]

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[278] NRC Staff's Rebuttal Testimony, Ex. NRC-151 at 14–15.

[279] NRC Staff's Initial Testimony, Ex. NRC-001 at 30–31.

[280] Regulatory Guide 4.14, Ex. NRC-074.

[281] Ex. NRC-076, Division of Regulatory Applications and Analysis, Office of Nuclear Regulatory Research, Historical Case Analysis of Uranium Plume Attenuation, NUREG/CR-6705 (July 20, 2014) [hereinafter NUREG/CR-6705, Ex. NRC-076].

[282] NRC Staff's Initial Testimony, Ex. NRC-001 at 29.

[283] NUREG/CR-6705, Ex. NRC-076 at 4.

However, NRC Staff witnesses Mr. Prikryl and Mr. Lancaster also testified that "the radius of 2 km [1.2 mi] from an ISR wellfield has been shown to be sufficient based on historical and current monitoring data from NRC licensed sites. There are no reported instances of contamination of any monitored private wells within or beyond 2 km of an ISR wellfield at any sites historically or currently licensed by the NRC (Ex. NRC-075)."[284]

4. Board Ruling

While we agree that the language of Appendix A regarding the relationship between Criterion 5 and 7 is ambiguous and that the terms "baseline" and "background" are not explicitly defined, we are bound by precedent. In Hydro Resources, Inc. (P.O. Box 777, Crownpoint, New Mexico 87313), CLI-06-1, 63 NRC 1, 6 (2006) (citation omitted), the Commission affirmed that:

> waiting until after licensing (although before mining operations begin) to establish definitively the groundwater quality baselines and upper control limits is, as the Presiding Officer stated, 'consistent with industry practice and NRC methodology,' given the sequential development of in situ leach well fields. The site-specific data to confirm proper baseline quality values, and confirm whether existing rock units provide adequate confinement cannot be collected until an in situ leach well field has been installed.

Further, the Commission noted that "in this proceeding the Intervenors also have had the opportunity to litigate – and did litigate – whether the performance-based licensing complies with the Atomic Energy Act and National Environmental Policy Act (NEPA), and whether it accords undue discretion to the Licensee."[285]

More recently, the Licensing Board in Strata Energy, Inc. (Ross In Situ Recovery Uranium Project), LBP-15-3, 80 NRC __, __ (slip op. at 26) (Jan. 23, 2015) rejected a very similar contention by noting:

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[284] NRC Staff's Initial Testimony, Ex. NRC-001 at 29–30. We were unable to find a specific mention of a 2 kilometer radius in Exhibit NRC-075, Data on Groundwater Impacts at the Existing ISR Facilities.

[285] Hydro Res., CLI-06-1, 63 NRC at 5.

> in light of the Commission's Hydro Resources decision and the language of Appendix A, Criterion 7A, we are unable to discern a legal basis for concluding that the Appendix A, Criterion 7 pre-licensing monitoring program for the purpose of establishing existing characterization values for certain site groundwater constituents must be co-extensive with the Criterion 7A pre-operational monitoring, license condition-based program intended to provide the information needed for setting Appendix A, Criterion 5B groundwater protection standards and UCLs.

In this case, the Intervenors did not challenge any specific license conditions, only that the use of license conditions to establish background concentrations after licensing violated NEPA. However, based on the previous review in Hydro Resources, and recognizing the similar interpretation in Strata, we conclude that collection of groundwater quality data in a staggered manner is not in and of itself a violation of NEPA.[286]

Regarding the specific technical concerns of Dr. Moran, we find the testimony offered by NRC Staff witnesses Mr. Prikryl and Mr. Lancaster and Powertech witness Mr. Lawrence to be more detailed and more persuasive.

Finally, we turn to the Oglala Sioux Tribe's exhibits regarding an EPA Preliminary Assessment which are potentially relevant to Contention 2.[287]

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[286] Like our colleagues in Strata, we are also less convinced that anything in the "Construction Rule" would prohibit collection of any needed pre-license data.

[287] Ex. OST-025, Darrow/Freezeout/Triangle Uranium Mine, EPA, Preliminary Assessment Announcement (Sept. 2014) is an announcement that EPA Region 8 has completed a Preliminary Assessment of the abandoned uranium mines located within and adjacent to the proposed Dewey-Burdock ISL Project in response to a citizen's petition under the Comprehensive Environmental Response, Compensation, and Liability Act. According to the announcement, a Preliminary Assessment is "designed to distinguish, based on limited data, between sites that pose little or no threat to human health and the environment and sites that may pose a threat and require further investigation." Id. at 1. Ex. OST-026, Seagull Environmental Technologies, Inc., Preliminary Assessment Report Regarding the Darrow/Freezeout/Triangle Uranium Mine Site Near Edgemont, South Dakota at 35 (Sept. 24, 2014) [hereinafter Preliminary Assessment, Ex. OST-026] is the Preliminary Assessment report itself [hereinafter Preliminary Assessment]. Although the Oglala Sioux Tribe argued that Ex. OST-025, Darrow/Freezeout/Triangle Uranium Mine, EPA, Preliminary Assessment Announcement (Sept. 2014) and the Preliminary Assessment, Ex. OST-026 had relevance to Contentions 2, 3, 4, and 6, we saw little if anything in those exhibits relating to the ability of the site to contain ISL fluids (Contention 3), groundwater quantity (Contention 4), or mitigation measures (Contention 6).

On first inspection, the Preliminary Assessment's conclusion that the "lack of groundwater sampling data from near and upgradient of the Site limited availability of reliable background concentrations" appears dispositive of whether the FSEIS included the necessary information for adequate determination of baseline groundwater quality.[288] However, in considering the different objectives of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) versus NRC and NEPA regulations, we conclude that background/baseline is being used in two fundamentally different contexts. Under CERCLA, determining the un-impacted natural (i.e., upgradient) background is important in assessing the impact of past mining activities on the current state of the environment at the site. Under NRC and NEPA regulations, the site's current baseline is important in assessing the potential future impacts (both cumulative and incremental) of the proposed ISL facility on the current state of the environment at the site. Accordingly, we find that the identification and documentation of the historic mining operations as documented in the FSEIS is adequate to assess the incremental and cumulative impacts of the proposed project.

As a result, we find for Powertech and the NRC Staff on Contention 2.

C. Contention 3: The FSEIS Fails to Include Adequate Hydrogeological Information to Demonstrate the Ability to Contain Fluid Migration and Assess Potential Impacts to Groundwater

1. Legal Standards

In this Partial Initial Decision the Board reviews the NRC Staff's FSEIS under the NEPA hard look standard.[289]

2. Parties' Positions

In Contention 3[290] the Oglala Sioux Tribe argues that the Dewey-Burdock site contains numerous geological and man-made features such as inter-fingering sediments, unplugged

[288] Preliminary Assessment, Ex. OST-026 at 35.

[289] This standard is fully explained above in Part II(B) of this Partial Initial Decision.

bore holes, breccia pipes/collapse structures and faults and fractures that will permit unwanted groundwater migration.[291] Given these features, the Oglala Sioux Tribe and Consolidated Intervenors also argue that deferring collection of necessary data to confirm the ability of the site to contain production fluids violates NEPA.[292]

The NRC Staff argues that the evidence does not indicate the presence of faults, fractures, breccia pipes, and related features at the Dewey-Burdock site.[293] While the NRC Staff acknowledges that there are a number of improperly plugged or abandoned boreholes at the Dewey-Burdock site, they also argue that as a condition of its license Powertech must address these boreholes before beginning operations. Finally, the NRC Staff argues that although Powertech's license includes conditions requiring that it submit additional data on hydrogeological confinement before beginning operations in any well field, these conditions are consistent with NEPA, NRC regulations, and NRC guidance.[294]

Similarly, Powertech presented testimony and exhibits in support of its position that the ore-bearing formations at the Dewey-Burdock site are sufficiently hydrogeologically isolated to allow ISL operations to be conducted safely.

3. Summary of Key Evidence

The technical issue at the heart of Contention 3 is Intervenors' assertion that Powertech's conceptual model, which was adopted by the NRC Staff in the FSEIS, fails to account for natural and man-made hydraulic conductivity that makes it unlikely process waters

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[290] LBP-14-5, 79 NRC at 401.

[291] Oglala Sioux Tribe Post-Hearing Initial Brief at 45-46.

[292] Id.

[293] NRC Staff's Post-Hearing Reply Brief at 26.

[294] Id.

can be contained within the mined formations.[295] Potential groundwater flow pathways enumerated by the Oglala Sioux Tribe's witness Robert Moran include (a) inter-fingering fluvial sediments, (b) fractures and faults, (c) breccia pipes and collapse structures, and (d) historical boreholes.[296] Consolidated Intervenors rely upon the testimony of Hannan LaGarry.[297] Powertech witnesses Hal Demuth,[298] Errol Lawrence, Frank Lichnovsky[299] and NRC Staff witnesses James Prikryl, Thomas Lancaster, Paul Bertetti[300] and Ronald McGinnis[301] provided testimony in support of hydrological confinement.

Because of the multiple potential fluid migration pathways raised by the Intervenors, we divide our analysis into general issues relating to fluid confinement (including inter-fingering sediments) and specific technical issues associated with faults, fractures and joints, breccia pipes, and boreholes. We address in turn each potential hydrological pathway, the evidence in the record as to each potential pathway, and conclude with our decision as to the sufficiency of the analysis of the potential for fluid migration.

a. General Issues

Intervenors assert that the physical nature of fluvial sandstones that host roll-front uranium deposits like those at the Dewey-Burdock site makes confinement nearly impossible because these formations typically interfinger with finer-grained silts and shales, allowing

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[295] Oglala Sioux Tribe Petition, Ex. OST-010 at 22.

[296] Moran Testimony, Ex. OST-001 at 20.

[297] Ex. INT-004, Hannan E. LaGarry Curriculum Vitae.

[298] Ex. APP-014, Hal P. Demuth Curriculum Vitae.

[299] Ex. APP-073, Frank Lichnovsky Curriculum Vitae.

[300] Ex. NRC-159, F. Paul Bertetti Curriculum Vitae.

[301] Ex. NRC-160, Ronald N. McGinnis, Jr. Curriculum Vitae.

groundwater to flow between the different stratigraphic horizons.[302] Intervenors further maintain that a series of pumping tests conducted in 1979 and 2008 demonstrate that groundwater is not confined in the ore zone and that there is leakage between the various formations bounding the ore bodies. Dr. Moran, citing an analysis of the 1979 tests in the Dewey-Burdock area,[303] notes that the authors of that study concluded the Fuson Shale is inherently leaky owing to "the primary pore space and naturally occurring joints and fractures" as well as unplugged boreholes.[304] Dr. Moran rejects Powertech's assertion both that natural geologic features such as faults and breccia pipes play no role in transmitting water through the Fuson Shale and that the drawdown observed in the Fall River Formation during recent pumping tests was entirely attributable to improperly abandoned boreholes.[305] Dr. Moran also testified that the 2012 numerical models prepared by Petrotek (a consultant for Powertech) for the Dewey-Burdock site are unreliable because they are based on several improper simplifications and assumptions, the most significant of which is that the Fuson Shale is an effective aquitard.[306]

Dr. LaGarry contends (a) that groundwater in the Fall River and Chilson aquifers exists under artesian conditions, which he asserts will increase the likelihood that production waters could migrate vertically into adjacent aquifers or flow onto the surface, and (b) horizontal

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[302] Oglala Sioux Tribe Petition, Ex. OST-010 at 23.

[303] Ex. OST-006, Tennessee Valley Authority Analysis of Aquifer Tests Conducted at the Proposed Burdock Uranium Mine Site Burdock, South Dakota (Sept. 2012) [hereinafter TVA Aquifer Analysis, Ex. OST-006].

[304] Moran Testimony, Ex. OST-001 at 19 (emphasis omitted).

[305] Id. at 24–25.

[306] Id. at 23–26.

groundwater velocities of up to 35.5 meters per day for groundwater within the uranium-bearing strata could result in the rapid migration of contaminants outside the controlled area.[307]

Powertech and the NRC Staff witnesses maintain that the ore-bearing formations at the Dewey-Burdock site are sufficiently hydrogeologically isolated to allow ISL operations to be conducted safely. Powertech witness Mr. Demuth testified that the ore-bearing formations are confined above by the Graneros Group and below by thick shale horizons in the Morrison Formation. Mr. Demuth maintains that the 20 to 80 foot thick Fuson Shale separating the two ore-bearing units in the Inyan Kara Group is an effective barrier to fluid migration.[308] Powertech witness Mr. Lawrence testified that the lower permeability siltstones and mudstones that typically interfinger with sandstones in these deposits actually help control water flow and contribute to the hydrologic isolation of the ore-bearing sands.[309] Powertech witness Mr. Lichnovsky testified that analysis of geophysical logs for more than 3,000 boreholes indicates the Fuson Shale is continuous and no less than 20 feet thick throughout the project area.[310]

Powertech witness Mr. Lawrence reviewed the 1979 aquifer tests cited by Dr. Moran and concluded that the leaks it found were most likely caused by open boreholes completed in both the Chilson and Fall River aquifers.[311] Mr. Lawrence testified that the 2008 pumping test focused in the Chilson sandstones caused a ninety-one foot drawdown in that aquifer but produced only a one foot drawdown response in the overlying Fall River aquifer, which he

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[307] Ex. INT-020A, Expert Opinion Regarding the Proposed Dewey-Burdock Project ISL Mine near Edgemont, South Dakota at 3–4 (Aug. 19, 2014).

[308] Ex. APP-013, Written Testimony of Hal Demuth at 14 (June 20, 2014) [hereinafter Demuth Testimony, Ex. APP-013].

[309] Ex. APP-037, Written Testimony of Errol Lawrence at 20 (June 20, 2014) [hereinafter Lawrence Testimony, Ex. APP-037].

[310] Ex. APP-072, Answering Testimony Regarding NRC Staff's Analysis of TVA Well Log Data (Oct. 24, 2014) at 3.

[311] Lawrence Testimony, Ex. APP-037 at 35.

maintains is consistent with leakage through unplugged boreholes.[312] Powertech witness Mr. Demuth testified that the Fuson Shale is an effective hydraulic barrier in the absence of open boreholes. As support for this conclusion, he testified that the potentiometric surfaces (water level elevations) in paired wells completed in the Fall River and Chilson aquifers differ by as much as 40 feet whereas if the two aquifers were hydraulically connected these surfaces would be at approximately the same elevation.[313] Mr. Demuth also cited a U. S. Geological Survey study of the quality of groundwater in different aquifers in and around the Dewey-Burdock site[314] that he maintained further supports the conclusion that no significant transfer of water has occurred across the confining units between aquifers.[315] While admitting that uncertainties remain whether the Fuson Shale can function as a confining horizon throughout the entire Dewey-Burdock project area, Mr. Demuth emphasized that in the Burdock area, where production is located in the Chilson member, license conditions will require Powertech to place monitoring wells in the overlying Fall River aquifer to identify any lack of confinement.[316]

Regarding the question of artesian flow in the ore-bearing aquifers, both Powertech and the NRC Staff acknowledge that the Fall River and Chilson members host artesian aquifers in the project area. However, Powertech contends that this condition does not signify that either aquifer is in communication with overlying or underlying aquifers, but instead indicates they are hydraulically confined.[317] The NRC Staff testified that artesian flow concerns were addressed

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[312] Id. at 35.

[313] Demuth Testimony, Ex. APP-013 at 15.

[314] Ex. APP-026, Raymond H. Johnson, Presentation to EPA, USGS Research at the Proposed Dewey-Burdock Uranium In-Situ Recovery Mine, Edgemont, South Dakota (Feb. 22, 2012).

[315] Demuth Testimony, Ex. APP-013 at 16.

[316] Id. at 29.

[317] Ex. APP-074, Answering Testimony Regarding Dr. LaGarry's Analysis of Borehole Log Data (Dec. 4, 2014) at 7 [hereinafter Borehole Log Data Answering Testimony, Ex. APP-074].

by including a license condition whereby Powertech must monitor twice monthly for excursions at the surface and thereby "limit the environmental impact of any excursion associated with artesian flow."[318] Dr. LaGarry asserted that horizontal groundwater velocity in the ore-zone aquifer could be as much as 35.5 meters per day.[319] Powertech witness Mr. Lawrence stated this velocity was calculated incorrectly, and that based on his "experience working with over a dozen permitted ISR facilities, groundwater flow velocities on the order of 10 feet per year are typical for ISR facilities."[320] Further, he cited a U.S. Geological Survey estimate of the horizontal flow velocity in the Chilson aquifer to be 4.34 meters per year, which he testified is of similar magnitude to Powertech's estimate and consistent with typical natural flow velocities at ISL facilities.[321]

b. Faults, Fractures and Joints

Intervenors assert it is unlikely that production fluids can be contained within the ore zone aquifers because faults and joints in the project area create vertical permeability pathways between aquifers.[322] In response to Powertech's claims that there are no identified faults in the Dewey-Burdock project area,[323] Consolidated Intervenors' witness Dr. LaGarry explained that the Dewey Fault, which is only one mile northwest of the Dewey-Burdock property, is only the most prominent expression of a structural zone that contains numerous ancillary faults and

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[318] Ex. NRC-175, NRC Staff's Answering Testimony at 6–7 (Dec. 9, 2014) [hereinafter NRC Staff's Answering Testimony, Ex. NRC-175].

[319] Ex. INT-013, Opening Written Testimony of Dr. Hannon [sic] LaGarry at 6 (June 20, 2014).

[320] Lawrence Answering Testimony, Ex. APP-066 at 11.

[321] Ex. APP-041, Raymond H. Johnson, Presentation to EPA, Using Groundwater and Solid-Phase Geochemistry for Reactive Transport Modeling at the Proposed Dewey-Burdock Uranium In-Situ Recovery Site, Edgemont, South Dakota at 36 (Apr. 11, 2012).

[322] Oglala Sioux Tribe Petition, Ex. OST-010 at 23.

[323] Ex. APP-015-B, Powertech, Dewey-Burdock Project Application for NRC Uranium Recovery License, Technical Report § 2.6.2.1 (Rev. Dec. 2013).

joints that are likely to extend onto the site.[324] Dr. LaGarry further noted[325] that the Tennessee Valley Authority's (TVA) 1979 Draft Environmental Statement for a property that overlaps part of the present Dewey-Burdock site specifically mentions faults and fractures associated with the Dewey Fault,[326] and cites twelve examples in which faults are mentioned or otherwise indicated in the written notes on drillers' logs prepared during TVA's evaluation of the Dewey-Burdock deposits in the late 1970's.[327] Dr. Moran asserted that satellite imagery of the Dewey-Burdock area shows that the site is intersected by numerous faults and fractures.[328] In response to Board questions about whether geophysical well logs would reveal the presence of faults, Dr. LaGarry explained that small faults with only a few meters of offset are commonly overlooked but could be detected by careful examination of electrical resistivity logs if the spacing of the boreholes were close enough.[329] Finally, Dr. LaGarry asserted that even if pumping tests show that faults and fractures do not presently act as conduits for groundwater, the use of oxidizing lixiviant during mining could dissolve minerals that had been deposited along fault surfaces and "uncork" these pathways between aquifers.[330]

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[324] Tr. at 1,065.

[325] Tr. at 1,073.

[326] Ex. OST-009, Tennessee Valley Authority Draft Environmental Statement, Edgemont Uranium Mine at 60 (Aug. 30, 1978) [hereinafter TVA Draft Environmental Statement, Ex. OST-009].

[327] Ex. OST-029, Written Supplemental Testimony of Dr. Hannan LaGarry at 2 (Nov. 21, 2014) a[hereinafter LaGarry Supplemental Testimony, Ex. OST-029].

[328] Moran Testimony, Ex. OST-001 at 21; Ex. OST-005, Robert E. Moran, Powerpoint Presentation at 29 (Aug. 19, 2014) [hereinafter Moran Presentation, Ex. OST-005]; Tr. at 1,078.

[329] Tr. at 1,075.

[330] Tr. at 1,084.

Powertech and NRC Staff witnesses maintain that no faults have been identified within the Dewey-Burdock permit area[331] but that, if undetected faults or joints are present on the site, they would not significantly affect the hydrogeology.[332] Many of these witnesses relied heavily on the geologic cross sections or "fence diagrams" developed from electrical resistivity logs of boreholes (e-logs) to demonstrate that faults have not caused significant offsets in the distinctive stratigraphic horizons.[333] In particular, the NRC Staff reviewed e-logs from closely spaced drill holes that transect the lineaments that Dr. Moran interpreted as faults.[334] Based on fence diagrams constructed using these logs,[335] the NRC Staff concluded that the subsurface strata do not show evidence of faulting.[336] In response to Dr. LaGarry's analysis of notes on drillers' logs purporting to contain twelve references to faults present on the project site, witnesses for both Powertech and NRC Staff asserted that whereas geophysical well logs provide objective data that can be examined and interpreted by experts, drillers' comments recorded at the time the boreholes were constructed are subjective observations by persons whose qualifications are unknown.[337] Powertech further asserted that references to "offsets" in

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[331] FSEIS, Ex. NRC-008-A-1 § 3.4.3.

[332] Lawrence Answering Testimony, Ex. APP-066 at 6.

[333] Lawrence Testimony, Ex. APP-037 at 20; NRC Staff's Rebuttal Testimony, Ex. NRC-151 at 20; Tr. at 1,107.

[334] Moran Presentation, Ex. OST-005 at 29.

[335] Ex. NRC-168, Transect 1 – Fence Diagram of Drill Hole Resistivity Logs (Oct. 14, 2014) [hereinafter Transect 1, Ex. NRC-168]; Ex. NRC-169, Transect 2 – Fence Diagram of Drill Hole Resistivity Logs (Oct. 14, 2014) [hereinafter Transect 2, Ex. NRC-169].

[336] Ex. NRC-158, Supplemental Testimony Regarding NRC Staff's Analysis of TVA Well Log Data (Oct. 14, 2014) at 12 [hereinafter NRC Staff Well Log Data Supplemental Testimony, Ex. NRC-158].

[337] Borehole Log Data Answering Testimony, Ex. APP-074 at 3; NRC Staff's Answering Testimony, Ex. NRC-175 at 14.

drillers' remarks on two of Intervenors' exhibits[338] were incorrectly interpreted by Dr. LaGarry as referring to faults, whereas the term used in these drillers' notes refers to the location of the drill hole.[339] In addition, Powertech investigated the site of historical drill hole IHK2, where drillers' remarks indicated the presence of an east-west trending fault zone, by conducting a field check of the site and by constructing two cross sections based on e-logs of closely spaced drill holes. In Powertech's estimation, neither indicated the presence of a fault.[340]

c. Breccia Pipes

Intervenors contend that the presence of natural breccia pipe formations in the Dewey-Burdock area create additional vertical permeability pathways between aquifers.[341] Dr. Moran specifically cited the 1974 geological report by Gott et al.[342] as support for his assertion that breccia pipes and collapse structures occur near the Dewey-Burdock project area.[343] Dr. Moran further stated that circular features visible on satellite imagery of the project site "likely represent solution/collapse structures," and he indicated the outline of one of these features on a satellite image.[344] Additional testimony by Dr. LaGarry[345] maintained that drillers' notes from the 1970's

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[338] Ex. OST-034, DS392 Driller Remarks; Ex. OST-036, IHM32 Driller Remarks.

[339] Borehole Log Data Answering Testimony, Ex. APP-074 at 13–14.

[340] Id. at 14.

[341] Moran Testimony, Ex. OST-001 at 21–22.

[342] Ex. NRC-081, Garland B. Gott, Don E. Wolcott & C. Golbert Bowles, Stratigraphy of the Inyan Kara Group and Localization of Uranium Deposits, Southern Black Hills, South Dakota and Wyoming, Geological Survey Professional Paper 763 (1974).

[343] Moran Testimony, Ex. OST-001 at 22.

[344] Id. at 22; Moran Presentation, Ex. OST-005 at 13.

[345] LaGarry Supplemental Testimony, Ex. OST-029 at 3.

TVA project document a sinkhole on the Dewey-Burdock site associated with two closely spaced faults.[346]

Powertech witness Mr. Lawrence responded by noting that concerns about collapse structures on the Dewey-Burdock site were specifically addressed by a numerical model that simulated the potentiometric groundwater surface that would result from discharge of groundwater into the Chilson Member via a hypothetical breccia pipe.[347] Referring to the results of the numerical model,[348] he stated that the effect on the aquifer surface would be readily discernible with the current monitor well network but that no such recharge mound has been detected. Regarding the purported collapse feature identified by Dr. Moran on satellite images, Powertech geologist Mr. Lichnovsky testified that he field checked the specific site and determined that the feature was an open depression caused by erosion and was not a sink hole.[349] In addition, the NRC Staff conducted an analysis of e-logs for five drill holes in the vicinity of the circular feature identified by Dr. Moran and reported that neither the land surface profile nor the stratigraphic horizons showed evidence of a sinkhole-like structure or any discontinuity that might result from brecciation.[350] Finally, in response to Dr. LaGarry's assertion that a sketch drawn on the back of a driller's lithologic log depicts a sinkhole and two parallel faults, Powertech witness Mr. Lichnovsky noted that the sketch is unlabeled and that the hash

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[346] Ex. OST-033, DS178 Driller Remarks.

[347] Lawrence Answering Testimony, Ex. APP-066 at 6.

[348] Ex. APP-025, Petrotek, Numerical Modeling of Hydrogeologic Conditions, Dewey-Burdock Project South Dakota at 26 (Feb. 2012).

[349] Tr. at 1,126.

[350] NRC Staff Well Log Data Supplemental Testimony, Ex. NRC-158 at 17.

marks on the circular feature point outward, indicating a dome, rather than inward, which would be the usual way to indicate a circular depression.[351]

d. Historical Boreholes

Intervenors first note that the NRC Staff and Powertech acknowledge that unplugged or improperly abandoned historical boreholes occur on the Dewey-Burdock project site. Intervenors then contend that leaky boreholes can provide pathways for waters to mix between the mineralized zones and the surrounding aquifers.[352] Based on a review of drillers' comments on logs of historical TVA boreholes, Dr. LaGarry cited specific examples of old boreholes that were uncased, displayed artesian water, or had been plugged with wood fence posts or broken steel, asserting that these examples indicate open drill holes that could potentially serve as fluid pathways.[353] Dr. Moran disputed the NRC Staff's and Powertech's assertion that leaking boreholes would necessarily produce wet areas detectable by satellite color infrared imagery (CIR). Dr. Moran also noted that old boreholes can connect water-bearing units without producing flowing water.[354] In addition, Intervenors objected to the NRC Staff's acceptance of Powertech's plan to locate and plug historical boreholes at some later date. Instead, Intervenors maintained that the FSEIS must discuss how old boreholes will be identified and must explain the methodology that will be used to assess the effectiveness of plugging and abandonment.[355]

Powertech witness Mr. Lawrence responded that historical drill holes that penetrate to uranium-bearing horizons in the Inyan Kara Group would have to pass through at least 500 feet

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[351] Borehole Log Data Answering Testimony, Ex. APP-074 at 12.

[352] Moran Testimony, Ex. OST-001 at 19.

[353] LaGarry Supplemental Testimony, Ex. OST-029 at 3.

[354] Moran Testimony, Ex. OST-001 at 20.

[355] Oglala Sioux Tribe Statement of Position at 33.

of bentonitic shale in the overlying Graneros Group and that collapse and swelling of these shales would self-seal the holes.[356] Mr. Lawrence asserted that this self-sealing process occurs so rapidly in uncased holes that it is often difficult to perform geophysical logging immediately after drilling.[357] As to whether large numbers of historical boreholes remain unplugged or were improperly abandoned, Mr. Lawrence responded that TVA and Powertech exploration holes were plugged with bentonite or cement grout in accordance with South Dakota state requirements that were in effect at the time these holes were drilled.[358] In response to Dr. LaGarry's interpretation of comments on driller's logs, Powertech witnesses maintained that (a) exploration boreholes are almost never cased and a notation to that effect is not relevant to whether or not the hole in question was adequately abandoned; (b) the Fall River and Chilson aquifers are indeed artesian at some locations on the site, but instead of indicating open communication with other aquifers, artesian conditions demonstrate these aquifers are confined; and (c) wooden fence posts are commonly inserted in previously plugged boreholes to mark their locations and references to "broken steel" likely refer to drill pipe lost during construction of the borehole, and neither are relevant to whether or not the hole was properly plugged.[359]

With regard to the use of infrared imagery to detect leaking boreholes, Powertech and NRC Staff witnesses referred to a 2010 Powertech Technical Report RAI Response[360] that explains that CIR imagery detects anomalous areas of vegetation which, in the semi-arid Dewey-Burdock region, may indicate groundwater discharge at or near the surface. Powertech

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[356] Lawrence Testimony, Ex. APP-037 at 26.

[357] Id. at 26.

[358] Id. at 25.

[359] Borehole Log Data Answering Testimony, Ex. APP-074 at 4–11.

[360] Ex. APP-016-C, Powertech, Revised Responses to [Technical Report] RAIs Dated May 28, 2010 at 201–10 (June 2011).

attributed the anomalous CIR signature in the southwest corner of the Burdock portion of the project area, known as "alkali flats," to improperly plugged boreholes, and asserted that if old boreholes caused similar discharges elsewhere on the site, they would have been readily detectable.[361] Powertech witnesses responded to Intervenors' assertion that the FSEIS lacks a discussion of how old boreholes will be located and abandoned by stating that existing historical records show the survey coordinates of old boreholes and that South Dakota regulations require that boreholes be plugged with bentonite or cement grout.[362] Specifically, Powertech witness Mr. Lichnovsky states that "the FSEIS describes Powertech's commitment to follow South Dakota regulations for plugging exploration holes and wells."[363]

4. Board Ruling

Because of the number of issues involved in this Contention, we set forth our conclusions separately on each specific technical issue related to fluid confinement.

a. General Confinement of the Overall Ore Zone

According to the FSEIS, the geologic confinement required for an ISL license is provided in the Dewey-Burdock area by the Morrison Formation below the ore-bearing units and the three formations of the Graneros Group above those units.[364] Aside from a statement questioning whether testing has been adequate to demonstrate the confining ability of the Morrison Formation, Intervenors offered little evidence relating specifically to these stratigraphic units.[365] Powertech witness Mr. Lawrence testified that pumping tests in the Chilson showed no response in the Unkpapa aquifer (below the Morrison Formation), which he maintained

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[361] Id.

[362] Borehole Log Data Answering Testimony, Ex. APP-074 at 5.

[363] Id. at 10 (citing FSEIS, Ex. NRC-008-A-1 § 2.1.1.1.5.2).

[364] FSEIS, Ex. NRC-008-A-1 § 3.4.1.

[365] Moran Testimony, Ex. OST-001 at 27.

supported "a no-flow boundary for the Morrison Formation for modeling purposes."[366] Powertech witness Mr. Demuth, citing the FSEIS and license application, noted that the overlying Graneros Group is up to 550 feet thick and is present across the project area, except where eroded in the eastern edge of the site. In contrast, the Intervenors offered very little evidence to support their claim that the Graneros Group and Morrison Formation were not effective aquitards. Accordingly, we conclude the NRC Staff has given the confinement of the overall ore zone a hard look and agree with the conclusion in the FSEIS that the general confinement requirement for the Dewey-Burdock project has been met.

b. Continuity and Thickness of Fuson Shale

The FSEIS concludes that the continuous thickness of the Fuson Shale is based on the well logs of thousands of drill holes; representative examples of which indicate that the Fuson Shale can be clearly identified by its e-log signature. Intervenors' witnesses had access to these logs, but did not use them to challenge the continuity and thickness of the Fuson Shale. Accordingly, we conclude that Powertech has adequately shown that the Fuson Shale is continuous and has a minimum thickness of 20 feet, as indicated in the cross sections.

c. Leakage Shown by Pumping Tests

The question whether the NRC Staff's and Powertech's witnesses were justified in the conclusion that boreholes were the only cause for leakage through the Fuson Shale (indicated by pumping tests) is not fully answerable without discussing faulting and collapse structures. These are discussed below. Powertech and the NRC Staff witness testimony about differences in the potentiometric surfaces in paired wells in the Chilson and Fall River aquifers is compelling evidence that these aquifers are not freely connected by natural pathways. Further, that boreholes are known to exist in the vicinity of the test wells and reports of the earlier TVA pump tests both point to unplugged boreholes as the most likely cause of leakage. This indicates that,

[366] Lawrence Answering Testimony, Ex. APP-066 at 10.

in the absence of compelling evidence for natural connectivity, we find the assumption that boreholes caused the leakage to be reasonable.

d. Rapid Groundwater Flow

Regarding the question of rapid horizontal flow, Powertech witness Mr. Lawrence testified that the average groundwater velocity in the Fall River and Chilson aquifers is approximately 6 to 7 feet per year (1.8 to 2.1 meters per year), which was consistent with the U.S. Geological Survey's independent estimate.[367] Intervenor witness Dr. LaGarry in contrast alleged the groundwater velocity in the ore zone was 35.5 meters per day. The Board was unable to find any support for Dr. LaGarry's claim. Accordingly, we concur with Mr. Demuth's analysis that Dr. LaGarry's groundwater velocity estimates are not supported by the record.

e. Faults, Fractures, and Joints

The Intervenors assert that faults and joints provide significant pathways for groundwater to migrate between aquifers. This is not simply a question of whether faults and joints are present, but rather whether they are large and open enough to produce a substantial breach in the confining layers, particularly in the Fuson Shale. The reports focusing on the TVA project in the Dewey-Burdock area are unequivocal in stating that faults and joints are present on the site.[368] Moreover, as correctly pointed out by Powertech and NRC Staff witnesses, although most of the drillers' notes presented as evidence by Intervenors are subject to interpretation, the driller's remark for drill hole TRR17 giving a specific description of a fault exposed in the wall of a mine pit seems credible.[369] On the other hand, none of the analyses of borehole logs performed by witnesses for Powertech, the NRC Staff, or the Intervenors have demonstrated

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[367] Lawrence Answering Testimony, Ex. APP-066 at 11.

[368] TVA Aquifer Analysis, Ex. OST-006 at 31; TVA Draft Environmental Statement, Ex. OST-009 at 50.

[369] Ex. OST-038, TRR17 Driller Remarks.

that faults produced any significant displacements within the geophysically distinctive Fuson Shale. The fence diagrams based on logs from closely spaced drill holes that transect the purported faults identified by Dr. Moran provide particularly convincing evidence for a lack of significant faulting in that part of the project area.[370] Further, although Powertech and Staff witnesses are loath to acknowledge the existence of any faults or fractures in the area, Mr. Demuth noted in oral testimony that ISL operations have operated successfully in areas where faults cut the ore body, and that the presence of "small scale features in the orebody is not a deal killer."[371]

We therefore find that the evidence indicates that even though small faults and joints may be present in the project area, their presence does not support Intervenors' assertions that such faults produced significant offsets, much less that such faults and joints provide pathways for groundwater to migrate between aquifers.

f. Breccia Pipes

Intervenors' assertion that breccia pipes on the Dewey-Burdock property could provide connections between aquifers is less credible than the concerns about faulting. The satellite imagery offered in evidence by Dr. Moran was effectively refuted by both Mr. Lichnovsky's testimony that a field examination showed it was not a sinkhole,[372] and by the NRC Staff's analysis of e-logs from wells in the vicinity of the purported feature that demonstrated no disruption of the bedding.[373] Mr. Lichnovsky's analysis of the sketch on the drillers' log convincingly refuted Dr. LaGarry's interpretation that it depicted a sinkhole. In addition,

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[370] Ex. NRC-167, Location of Drill Hole Transects; Transect 1, Ex. NRC-168; Transect 2, Ex. NRC-169s.

[371] Tr. at 1,079.

[372] Tr. at 1,126.

[373] Ex. NRC-172, Fence Diagram of Resistivity Profiles for Selected Drill Holes (Oct. 14, 2014).

Petrotek's conclusion, based on one of their numerical models, that groundwater flow through a breccia pipe would produce a mound in the potentiometric surface that would be easily detected if it were present, along with the totality of testimony and exhibits presented on the issue of breccia pipes, further convinces us that the FSEIS analysis on this issue is adequate.

g. Boreholes

While all parties acknowledge that thousands of historical boreholes penetrate the Dewey-Burdock site, Intervenors assert that a large number remain open and could act as pathways for waters moving from the ore zones to adjacent aquifers. It is apparent that some boreholes on the site have not been adequately plugged, because leakage between formations was attributed to open boreholes in the TVA studies of the late 1970's, was again cited as the cause of leakage by Powertech and NRC Staff witnesses who analyzed the more recent pumping tests, and is cited as the cause for surface water in the "alkali flats" area. In light of these occurrences, it seems unlikely that all historic boreholes have been properly abandoned or have "self sealed."

Both Powertech and NRC Staff witnesses further assert that open boreholes do not pose a concern because Powertech will be required to locate any historical boreholes that were not properly abandoned and plug them with bentonite or cement grout. After considerable searching, we were able to locate the place in the record where "Powertech commits to properly plugging and abandoning or mitigating any . . . historical wells and exploration holes."[374] And, despite the NRC Staff's claim that because "there are a number of improperly plugged or abandoned boreholes at the Dewey-Burdock site, as a condition of its license Powertech must

[374] Ex. APP-016-B, Powertech Application for NRC Uranium Recovery License, Technical Report RAI Responses at 31 (June 2011).

address these boreholes before beginning operations,"[375] we did not find any such explicit condition in the license.[376]

Therefore, the Board will amend license SUA-1600 with a similar condition that was included in the Strata license. License SUA-1600 shall be amended to include an additional license condition stating:

> Prior to conducting tests for a wellfield data package, the licensee will attempt to locate and properly abandon all historic drill holes located within the perimeter well ring for the wellfield. The licensee will document, and provide to the NRC, such efforts to identify and properly abandon all drill holes in the wellfield data package.

h. Artesian Flow

As noted by Consolidated Intervenor witness Dr. LaGarry, the record is replete with acknowledgements that artesian conditions exist at the proposed site.[377] The FSEIS notes that "anomalous (i.e., high) gamma-ray readings identified in the southern part of the Dewey area in the area of an artesian well are likely due to discharging groundwater from the Inyan Kara aquifer."[378] Powertech witness Mr. Lawrence testified that flowing artesian conditions in the Fall River and Chilson aquifers throughout much of the license area are advantageous in identifying potential unplugged boreholes or wells, since surface discharge would be readily identifiable at these locations.[379]

Thus, there is no factual dispute as to whether there are artesian conditions at the site nor whether such conditions have the potential to spread fluids from the Inyan Kara aquifer to

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[375] NRC Staff's Post-Hearing Reply Brief at 26.

[376] Powertech Materials License, Ex. NRC-012.

[377] See Ex. APP-040-A, Application for NRC Uranium Recovery License Proposed Action Fall and Custer Counties South Dakota Environmental Report § 3.4.1.2 (Feb. 2009); SER (Revised) (Apr. 2014), Ex. NRC-134 §§ 2.3.3.3.1, 2.4.3.3.2; FSEIS, Ex. NRC-008-A-1 §§ 3.12.1.1, 3.12.2.

[378] FSEIS, Ex. NRC-008-A-1 § 3.12.1.1.

[379] Lawrence Testimony, Ex. APP-037 at 28.

the surface. The NRC Staff addressed concerns about artesian flow at the surface by stating that Powertech is bound by license conditions to "limit the environmental impacts of any excursion associated with artesian flow" by monitoring for excursions twice monthly.[380] The NRC Staff also stated, "we took [artesian flow] into account when developing mitigation measures (e.g., license conditions) and assessing the environmental impacts of the Dewey-Burdock Project."[381] NRC Staff witnesses Mr. Prikryl and Mr. Lancaster testified that the presence of artesian wells in and around the license area is documented in FSEIS section 4.5.2.1.1.2.2.[382] NRC Staff witnesses Mr. Prikryl and Mr. Lancaster also testified that the FSEIS documents Powertech's procedures to mitigate potential impacts regarding flowing artesian wells, including removing all domestic wells within the project area from private use prior to beginning operations, removing all stock wells within 0.25 mile of any wellfield from private use prior to operation of that wellfield, and monitoring all domestic, livestock and crop irrigation wells within 2 kilometers of the boundary of any wellfield during operations.[383] Mr. Prikryl and Mr. Lancaster also testified that Powertech's routine excursion monitoring program, required by LC 11.5, and Powertech's requirement to maintain a net inward hydraulic gradient, required by LC 10.7, will further minimize potential impacts from flowing artesian conditions.[384]

Powertech and the NRC Staff convincingly note that the very existence of artesian conditions in the ore zone aquifers means that they are largely confined, and that in the absence of significant natural pathways, such as faults and breccia pipes, the only way the

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[380] NRC Staff's Answering Testimony, Ex. NRC-175 at 6–7.

[381] Id. at 7.

[382] NRC Staff's Rebuttal Testimony, Ex. NRC-151 at 39; see also NRC Staff's Answering Testimony, Ex. NRC-175 at 6.

[383] See NRC Staff's Answering Testimony, Ex. NRC-175 at 6.

[384] See NRC Staff's Rebuttal Testimony, Ex. NRC-151 at 39–40.

artesian conditions can result in a transfer of water out of the ore zone aquifers is via unplugged boreholes. Therefore, requiring boreholes to be located and properly abandoned should largely resolve any threats posed to either surface water or the shallow aquifers by the existing artesian conditions.

With the condition that unplugged boreholes be located and properly abandoned, the FSEIS and the record in this proceeding include adequate hydrogeological information to demonstrate the ability to contain fluid migration and assess potential impacts to groundwater. We therefore find for Powertech and the NRC Staff on Contention 3.

D. Contention 4: The FSEIS Fails to Adequately Analyze Groundwater Quantity Impacts

1. Legal Standards

In this Partial Initial Decision the Board reviews the NRC Staff's FSEIS under the NEPA hard look standard.[385]

2. Parties' Positions

In Contention 4[386] the Oglala Sioux Tribe alleges that the FSEIS fails to comply with NEPA's hard look requirement because it inadequately analyzes groundwater quantity impacts of the ISL project. Specifically, the Oglala Sioux Tribe argues that "the FSEIS presents conflicting information on groundwater consumption such that the water consumption impacts of the project cannot be accurately evaluated."[387] The Oglala Sioux Tribe maintains that these consumption impacts and "the underlying basis for the quantity of water lost due to contamination, reverse osmosis, evaporation, and deep disposal were never established" in the FSEIS, or in the evidentiary record of this hearing.[388]

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[385] This standard is fully explained above in Part II(B) of this Partial Initial Decision.

[386] LBP-14-5, 79 NRC at 401.

[387] Oglala Sioux Tribe Post-Hearing Initial Brief at 56.

[388] Id. at 57.

The Oglala Sioux Tribe also characterizes the FSEIS as improperly relying on South Dakota Department of Environment and Natural Resources (SDDENR) findings that "annual water consumption will not exceed the recharge rates of either the Madison or Inyan Kara aquifers."[389] The Oglala Sioux Tribe contends that non-NEPA documents cannot satisfy NEPA, except when tiered with other documents that must have both been prepared within a NEPA process and address the specific proposed action.[390] The Oglala Sioux Tribe does not believe that the SDDENR permits in this proceeding are eligible for NEPA tiering.

Powertech argues that project water usage is properly quantified in the FSEIS, that the water quantity impacts to local wells have been adequately analyzed, and that the project water balance is adequate and appropriate for its intended purpose.[391] The NRC Staff argues that both CEQ guidance and NRC practice allow the NRC Staff to incorporate other analyses and information relevant to NEPA decision making, including those prepared by other state and federal agencies.[392] Specifically, although the NRC Staff acknowledges consideration of the SDDENR water permit applications and EPA groundwater injection regulations, the NRC Staff asserts it conducted independent analyses.[393]

3. Summary of Key Evidence

The Oglala Sioux Tribe relies on Dr. Moran's testimony that Powertech will use and contaminate 4.5 billion gallons of water per year from the Inyan Kara aquifer and up to 290

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[389] Tr. at 1,303.

[390] Oglala Sioux Tribe Post-Hearing Initial Brief at 58–59. In support of its position that an FSEIS cannot rely on non-NEPA documents, the Oglala Sioux Tribe cites South Fork Band Council v. BLM, 588 F.3d 718, 726 (9th Cir. 2009).

[391] Powertech Initial Findings of Fact and Conclusions of Law at 113–20.

[392] NRC Staff's Response to Post-Hearing Order (Jan. 9, 2015) at 18–19.

[393] Id. at 19–22.

million gallons of water per year from the Madison aquifer.[394] Although Dr. Moran does acknowledge that the "consumptive use" figure of 2% listed in the FSEIS will be relatively small, he opined that this estimate ignored the water that will be contaminated and lost by evapotranspiration, rendering it "no longer available for present or future uses within the exempted aquifer zone."[395] Dr. Moran also testified that based on the limited testing and modeling done by the NRC Staff, the "long-term water level drawdown in either the Madison or Inyan Kara are semi-quantitative, at best."[396] Dr. Moran criticized the purported water balance shown in FSEIS Figure 2.1-14[397] because it is based only on flow rates rather than total volumes. In Dr. Moran's estimation, the FSEIS failed to consider the basic components of a water balance by excluding "detailed, measured data for volumes of water entering the system and losses (e.g. volumes of ground water available in the various aquifers, evaporation from land application facilities, volumes under-going Underground Injection Control, etc.), and fail[ing] to calculate an actual balance."[398]

Powertech's witness Doyl Fritz[399] provided detailed written testimony that the FSEIES did provide a water balance for the project that included "the typical water consumption estimates for the Inyan Kara and Madison aquifers during each project phase (production, production/restoration, restoration) and for each wastewater disposal option."[400] Mr. Fritz

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[394] Moran Testimony, Ex. OST-001 at 26.

[395] Id. at 27.

[396] Id. at 27.

[397] FSEIS, Ex. NRC-008-A-1 § 2.1.1.1.4, Figure 2.1-14.

[398] Moran Testimony, Ex. OST-001 at 26–27 (emphasis omitted).

[399] Ex. APP-047, Doyl M. Fritz Curriculum Vitae.

[400] Ex. APP-046, Written Testimony of Doyl Fritz (June 20, 2014) at 8 [hereinafter Fritz Testimony, Ex. APP-046]. In discussing the water balance, Mr. Fritz cited RAI Responses, Ex. APP-016-B at 68–73, which appears to be identical to FSEIS Figure 2.1-14. FSEIS, Ex. NRC-

testified that Powertech has submitted applications to the SDDENR for water appropriation permits from the Inyan Kara and Madison aquifers, that information from the applications and the SDDENR's review and recommended approval of those applications is provided in the FSEIS, and that the "SDDENR has recommended approval on the basis that sufficient water is available, the proposed withdrawals will not exceed average annual recharge, and there is not anticipated to be harm to nearby water users."[401] Further, Mr. Fritz testified that "Powertech will be required by South Dakota water right permits to not adversely affect existing water rights or domestic wells."[402]

With detailed reference and specific citations to the FSEIS and other items in the record, Powertech witness Mr. Demuth testified 1) to the location (in the record) of the water balance and its relationship to groundwater use;[403] 2) how the water balance was developed based on NUREG 1569 guidance;[404] 3) the workings of the water balance;[405] 4) how "measured data"

008-A-1 § 2.1.1.1.4, Figure 2.1-14. Dr. Moran's response characterizes this as an "attempt to identify materials in the hearing record that could be construed as part of a water balance. [However], [t]he comments of Mr. Fritz do not change my opinions or the basis of my opinion that the FSEIS does not contain a water balance." Ex. OST-018, Written Rebuttal Testimony of Dr. Robert E. Moran (July 15, 2014) at 7–8 [hereinafter Moran Rebuttal Testimony, Ex. OST-018].

[401] Fritz Testimony, Ex. APP-046 at 5; see also FSEIS, Ex. NRC-008-A-2 § 4.5.2.1. At the hearing, Dr. Moran did not dispute the FSEIS's summary of the SDDENR's conclusions, although he did add that he did not "see any of the backup for defending those conclusions." Tr. at 1,150–52.

[402] Fritz Testimony, Ex. APP-046 at 10; see also Ex. APP-028, SDDENR, Report to Chief Engineer on Powertech Water Permit Application at 16 (Nov. 2, 2012) [hereinafter SDDENR Report on Water Permit Application, Ex. APP-028].

[403] Demuth Testimony, Ex. APP-013 at 18.

[404] Id. at 19. Mr. Demuth's rebuttal testimony further commented that the water balance in the FSEIS is appropriate and "in accordance with NRC regulatory guidance in NUREG-1569 Section 3.1.3 and federal regulations in 10 CFR 40.32(c) and 40.41(c)," and "the NRC Staff found that the modeling effort was sufficient to 'enhance understanding of the Fall River and Chilson aquifer systems with respect to: regional and local flow patterns; recharge and discharge boundaries; and overall water budget.'" Ex. APP-065, Answering Testimony of Hal Demuth at 4–5 (July 15, 2014).

cannot be included in a water balance prior to the commencement of facility operations;[406] 5) how any water loss due to evaporation will occur from water temporarily stored in ponds prior to disposal, which is effectively accounted for in the water balance diagram in streams I and N;[407] 6) the relatively small projected impact of facility operations on local wells;[408] 7) water level and flow rate data for existing wells;[409] and 8) measures to protect existing wells during operation.[410] Powertech witness Mr. Lawrence also added that ISL:

> actually does not require much water relative to many other types of uses (including irrigation), and there are many incentives for Powertech to minimize water withdrawal, not the least of which is to minimize the amount of water that must be disposed by land application or deep well injection, both of which are relatively expensive.[411]

NRC Staff witnesses Mr. Lancaster and Mr. Prikryl jointly filed initial written testimony on Contention 4.[412] Mr. Lancaster and Mr. Prikryl 1) identified specific locations in the record where water consumption was discussed;[413] 2) defined a "water balance" and its significance and

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[405] Demuth Testimony, Ex. APP-013 at 19–20.

[406] Id. at 20.

[407] Id. at 19–20; see also Tr. at 1,146–47. Dr. Moran responds that "Mr. Demuth wrongly asserts that water lost via evaporation from the waste ponds has no effect on the volumes of water used by the D-B project. Mr. Demuth wrongly asserts that my expert opinion was 'based on a false premise – that water loss through evaporation would somehow increase the overall water consumption rate.' My testimony is not based on the increase in consumption rate. My testimony is based on the conclusion that such evaporation and any other categories of water loss not accounted for in the FSEIS estimate will increase the total volumes of water used by the D-B project." Moran Rebuttal Testimony, Ex. OST-018 at 7.

[408] Demuth Testimony, Ex. APP-013 at 20–22.

[409] Id. at 22–23.

[410] Id. at 23.

[411] Lawrence Testimony, Ex. APP-037 at 45.

[412] NRC Staff's Initial Testimony, Ex. NRC-001.

[413] Id. at 65.

identified its location in the record for the Dewey-Burdock site as well as local and regional balances for the Inyan Kara and Madison aquifers;[414] 3) identified the results of numerical modeling used to predict drawdown in the Inyan Kara;[415] 4) identified the section of the FSEIS where consumptive groundwater use is discussed;[416] 5) identified the sections of the FSEIS describing wastewater treatment, disposition, and the applicable water quality standards;[417] 6) identified the location in the record of the discussion and analysis of the facility impacts on local (<2 kilometers) and surrounding domestic and livestock groundwater wells;[418] 7) explained that Powertech cannot provide facility-specific "measured data" in the water balance until the facility becomes operational;[419] 8) discussed the SDDENR's analysis and approval of the groundwater appropriation for the facility;[420] and 9) discussed the use of flow volumes versus flow rates (volume per time) in the water balance.[421]

4. Board Ruling

We find that based upon a reasonably comprehensive analysis, the SDDENR has recommended approval of water rights permits limiting Powertech to net withdrawals of 274.2 acre-feet per year (89.3 million gallons per year) from the Inyan Kara aquifer and 888.8 acre-feet per year (290 million gallons per year) from the Madison aquifer. SDDENR's recommended

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[414] Id. at 65–68. At the hearing, Mr. Prikryl confirmed that "water taken from the Inyan Kara and injected in deep wells would be counted for [in streams] I and N." Tr. at 1,147–48.

[415] Id. at 68–69.

[416] Id. at 69–71.

[417] Id. at 71–73.

[418] Id. at 73–76.

[419] Id. at 77–78.

[420] Id. at 78.

[421] Id. at 79.

approval is based on the conclusion that withdrawals at the approved rates will not result in annual withdrawals that exceed the annual average recharge to the aquifers, that there is a reasonable probability that unappropriated water is available in the aquifers to supply the proposed appropriation, and there is a reasonable probability that the withdrawals proposed in the application can be made without unlawful impairment of existing water rights or domestic wells. Although there was significant information pertaining to the SDDENR water rights applications and permits and their bases in the record (and therefore subject to challenge under NEPA), this information was not challenged by the Intervenors.

In addition, we find that although the NRC Staff relied on the SDDENR water rights applications and permits for the Inyan Kara and Madison aquifers to a significant extent in determining that the environmental impacts of the proposed project to groundwater were small,[422] the NRC Staff did not place complete or undue reliance on the SDDENR analysis in making that determination.[423] In addition to numerous references to the NRC Staff's generic assessments of the impacts to groundwater, including consumptive use, of ISL projects in general,[424] there are also many examples in the FSEIS of the NRC Staff's analysis of consumptive use and groundwater quantity impacts above and beyond the SDDENR's water rights permit application.[425]

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[422] FSEIS, Ex. NRC-008-A-2 § 4.6, Table 4.5-2.

[423] Based on the Board's analysis, Intervenors' allegations regarding South Fork Band Council and NEPA tiering do not accurately portray how water quantity conclusions in the FSEIS were reached.

[424] FSEIS, Ex. NRC-008-A-2 § 4.5.2.

[425] For example, the NRC Staff considered the "results of numerical groundwater simulations . . . [in assessing] the potential impact to shallow local aquifers and domestic and livestock wells from consumptive water use during the construction phase of the proposed project." FSEIS, Ex. NRC-008-A-2 § 4.5.2.1.1.1. The NRC Staff also "analyzed the hydrogeologic characteristics of the Fall River and Chilson aquifers (i.e., formation thicknesses and potentiometric surfaces)" in determining that water consumptive use during operations "will have a SMALL impact on nearby wells located in the Fall River and Chilson aquifers." FSEIS, Ex. NRC-008-A-2 § 4.5.2.1.1.2.2.

At the hearing, Dr. Moran acknowledged that he could not identify another NRC-led EIS that included the kind of detailed water balances to which he had alluded in his initial testimony.[426] Further, in response to questions on FSEIS Figure 2.1-14,[427] while maintaining that there were some missing items such as water loss from evaporation and water pumped from the Inyan Kara and injected into other aquifers,[428] Dr. Moran acknowledged that he had not gone through the flows to see if they balanced. In contrast, both Powertech and NRC Staff witnesses testified with detailed reference and specific citations to the FSEIS and other items in the record on the workings and adequacy of the water balance. As a result, the Board finds that FSEIS Figure 2.1-14[429] and the accompanying text is a reasonable and appropriate water balance, which accounts for all significant project water uses, including (in effect) water lost to evaporation.

Accordingly, we conclude the NRC Staff took the required hard look at the relevant groundwater quantity impacts and find for Powertech and the NRC Staff on Contention 4.

The NRC Staff also relied on Powertech's commitment to appropriately handling wells in and near the project boundaries in concluding that "the overall environmental impacts on local aquifers, production aquifers, and domestic and livestock wells from consumptive use during operations for the Class V injection well disposal option at the proposed project will be SMALL." FSEIS, Ex. NRC-008-A-2 § 4.5.2.1.1.2.2. The NRC Staff "reviewed the applicant's numerical groundwater model and calibration, and it determined that the model was appropriately developed and sufficiently calibrated." Id. Finally, we note that in the Safety Evaluation Report the NRC Staff indicated it "constructed a simple 3-layer model to study the effects of a large withdrawal from the Madison Formation" and concluded that "the proposed maximum Madison withdrawals at the Dewey-Burdock project do not appear to affect water supplies in the City of Edgemont, South Dakota." SER (Revised) (Apr. 2014), Ex. NRC-134 § 3.1.3.5. We did not find reference to that study in the FSEIS.

[426] Tr. at 1,143.

[427] FSEIS, Ex. NRC-008-A-1 § 2.1.1.1.4, Figure 2.1-14.

[428] Tr. at 1,143–44.

[429] FSEIS, Ex. NRC-008-A-1 § 2.1.1.1.4, Figure 2.1-14.

E. Contention 6: The FSEIS Fails to Adequately Describe or Analyze Proposed Mitigation Measures

In Contention 6[430] Intervenors assert that "the FSEIS violates 10 C.F.R. §§ 51.10, 51.70 and 51.71, and [NEPA] and implementing regulations by failing to include the required discussion of mitigation measures."[431] Specifically, Intervenors contend that the NRC Staff violated NEPA by (1) not adequately discussing or evaluating mitigation measures that are incorporated in the FSEIS, and (2) wrongly deferring the development of further mitigation measures until after the FSEIS and Record of Decision were issued. We consider both of these concerns in turn.

1. Legal Standards

Mitigation under NEPA is defined as (a) avoiding an impact by not taking an action, (b) minimizing an impact by limiting the degree or magnitude of an action, (c) rectifying the impact of an action by repairing, rehabilitating, or restoring the impacted area, (d) reducing or eliminating the impact over time by preservation and maintenance operations, or (e) compensating for the impact or replacing or substituting resources or environments.[432] For a project requiring a NEPA analysis, the statute itself,[433] CEQ regulations,[434] NRC implementing

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[430] LBP-14-5, 79 NRC at 401.

[431] Oglala Sioux Tribe Statement of Position at 27. Consolidated Intervenors adopt the Contention 6 arguments forwarded by the Oglala Sioux Tribe. Consolidated Interveners' Opening Statement at 9 (July 7, 2014) [hereinafter Consolidated Intervenor Statement of Position].

[432] 40 C.F.R. § 1508.20.

[433] NEPA documents must include "a detailed statement by the responsible official on . . . any adverse environmental effects which cannot be avoided should the proposal be implemented." 42 U.S.C. § 4332(2)(C)(ii).

[434] "The environmental impacts of the proposal and the alternatives . . . shall . . . include appropriate mitigation measures." 40 C.F.R. § 1502.14. The scientific and analytical section backing up the proposal and alternatives section must also discuss any "means to mitigate adverse environmental impacts" not previously covered. 40 C.F.R. § 1502.16(h). An agency's

regulations,[435] and Supreme Court precedent[436] require agencies to discuss and consider how possible environmental effects can be mitigated. Merely listing possible mitigation options does not satisfy NEPA.[437] Though mitigation measures must be discussed in an EIS, the statute "does not guarantee that federally approved projects will have no adverse impacts."[438] NEPA does not "demand the presence of a fully developed plan that will mitigate environmental harm before an agency can act."[439]

Judicial precedent indicates that when the adequacy of an EIS mitigation strategy is challenged, the determining issue is whether the agency took a sufficiently hard look at environmental consequences, and ensured that its decision was supported by a completely informed record.[440] A court may not substitute its own judgment for that of an agency, and agencies are not constrained by NEPA to select only "the most environmentally benign option."[441] Courts decide whether a mitigation plan was adequately or inadequately discussed, but the line between these two options "is not well defined."[442] Here, in judging whether the

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Record of Decision also must include a concise discussion of mitigation measures. 40 C.F.R. § 1505.2(c).

[435] 10 C.F.R. Part 51.

[436] "A reasonably complete discussion of possible mitigation measures" must be included in a NEPA document, to allow the agency and the public a chance to "properly evaluate the severity of the adverse effects." Robertson, 490 U.S. at 352.

[437] Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 476 (9th Cir. 2000).

[438] Hydro Res., Inc. (P.O. Box 777, Crownpoint, N.M. 87313), CLI-06-29, 64 NRC 417, 429 (2006).

[439] Robertson, 490 U.S. at 353; see also Hydro Res., CLI-06-29, 64 NRC at 427.

[440] See Theodore Roosevelt Conservation P'ship v. Salazar, 616 F.3d 497, 517 (D.C. Cir. 2010); see also La. Energy Servs., L.P. (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 88 (1998).

[441] Claiborne, CLI-98-3, 47 NRC at 88.

[442] Okanogan Highlands Alliance, 236 F.3d at 476.

NRC Staff took the NEPA-mandated hard look in licensing Powertech's ISL facility, the Board reviewed the proposed mitigation programs to ensure that "sufficient detail" was provided on mitigation measures to show a fair agency evaluation of mitigation and environmental consequences, and that the NRC Staff has not "ignored or minimized pertinent environmental effects."[443]

At the evidentiary hearing in this proceeding, the Oglala Sioux Tribe did not offer witnesses in support of Contention 6. Consolidated Intervenors did not adopt Contention 6, which was advanced by the Oglala Sioux Tribe, and so could not present their own evidence or witnesses.[444] But, as an admitted party to the proceeding, Consolidated Intervenors were allowed to make arguments and otherwise participate as a party in the proceeding.[445] Powertech offered witnesses Hal Demuth, Errol Lawrence, and Doyl Fritz. The NRC Staff offered witnesses Haimanot Yilma, Kellee Jamerson, and James Prikryl.

2. Parties' Positions on Lack of Adequate Discussion of Mitigation Measures

The Oglala Sioux Tribe argues that each proposed mitigation measure "must be detailed with specific description, supporting data, and analysis of process and effectiveness;"[446] and that NEPA requires an agency to fully review whether the mitigation strategy will be effective.[447] Intervenors allege that mitigation measures regarding Powertech's application have not been discussed with sufficient detail to ensure that environmental consequences have been fairly

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[443] Duke Energy Corp. (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-03-17, 58 NRC 419, 431–32 (2003).

[444] Licensing Board Order (Ruling on Motions in Limine: Motions to Strike and for Cross-Examination) (Aug. 1, 2014) at 7.

[445] Id. at 5. Consolidated Intervenors adopted the evidence, authority, and argument of the Oglala Sioux Tribe. Consolidated Intervenor Statement of Position at 9.

[446] Oglala Sioux Tribe Statement of Position at 38.

[447] Id. at 28.

evaluated.[448] While the Oglala Sioux Tribe recognizes that impacts need not actually be mitigated to grant Powertech an NRC license, the Oglala Sioux Tribe contends that the FSEIS discussion of mitigation measures simply listed the measures and asserted they might be successful, "with no scientific evidence or analysis to support those claims," and that the FSEIS did not adequately assess the measures' effectiveness in the context of the proposed action and proposed alternatives.[449]

In a general sense, the Oglala Sioux Tribe alleges that the NRC Staff's "reliance on license conditions to mitigate impacts" without discussion of their effectiveness violated NEPA requirements.[450] Specifically, the Oglala Sioux Tribe claims "no discussion or analysis is provided" on the effectiveness of identifying and plugging abandoned holes in the permit area.[451] The Oglala Sioux Tribe also asserts that the FSEIS does not assess the plan to review groundwater restoration for only 12 months without support for this time period or analyzing any alternative time periods.[452] The Oglala Sioux Tribe also faults a proposed, but allegedly unevaluated, monitoring well network "because leakage may occur through the Fuson Shale and draw-down induced migration of radiological contaminants from abandoned open pit mines in the Burdock area."[453] Various other specific examples of insufficient analysis alleged by the

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[448] Oglala Sioux Tribe Statement of Position at 30; Consolidated Intervenor Statement of Position at 9.

[449] Oglala Sioux Tribe Statement of Position at 30–31.

[450] Tr. at 1,197–98. The Oglala Sioux Tribe alleged that the mitigation discussion consisted of a chart simply listing "a series of proposed mitigation measure[s], with no elaboration or other analysis." Oglala Sioux Tribe Statement of Position at 37. This claim seems to have been abandoned in later briefing following explanations from the NRC Staff that the chart in FSEIS chapter 6, titled 'Mitigation,' was simply a compilation of mitigation measures, the specifics of which are detailed across other chapters of the FSEIS.

[451] Oglala Sioux Tribe Statement of Position at 33.

[452] Id. at 33.

[453] Id. at 33–34.

Oglala Sioux Tribe includes references to BLM guidelines, sound abatement controls, evaporation pond impacts, and groundwater mitigation and restoration.[454]

In response, the NRC Staff and Powertech defended the adequacy of the FSEIS discussion of mitigation measures. The NRC Staff argues that while the effectiveness of mitigation measures must be discussed, this discussion need not be highly detailed.[455] The NRC Staff gives several examples of the level of detail it provided in describing mitigation measures, which it asserts was sufficient. In one example, the NRC Staff quotes the FSEIS as saying, "impacts of surface land disturbance will be minimized by mitigation measures, including concurrently reclaiming and revegetating surface disturbed areas, limiting construction of new access roads, and restricting vehicular traffic in wellfields and land application areas."[456] While the NRC Staff admits that the Oglala Sioux Tribe provided an accurate recitation of NEPA mitigation requirements, the NRC Staff asserts that it met these requirements, and fully considered the effectiveness of mitigation measures.

Powertech also defends the NRC Staff's work in analyzing mitigation measures in the FSEIS. Powertech contends that mitigation measures in the SER, along with those in the FSEIS, must be taken into account, as the Record of Decision incorporates the findings of both documents.[457] Powertech further contends that all plans were reviewed and approved by the NRC Staff, and that they are consistent with past practices at ISL facilities.[458] Regarding specific mitigation measures, Powertech represents that for those associated with historical mine pits and groundwater restoration, the FSEIS does outline a variety of mitigation measures

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[454] Id. at 35–36.

[455] NRC Staff Statement of Position at 43–44.

[456] Id. at 45.

[457] Powertech Statement of Position at 51.

[458] Id. at 54.

that will be approved before operation.[459] Powertech also defends the avian and wildlife mitigation plans as proposing specific mitigation strategies developed based on expert recommendations.[460]

3. Board Ruling on Lack of Adequate Discussion of Mitigation Measures

After a thorough review of the Record of Decision, FSEIS, and associated documents, the Board finds that the NRC Staff's discussion and evaluation of mitigation measures is adequate. The Oglala Sioux Tribe correctly claims that mitigation measures must provide a specific description, supporting data, and an analysis of process and effectiveness, but the Board concludes that the NRC Staff has adequately satisfied this burden. The Oglala Sioux Tribe's arguments overlook extensive mitigation analysis in the FSEIS. Specifically, Chapter 4 of the FSEIS contains sufficiently detailed information on mitigation measures of Powertech's permitted activities.[461] The NRC Staff has not ignored the mitigation of potential environmental effects associated with this ISL licensing action. Rather, the FSEIS provides extensive mitigation discussions in which risks to the environment have been thoroughly analyzed and license conditions imposed to mitigate those risks.

The NRC Staff's final NEPA document, the Record of Decision, provides the mandated references to mitigation measures detailed in the FSEIS.[462] The Record of Decision also states

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[459] Id. at 52.

[460] Id. at 55–56 (referencing "limiting noise and vehicular traffic and wildlife access to wastewater ponds, adherence to timing and distance restrictions from appropriate agencies to protect active raptor nests during breeding seasons, and following appropriate land application requirements").

[461] For example, regarding the impact on geology and soils, mitigation strategies are discussed in the FSEIS in sections 4.4 and 4.4.1.2. Mitigation strategies are also discussed and analyzed regarding water resources, ecological resources, air quality, noise, historical and cultural resources, visual and scenic resources, socioeconomics, environmental justice, public and occupational health and safety, and waste management.

[462] Ex. NRC-011, Record of Decision for Dewey-Burdock Project at 3–4 (Apr. 8, 2014) [hereinafter Record of Decision, Ex. NRC-011]; see also 10 C.F.R. § 51.103(a)(4) (requiring the

that license condition 9.2 binds Powertech to all the "commitments, representations, and statements includ[ing] the mitigation measures and monitoring programs described" throughout its license, the Record of Decision, and the FSEIS.[463] From surface disturbance,[464] facility construction,[465] operation,[466] to decommissioning,[467] the NRC Staff discusses and analyzes substantial mitigation strategies. Regarding issues outside of the NRC's expertise, it is appropriate for the agency to incorporate the mitigative controls incorporated in permits granted by other expert agencies. The Board finds that the NRC Staff appropriately relied on restrictions present in other federal and state permits as mitigation measures.[468] In South Fork Band Council v. BLM, 588 F.3d 718, 726 (9th Cir. 2009) the Ninth Circuit rejected the Bureau of Land Management's argument that some "impacts need not be evaluated because the Goldstrike facility operates pursuant to a state permit under the Clean Air Act." Here, however, the NRC Staff did not disregard impacts considered under other agencies' permits. Instead, the FSEIS fully evaluated the impacts and mitigation strategies detailed under other permits. The NRC

Record Of Decision to summarize any license conditions and monitoring programs adopted in connection with mitigation measures).

[463] Record of Decision, Ex. NRC-011 at 4.

[464] Revegetation and restricting vehicular traffic are discussed in FSEIS Ex. NRC-008-A-2 § 4.2.1.2.

[465] The plant will be constructed on concrete slabs with protective berms to mitigate and contain accidental spills. FSEIS, Ex. NRC-008-A-2 § 4.5.1.1.1.2.

[466] Class V deep well injection permit requirements were, in part, considered by the NRC as mitigation measures during operation of the ISL facility. FSEIS, Ex. NRC-008-A-2 § 4.5.1.1.1.2.

[467] Mitigation measures to control erosion, storm water runoff, sedimentation, and National Pollution Discharge Elimination Standards permit requirements were cited to "ensure that stormwater runoff will not contaminate surface water." FSEIS, Ex. NRC-008-A-2 § 4.5.1.1.1.3.

[468] For instance, Powertech must comply with EPA injection well permits (FSEIS, Ex. NRC-008-A-2 § 4.5.1.1.1.2) and SDDENR SWMP (FSEIS, Ex. NRC-008-A-2 § 4.5.1.1.1.2) and National Pollution Discharge Elimination Standards permit (FSEIS, Ex. NRC-008-A-2 § 4.5.1.1.2.1), and U.S. Army Corps of Engineers Section 404 permitting requirements must be complied with before conducting work in project area wetlands (FSEIS, Ex. NRC-008-A-2 § 4.5.1.1.2.1).

Staff also adequately considered the impacts to birds and wildlife in the FSEIS, not just in associated documents.[469] The Board thus finds the NRC Staff adequately considered the effectiveness of mitigation measures.[470]

4. Parties' Positions on Developing Mitigation Measures after FSEIS Completion

The Oglala Sioux Tribe also alleges that the NRC Staff has violated NEPA by relying on "future, as yet-unsubmitted, mitigation to prevent/mitigate adverse impacts" from Powertech's ISL operation.[471] Regarding cultural resources, the Oglala Sioux Tribe alleges that mitigation for cultural resources impacts should have been included in the FSEIS, and not "deferred into a post-FSEIS programmatic agreement phase."[472] Other future mitigation plans the Oglala Sioux Tribe labels as nothing more than "plans to make plans at some point in the future" including the proposed monitoring well network, historical well hole plugging, and wildlife protections and monitoring.[473] Consolidated Intervenors also claim that the draft avian monitoring and mitigation plan should be completed and incorporated into the FSEIS.[474] In sum, the Intervenors allege

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[469] FSEIS, Ex. NRC-008-A-2 § 4.6.1.1.1.1.2. Associated Powertech documents expand on the plans and commitments referenced in the FSEIS. Ex. APP-071, 2013 Wildlife Monitoring Report (July 2, 2014); Ex. OST-023, Draft Avian Monitoring and Mitigation Plan (Sept. 2013); Ex. OST-022, BLM Correspondence (July 8, 2014); Ex. OST-024, January 10, 2014 USFWS Take Permit Application (Jan. 10, 2014).

[470] For example, based explicitly on the implementation of mitigation measures, the NRC Staff found that the impact of the preferred Class V injection well disposal would be SMALL, and that the impact of consumptive use on local aquifers, production aquifers, and domestic and livestock wells would also be SMALL. FSEIS, Ex. NRC-008-A-2 §§ 4.5.2.1.1.2.1, 4.5.2.1.1.2.2. The NRC Staff also found that groundwater quality impacts to the production and surrounding aquifers as a result of ISL operations for the Class V injection well disposal option would be SMALL. FSEIS, Ex. NRC-008-A-1 § 4.5.2.1.1.2.2.

[471] Oglala Sioux Tribe Statement of Position at 28.

[472] Tr. at 1,197; see also Oglala Sioux Tribe Statement of Position at 32.

[473] Oglala Sioux Tribe Statement of Position at 33–34. The Oglala Sioux Tribe alleges that even though the avian monitoring and mitigation plan was submitted before the FSEIS was finalized, it was not discussed in the FSEIS. Tr. at 1,198.

[474] Consolidated Intervenor Statement of Position at 10.

that any mitigation measures developed outside the FSEIS do not fulfill the agency's responsibility under NEPA to consider mitigation measures.[475]

The NRC Staff defends its NEPA cultural resources analysis by stressing that although the FSEIS was issued before the Programmatic Agreement was finalized, the Record of Decision was not issued until after the Programmatic Agreement was finalized.[476] According to the NRC Staff, it separated its NHPA and NEPA reviews in November 2013 to lessen delays in issuing the FSEIS.[477] The NRC Staff indicated the FSEIS was nearly complete at that time, but the NHPA Section 106 process was not. But the NRC Staff declared that it would not take any licensing action until the Programmatic Agreement was completed, so tribal comments on the Programmatic Agreement were considered before a Record of Decision was released.[478] The NRC Staff also asserts that the continued development of mitigation measures after the completion of the NEPA process is fully supported by NRC NEPA precedent.[479]

Powertech also defends the timing of the NRC Staff's treatment of mitigation measures, claiming that an on-going development of mitigation items is a necessary process.[480] Powertech also states that the Record of Decision and license include mitigation measures reviewed in the SER, and not just the FSEIS.[481] Regarding monitoring and mitigation measures

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[475] Tr. at 1,200–01.

[476] NRC Staff Statement of Position at 47.

[477] Ex. NRC-070, Letter from Kevin Hsueh, Chief, Environmental Review Branch, NRC to John M. Fowler, Executive Director, Advisory Council on Historic Preservation at 1.

[478] Id. at 2.

[479] NRC Staff Statement of Position at 49; see also NRC Staff's Initial Testimony, Ex. NRC-001 at 82–83.

[480] Powertech Statement of Position at 50 (claiming that mitigation measures cannot be implemented pre-license issuance).

[481] Id. at 51.

for groundwater, Powertech claims that NRC regulations establish a system in which post-license pump tests are necessary in order to develop the appropriate mitigation techniques depending on the presence or absence of abandoned boreholes.[482] Powertech witness Mr. Demuth offered testimony that monitor well networks will be established for every wellfield, as well as a general monitoring well network for the Fall River aquifer.[483] Powertech also stressed that wildlife impacts will be mitigated by specific measures outlined in the FSEIS.[484] While the FSEIS mentions the avian monitoring and mitigation plan that Powertech is developing, this plan is required by South Dakota rules, not NRC rules.[485] Therefore Powertech contends that the avian monitoring and mitigation plan did not need to be finalized before issuance of the Record of Decision.

5. Board Ruling on Developing Mitigation Measures after FSEIS Completion

To justify and memorialize a permitting decision, agencies must release a Record of Decision at the conclusion of every EIS process.[486] The release of an FSEIS does not mark the completion of the NEPA review process. Here, the Programmatic Agreement was not included in the FSEIS, but the FSEIS does explain that a separate Programmatic Agreement was yet to be released.[487] The FSEIS further explains that mitigation measures adopted in the Programmatic Agreement "could reduce an adverse impact to a historic or cultural resource."[488]

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[482] Id. at 53.

[483] Demuth Testimony, Ex. APP-013 at 28–29.

[484] Powertech Statement of Position at 55.

[485] Id. at 56.

[486] "At the time of its decision . . . each agency shall prepare a concise public record of decision." 40 C.F.R. § 1505.2.

[487] FSEIS, Ex. NRC-008-A-1 § 3.9.4.

[488] FSEIS, Ex. NRC-008-A-2 § 4.9.

In Hydro Resources, CLI-99-22, 50 NRC at 14, the Commission approved the NRC Staff completion of some NHPA documents after the EIS process was complete, but before the license was issued.[489] Therefore, the Board finds that the NRC Staff completing the Programmatic Agreement after the FSEIS was released, but before the issuance of the Record of Decision or the license, adequately satisfied NEPA. The NRC Staff's decision to grant Powertech license SUA-1600 necessarily incorporated the results of, and comments on, the Programmatic Agreement into the decision.[490]

The Board also finds that the other mitigation measures designated in the FSEIS for post-licensing development, including monitoring well networks, historical well hole plugging, and wildlife protections and monitoring, have been adequately explained and satisfy NEPA requirements. The FSEIS "need not . . . contain 'a complete mitigation plan,'"[491] and the "mitigation plan 'need not be . . . in final form to comply with NEPA's procedural requirements.'"[492] Although the mitigation and monitoring plans discussed in the FSEIS are not all in final form, they still contain the level of detail required to comply with NEPA.[493]

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[489] "Even if one assumes that the FEIS did not contain all the information considered by the Staff in its decision, the overall record for the licensing action includes a complete analysis of the cultural resources." Hydro Res., CLI-99-22, 50 NRC at 14.

[490] The Board's findings, and the adjudicatory record, are now also, in effect, part of the FSEIS. Hydro Res., Inc. CLI-01-4, 53 NRC at 53 (quoting Claiborne, CLI-98-3, 47 NRC at 89). Mitigation measures were discussed throughout the evidentiary hearing. See Tr. at 1,197–1,312.

[491] Hydro Res., CLI-06-29, 64 NRC at 427 (quoting Robertson, 490 U.S. at 352).

[492] Hydro Res., CLI-06-29, 64 NRC at 427 (quoting Okanogan Highlands Alliance, 236 F.3d at 473).

[493] For instance, it is acceptable for initial wildlife mitigation strategies to be discussed in the FSEIS, but further fleshed out in detail in subsequent documents. Compare FSEIS, Ex. NRC-008-A-2 § 4.6.1.1.1.1.2, with Ex. APP-071, 2013 Wildlife Monitoring Report., Ex. OST-023, Draft Avian Monitoring and Mitigation Plan, Ex. OST-022, BLM Correspondence, and Ex. OST-024, January 10, 2014 U.S. Fish and Wildlife Service Take Permit Application.

We add that we have no reason to doubt that Powertech will fully and faithfully implement the mitigation and monitoring measures and commitments detailed in the FSEIS, License SUA-1600, and associated documents. Nor do we have any reason to doubt that the NRC Staff will fully and faithfully ensure that these mitigation measures are actually implemented. In setting license conditions, the NRC Staff may assume that a licensee will comply with all requirements imposed by the license.[494] However, should any material reason arise suggesting that Powertech has shirked its mitigation or monitoring commitments, the Board trusts that either the agency, as an enforcement action, or public citizens, per the 10 C.F.R. § 2.206 process, will pursue the matter.[495]

A principal aid to the agency in that regard is the monitoring programs for all applicable mitigation measures.[496] Monitoring serves to alert the licensee and/or the agency whether the prescribed mitigation efforts are effective and producing the expected outcomes. Monitoring programs were described or incorporated by reference in the FSEIS and the ROD, and to the degree Powertech has been authorized to perform self-monitoring, the NRC is responsible for establishing and implementing an effective monitoring oversight program. Confirmation should be provided to the NRC Staff, through monitoring results, that mitigation is proceeding as expected by the NEPA documents. If mitigation is unsuccessful, additional environmental analysis may be necessary. Moreover, monitoring information must also be available to the

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[494] See Pac. Gas and Elec. Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-03-2, 57 NRC 19, 29 (2003) ("We assume that our licensees will comply with this agency's safety regulations."); see also U.S. Dep't of Energy (High-Level Waste Repository), LBP-09-6, 69 NRC 367, 466 (2009) ("The NRC generally presumes that licensees will comply with its regulations.").

[495] See Volume 8 – Licensee Oversight Programs, 8.8 Management of Allegations (2010), available at http://www.nrc.gov/reading-rm/doc-collections/management-directives/volumes/vol-8.html.

[496] "A monitoring and enforcement program shall be adopted . . . where applicable for any mitigation." 40 C.F.R. § 1505.2(c).

public, as appropriate.[497] It seems reasonable to the Board that NEPA monitoring information, to the extent discoverable under the Freedom of Information Act (FOIA), can be made available to the public and that it would be preferable for such information to be made available proactively.[498]

Regarding monitoring, the NRC Staff's Response to Post-Hearing Order drastically misrepresents the agency's role in monitoring the Powertech project.[499] The NRC Staff writes:

> In its 2011 guidance, the CEQ also addresses when an agency must confirm that mitigation measures will be effective. The CEQ first notes that, under its regulations, agencies may "provide for monitoring to assure that their decisions are carried out and should do so in important cases." 76 Fed. Reg. at 3,849 (citing 40 C.F.R. § 1505.3). The CEQ next states:
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> > Accordingly, an agency should also commit to mitigation monitoring in important cases when relying upon an EA and mitigated FONSI. Monitoring is essential in those important cases where the mitigation is necessary to support a FONSI and thus is part of the justification for the agency's determination not to prepare an EIS.
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> Id. (emphasis added). The requirement that the agency confirm whether mitigation measures are effective therefore applies only where the agency relies on a mitigated FONSI. This requirement does not apply where, as for the Dewey-Burdock Project, the agency prepares an EIS for its proposed action.[500]

However, the citation provided by the NRC Staff entirely ignores the preceding sentence in the CEQ's guidance, which states, "for agency decisions based on an EIS, the CEQ Regulations explicitly require that 'a monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation.'"[501] Nothing could more clearly contradict the NRC Staff's

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[497] "Upon request, [the lead agency shall] make available to the public the results of relevant monitoring." 40 C.F.R. § 1505.3(c). More broadly, the NRC must make a diligent effort to involve the public in implementation of NEPA procedures. 40 C.F.R. § 1506.6.

[498] 5 U.S.C. § 552; see also Office of Mgmt. & Budget, Executive Office of the President, "Open Government Directive" (Dec. 8, 2009), available at www.whitehouse.gov/open/documents/open-government-directive.

[499] NRC Staff's Response to Post-Hearing Order (Jan. 9, 2015) at 33–34.

[500] NRC Staff's Response to Post-Hearing Order (Jan. 9, 2015) at 33–34.

[501] 76 Fed. Reg. at 3,849 (citing 40 C.F.R. § 1505.2(c)).

assertion. The NRC Staff is required to confirm whether mitigation measures are effective through a monitoring program, which is recognized in Powertech license conditions.

Specifically, license condition 9.10 states that Powertech's monitoring results must be documented and maintained, and that the results are "subject to NRC review and inspection."[502] Further, monitoring results must be submitted to the NRC on various time tables, quarterly, semiannually, or annually.[503] The NRC already maintains a website containing public information regarding Powertech's Dewey-Burdock project site.[504] The Board suggests that all raw monitoring information gathered from Powertech and reviewed by the NRC Staff could be publicly posted, except to the extent it may be withheld by exemption from FOIA, on the Dewey-Burdock NRC website.

We conclude that the FSEIS adequately describes proposed mitigation measures and find for the NRC Staff and Powertech on Contention 6.

F. Contention 9: The FSEIS Fails to Consider Connected Actions

1. Legal Standards

When drafting an EIS, an agency's scope of review must include analysis of any connected or cumulative actions to the central proposed action.[505] Actions are connected[506] when they "(i) Automatically trigger other actions which may require environmental impact statements. (ii) Cannot or will not proceed unless other actions are taken previously or

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[502] Powertech Materials License, Ex. NRC-012 § 9.10.

[503] Id. § 11.

[504] U.S. NRC, Dewey Burdock Site, http://www.nrc.gov/info-finder/materials/uranium/licensed-facilities/dewey-burdock.html (last visited Apr. 27, 2015).

[505] 40 C.F.R. § 1508.25. This regulation has been officially adopted by the NRC. 10 C.F.R. § 51.14(b).

[506] The scope of an EIS includes "connected actions, which means that they are closely related and therefore should be discussed in the same impact statement." 40 C.F.R. § 1508.25(a)(1).

simultaneously. (iii) Are interdependent parts of a larger action and depend on the larger action for their justification."[507] To determine when an action is connected, courts use an 'independent utility' test. An action lacks independent utility when it would be irrational or unwise to pursue the action without the presence of the EIS-generating central action.[508] Once connected actions have been identified, the agency must evaluate any potential effects in the EIS.[509]

Even actions not directly encompassed by the scope of the proposed action may still be relevant in an EIS. "Cumulative impacts" are impacts resulting "from the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."[510] All aspects of the FSEIS, including the connected and cumulative actions discussions, must have been subjected to a hard look by the NRC.[511]

Before Powertech may commence ISL mining, it is obligated to obtain several permits from agencies other than the NRC. For instance, the underground injection control program, administered by the EPA, regulates injection wells.[512] This program includes Class III wells, used to inject fluids to dissolve and extract minerals such as uranium, and Class V wells, used

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[507] 40 C.F.R. § 1508.25(a)(1)(i)–(iii).

[508] Detroit Edison Co. (Fermi Nuclear Power Plant, Unit 3), LBP-14-09, 80 NRC 15, 41 (2014) (citing Soc'y Hill Towers Owners' Ass'n v. Rendell, 210 F.3d 168, 181 (3d Cir. 2000); Nw. Res. Info. Ctr. v. Nat'l Marine Fisheries Serv., 56 F.3d 1060, 1067–69 (9th Cir. 1995)).

[509] 10 C.F.R. §§ 51.71(d), 51.90; 40 C.F.R. § 1508.25(a)(1).

[510] 40 C.F.R. § 1508.7.

[511] "The principal goals of an FEIS are twofold: to force agencies to take a 'hard look' at the environmental consequences of a proposed project, and, by making relevant analyses openly available, to permit the public a role in the agency's decision-making process." Claiborne, CLI-98-3, 47 NRC at 87 (citing Robertson, 490 U.S. at 349–50).

[512] FSEIS, Ex. NRC-008-A-1 § 2.1.1.1.2.3.1.

to dispose of nonhazardous fluids underground.[513] Powertech may need to acquire permits for both classes of wells to operate its ISL facility.[514] The Safe Drinking Water Act (SDWA), also administered by the EPA, provides the method by which all or a portion of an aquifer is exempted, and thus allowed to be used in uranium ore recovery.[515] A National Pollutant Discharge Elimination System (NPDES) permit, issued by the SDDENR, sets the amount of pollutants that can enter surface water.[516] A radon emission standard is part of the EPA's national emission regulations under 40 C.F.R. Part 61, Subpart W, and Powertech may need EPA approval under this subpart before beginning operations.[517]

2. Parties' Positions

At the evidentiary hearing neither the Oglala Sioux Tribe nor the Consolidated Intervenors offered witnesses for Contention 9.[518] Powertech offered witnesses Hal Demuth, Gwyn McKee,[519] and Doyl Fritz. The NRC Staff offered witnesses Haimanot Yilma, Kellee Jamerson, and James Prikryl.

The Oglala Sioux Tribe alleges in Contention 9[520] that the NRC Staff's FSEIS inappropriately defers to the EPA and South Dakota in the determination that environmental

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[513] Id.

[514] Id.

[515] An aquifer can be exempted "if it does not currently serve as a source of drinking water and it cannot now and will not in the future serve as a source of drinking water because it is mineral, hydrocarbon, or geothermal energy producing." Id. § 3.5.3.5.

[516] FSEIS, Ex. NRC-008-A-1 § 1.7.3.6.

[517] Id. § 2.1.1.2.

[518] Consolidated Intervenors adopted the Oglala Sioux Tribe's evidence, authority, and arguments regarding deferral of NEPA's required analysis of environmental and waste disposal impacts from Powertech's proposal. Consolidated Intervenor Statement of Position at 10.

[519] Ex. APP-054, Gywn McKee Curriculum Vitae.

[520] LBP-14-5, 79 NRC at 401.

impacts of the proposed project will be SMALL, and that this inadequacy "violates 10 C.F.R. §§ 51.10, 51.70 and 51.71, and [NEPA] and implementing regulations."[521] Specifically, the Oglala Sioux Tribe claims that "the FSEIS fails to conduct any NEPA analysis of" the impacts of EPA-permitted Class III and Class V injection wells, which are connected actions that must be analyzed in the NRC Staff's FSEIS.[522] In the alternative, the Oglala Sioux Tribe argues that, even if judged not to be connected actions, impacts from the wells still must be fully analyzed in the FSEIS either in the cumulative impacts analysis, or as part of the NRC Staff's comprehensive hard look.[523] Additionally, the Oglala Sioux Tribe claims that other issues that have been insufficiently analyzed include EPA permits under the SDWA, Subpart W radon controls, and the South Dakota NPDES permit, none of which are subject to a NEPA analysis on their own.[524]

When the FSEIS does discuss non-NRC permits, the Oglala Sioux Tribe alleges that the NRC has not conducted its own analysis, and instead refers and defers to other agencies' future analysis.[525] Asserting that such a deferral is a violation of NEPA, the Oglala Sioux Tribe relies on South Fork Band Council v. BLM, 588 F.3d 718, 726 (9th Cir. 2009) for the principle that non-NEPA documents, especially when prepared by a state government, cannot satisfy a NEPA obligation.[526] The Oglala Sioux Tribe also relies on 10 C.F.R. § 51.71, which states that environmental impacts will be considered "irrespective of whether a certification or license from

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[521] Oglala Sioux Tribe Statement of Position at 38.

[522] Id. at 38.

[523] Id. at 38.

[524] Id. at 40; Oglala Sioux Tribe Post-Hearing Initial Brief at 77.

[525] Oglala Sioux Tribe Statement of Position at 39.

[526] Id. at 40.

the appropriate authority has been obtained."[527] The Oglala Sioux Tribe contends that these legal authorities prohibit the NRC from unreviewed reliance on other agencies' work relative to baseline, potential impacts, and mitigation associated with the project.[528]

Finally, the Oglala Sioux Tribe claims that a Class V well covers only shallow injection of waste material, and Powertech has proposed deep injection, below the lower-most Underground Source of Drinking Water aquifer, which is a Class I well.[529] The Oglala Sioux Tribe claims that South Dakota prohibits Class I wells.[530] The Oglala Sioux Tribe also contends that the FSEIS lacks an adequate discussion of this concern by deferring to the EPA's analysis without review of impacts or the effectiveness of mitigation.[531]

The NRC Staff claims the Oglala Sioux Tribe misread the FSEIS and has failed to show that NEPA was violated.[532] According to the NRC Staff, the very purpose of the FSEIS was to evaluate as a whole Powertech's proposal to inject lixiviant into underground aquifers, using a Class III injection permit, and disposal through possible use of a Class V injection permit.[533] Regarding deferral to EPA analysis, the NRC Staff argues that the FSEIS merely cites the permitting process of other agencies to aid its explanation of how the NRC Staff itself determined the likely impacts in a particular area, and not to substitute for its own analysis.[534]

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[527] See Oglala Sioux Tribe Statement of Position at 40 (quoting 10 C.F.R. § 51.71).

[528] Oglala Sioux Tribe Post-Hearing Initial Brief at 78.

[529] Oglala Sioux Tribe Statement of Position at 41.

[530] Id. at 41.

[531] Id. at 41.

[532] NRC Staff Statement of Position at 52.

[533] Id. at 52.

[534] Id. at 52.

The NRC Staff also states that the FSEIS analyzes both disposal through a Class V well, and the possibility that Powertech will not be able to obtain a Class V permit.[535]

Powertech supports the NRC Staff's review of connected actions relative to Powertech's application.[536] Powertech argues that, instead of deferring to the EPA, the NRC Staff consulted with the EPA, and both agencies worked together on multiple drafts throughout the EIS stages.[537] Powertech describes the NRC Staff's process when using another agency's procedure as "evaluat[ing] the characteristics and protective nature of these procedures to determine if they are adequate to satisfy NRC's AEA mission of adequately protecting public health and safety."[538]

Regarding a specific challenge to the FSEIS, Powertech labels the charge that radioactive waste will be disposed of through a Class I well a "false presumption."[539] Powertech comments that the company will treat wastewater, and that any liquid injected into a Class V well would not be hazardous material.[540] Concerning all connected actions, Powertech concludes that the NRC Staff "conducted its own evaluation of the potential impacts" and adequately assessed potential impacts.[541]

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[535] Id. at 53.

[536] Powertech Statement of Position at 57.

[537] Id. at 58.

[538] Id. at 59.

[539] Id. at 59.

[540] Id. at 59.

[541] Id. at 60.

3. Board Ruling

All non-NRC permits discussed above are interdependent parts of Powertech's proposed action,[542] and there would be no utility to these permits without the NRC licensing at issue in this proceeding. These are connected actions, and the Board finds that the FSEIS adequately considered them as such. The FSEIS does refer to the analyses done in other permitting schemes and requirements, but this does not constitute an improper deferral to current or future EPA or SDDENR analysis. Instead, it is not only permissible, but necessary, for the NRC Staff to be able to review the interconnected analyses and standards used by other agencies.

Further, after a review of the FSEIS, the Board finds that though the NRC Staff references the EPA's analysis, the NRC Staff also undertook its own independent review. The NRC Staff does not merely state that Powertech must comply with EPA regulations. Instead, the NRC Staff considers the requirements and effects of other permitting schemes as one aspect of its overall analysis in the FSEIS.

Regarding injection well permits, in Chapter 4 of the FSEIS, when discussing groundwater impacts from construction, the FSEIS indicates that "as part of the applicant's Class III Underground Injection Control permit, all production, injection, and monitoring wells will be cased and cemented to prevent the migration of fluids into and between [Underground Sources of Drinking Water] USDWs."[543] The FSEIS further lists the requirement that all wells "undergo mechanical integrity tests of the casing to ensure against well leakage."[544] Class V wells are also thoroughly discussed both as they "must meet EPA requirements" but also

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[542] 40 C.F.R. § 1508.25.

[543] FSEIS, Ex. NRC-008-A-2 § 4.5.2.1.1.1.

[544] Id.

through separate analysis of their design and use, and potential impact on aquifers.[545] And the Board finds no support for the Oglala Sioux Tribe's premise that Class I wells will be used.[546] The FSEIS also considers and evaluates the alternative that "land application for liquid waste disposal" is used instead of or in addition to Class V wells.[547] Class V injection wells are intertwined with the relevant SDWA regulations, and Chapter 4 of the FSEIS relies on SDWA regulations to conclude that Class V injection well impacts to geology and soils will be SMALL.[548] However, the FSEIS also separately analyzes these potential impacts, and states that the NRC also requires releases into any deep aquifers below the production aquifers "to be treated and monitored to verify they meet NRC release standards."[549]

The FSEIS also indicates that the NRC Staff coordinated with the SDDENR on the issues surrounding a NPDES permit.[550] We find that coordinating with a state agency does not constitute deferring to a state agency, and note that the FSEIS separately analyzes the NPDES permit requirements.[551]

Radon emissions, regulated by the EPA under 40 C.F.R. Part 61, Subpart W, are also evaluated both in the context of and independent of Subpart W. The NRC Staff reviewed radon emission modeling, and "verified that appropriate exposure pathways were modeled and

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[545] FSEIS, Ex. NRC-008-A-1 § 2.1.1.1.2.4.1; see also FSEIS, Ex. NRC-008-A-2 § 4.5.2.1.1.2.1.

[546] FSEIS, Ex. NRC-008-B-1 § 7.6 ("Class V deep injection wells are being used for disposal rather than Class I wells.").

[547] FSEIS, Ex. NRC-008-A-1 § 2.1.1.1.2.4.3; FSEIS, Ex. NRC-008-A-2 § 4.2.1.1.

[548] FSEIS, Ex. NRC-008-A-2 § 4.4.1.1.2.

[549] Id. § 4.5.2.1.1.2.3.

[550] FSEIS, Ex. NRC-008-A-1 § 1.7.3.6.

[551] Id. § 2.1.1.2.2 (analyzing controls needed for surface water discharge if Powertech is or is not granted a NPDES permit); FSEIS, Ex. NRC-008-A-2 § 4.5.1.1.1.1 (analyzing construction impacts of surface waters in the context of the required NPDES permit, but also stipulating three additional mitigation strategies).

reasonable input parameters were used."[552] The NRC Staff then reviewed the model results in detail, and determined "potential radiation doses to occupationally exposed workers and members of the public during operations will be SMALL."[553] Retention pond siting and design considerations in the FSEIS also included an analysis of Subpart W requirements.[554] And the FSEIS indicates that, in addition to Subpart W requirements, Powertech may also be subject to additional necessary radon-related "license conditions" to ensure requirements are met.[555]

Analysis of this type continues throughout the FSEIS in sections too numerous to reference in full. The Board thus concludes that this comprehensive analysis of connected actions satisfies NEPA's connected action and hard look requirements. Further, since the Board finds that these related permits are treated directly as connected actions to the proposed action, they need not also be reviewed as cumulative actions. Finally, because the NRC Staff did not defer to other agencies' analyses to satisfy NEPA obligations, the South Fork Band Council case cited by the Oglala Sioux Tribe is inapposite to this contention. Based on the above, we conclude that the FSEIS adequately considers connected actions and find for Powertech and the NRC Staff on Contention 9.

G. Motion for Leave to File New or Amended Contentions

Having addressed all admitted contentions that were the subject of the Board's August 2014 evidentiary hearing, we next turn to the Oglala Sioux Tribe's pending November 7, 2014 motion for leave to file new or amended contentions.[556] The Oglala Sioux Tribe states that the

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[552] FSEIS, Ex. NRC-008-A-2 § 4.13.1.2.2.1.

[553] Id.

[554] FSEIS, Ex. NRC-008-A-1 § 2.1.1.1.2.4.2.

[555] FSEIS, Ex. NRC-008-A-2 § 4.14.1.4.1.

[556] Motion for Leave to File New or Amended Contention on Behalf of the Oglala Sioux Tribe (Nov. 7, 2014) [hereinafter Oglala Sioux Tribe New Contention Motion].

two new contentions pertain to: "1) the NRC Staff's recent testimony related to its review of the new Powertech borehole data disclosed pursuant to the Board's September 8, 2014 Post-Hearing Order; and, 2) the recently released documents from the [EPA] under its [CERLCA] authority."[557] The Oglala Sioux Tribe alleges the borehole data was reviewed outside of the NEPA process and that the NRC Staff did not submit this material to the required hard look.[558] The Oglala Sioux Tribe further alleges that the EPA documents should have been but were not reviewed or analyzed in the FSEIS.[559]

On August 21, 2014 the evidentiary hearing concluded.[560] The record, however, was held open to facilitate disclosure by Powertech of certain well log data on September 13, 2014 and to permit the filing by the parties of additional testimony and/or exhibits based on this well log data.[561] Additional testimony and exhibits were filed by the Oglala Sioux Tribe[562] and the NRC Staff,[563] and on November 13, 2014, the Board admitted into evidence Exhibits OST-025 and OST-026, on which these new contentions are based.[564]

As the Oglala Sioux Tribe acknowledges, to gain the admission of a new or amended contention at this stage of the proceeding, a party must meet the requirements of both 10 C.F.R.

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[557] Id. at 1-2.

[558] Id. at 2.

[559] Id. at 3.

[560] Tr. at 1,328.

[561] Licensing Board Post Hearing Order (Sept. 8, 2014).

[562] Oglala Sioux Tribe Motion To Admit Additional Exhibits (Oct. 14, 2014); Oglala Sioux Tribe Motion to Admit Additional Exhibits (Nov. 7, 2014); Oglala Sioux Tribe Motion to Admit Additional Testimony and Exhibits (Nov. 21, 2014).

[563] NRC Staff's Motion To Admit Testimony And Exhibits Addressing Powertech's September 14, 2014 Disclosures (Oct. 14, 2014).

[564] Licensing Board Order (Admitting New Exhibits and Closing the Evidentiary Record on Contentions 1A, 1B, 2, 4, 6 and 9) (Nov. 13, 2014).

§ 2.309(c) and 2.309(f).[565] Section 2.309(c) states that a request to admit new or amended contentions must satisfy three specific requirements: "(i) The information upon which the filing is based was not previously available; (ii) The information upon which the filing is based is materially different from information previously available; and (iii) The filing has been submitted in a timely fashion based on the availability of the subsequent information."[566] Each of these requirements must be satisfied for a new or amended contention to be admitted. Further, even if contentions are based on an NRC Staff's FSEIS, an intervenor still bears the responsibility of demonstrating that a new contention merits admission and meets all six requirements of 10 C.F.R. § 2.309.[567] A contention cannot be admitted in an NRC hearing unless it meets the criteria in 10 C.F.R. § 2.309(f)(1), which requires that each contention:

> (i) Provide a specific statement of the issue of law or fact to be raised or controverted . . ;
> (ii) Provide a brief explanation of the basis for the contention;
> (iii) Demonstrate that the issue raised in the contention 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 . . . ;
> (vi) Provide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact.

Additionally, with respect to the need to supplement an issued final EIS, the party offering the new contention has the burden of presenting information sufficient to show that

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[565] Oglala Sioux Tribe New Contention Motion at 1.

[566] 10 C.F.R. § 2.309(c)(1)(i-iii).

[567] Private Fuel Storage (Indep. Spent Fuel Storage Installation), LBP-00-28, 52 NRC 226 (2000). The intervenors carry the burden of showing that any late-filed contentions are admissible. See Amergen Energy Company, LLC (Oyster Creek Nuclear Generating Station), CLI-09-07, 69 NRC 235, 260–61 (2009).

there is a genuine issue regarding whether the NRC Staff should supplement its document.[568] The party offering the contention thus must explain why the new information is sufficiently significant to present "a seriously different picture of the environmental landscape."[569] The new information must point to impacts that affect "the quality of the human environment in a significant manner or to a significant extent not already considered."[570]

1. New Contention 1: The NRC Staff's Review of Newly-Disclosed Borehole Data was Inadequate Under, and Failed to Comply with, the National Environmental Policy Act and Implementing Regulations

In proposed New Contention 1 the Oglala Sioux Tribe argues that NEPA requires that the record be reopened and the NRC Staff give the newly disclosed bore hole data a hard look. The Oglala Sioux Tribe further alleges that the NRC Staff cannot ignore this data and that the review it was given by the NRC Staff was "without a scientifically valid and sourced methodology."[571]

We conclude that New Contention 1 is inadmissible. It does not meet the standard in 10 C.F.R. § 2.309(c)(2) in that it relies on information that is not materially different from information previously available (and in this case already in the record). Further, it fails to raise a genuine dispute as required by 10 CFR 2.309 (f)(1)(vi), and does not meet the requirements in 10 C.F.R. § 51.92 for demonstrating the need to supplement a FSEIS.

In particular, the Oglala Sioux Tribe has not shown that the well log data or the NRC Staff's analysis of that well log data would lead to any new or materially different information or

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[568] See 10 CFR § 51.92; see also Hydro Res., Inc. (Crownpoint Uranium Project), CLI-04-33, 60 NRC 581, 659 (2004).

[569] S. Nuclear Operating Co. (Vogtle Electric Generating Plant, Units 3 and 4), CLI-12-11, 75 NRC 523, 533 n.53 (2012) (quoting Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-06-3, 63 NRC 19, 28 (2006)).

[570] Hydro Res., Inc. LBP-04-23, 60 NRC at 448 (quoting Marsh, 490 U.S. at 374).

[571] Oglala Sioux Tribe New Contention Motion at 8.

conclusions. The NRC Staff's "spot check" of Powertech's additional borehole log data led the NRC Staff to conclude that its initial analysis was accurate.[572] Similarly, the Oglala Sioux Tribe's review of this same data led them to conclude their original conclusions were correct.[573]

Initially, we note that the process of reviewing representative borehole logs is not new or a materially different approach relative to this proceeding. This review methodology has been practiced by the NRC Staff since the submission of Powertech's license application and throughout its review, culminating in the issuance of Powertech's NRC license. This methodology was reasonable to support issuance of the license application, and is reasonable for review of the additional borehole log data. As such, the use of this methodology does not rise to the level of new and significant or materially different information.

The results of the review by both the NRC Staff and the Oglala Sioux Tribe of Powertech's newly disclosed well log data did not "paint a seriously different picture of the environmental landscape."[574] Consequently, it does not give rise to a genuine issue in dispute, and the proposed contention does not meet the admissibility requirements of 10 C.F.R. § 2.309(f)(1)(vi).

2. New Contention 2: The NRC Staff NEPA Analysis Fails to Adequately Address or Review the Findings in the EPA's CERCLA Preliminary Assessment or the EPA's Reasonably Foreseeable CERLCA Removal Action

The Oglala Sioux Tribe contends that certain "newly-released EPA documents include findings and conclusions that were not reviewed or analyzed in the FSEIS or any other public NEPA forum, in violation of NEPA and NRC implementing regulations."[575] Specifically, the Oglala Sioux Tribe argues:

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[572] NRC Staff's Brief in Support of Answering Testimony (Dec. 9, 2014) at 5.

[573] LaGarry Supplemental Testimony, Ex. OST-029 at 4.

[574] Vogtle, 75 NRC at 534.

[575] Oglala Sioux Tribe New Contention Motion at 11.

> the EPA found that sources of radiological contamination associated with the unreclaimed uranium mines on the Dewey-Burdock property are not just impacting the soil and surface waters at the site, but are also leaking into and through the groundwater so as to contaminate ground water wells at the site, and have [the] potential to impact additional ground water wells at the site.[576]

According to the Oglala Sioux Tribe, "these are issues that should have been, but were not, analyzed in the NRC Staff's NEPA review."[577]

New Contention 2 refers to a Preliminary Assessment recently released by the EPA for the abandoned Darrow/Freezeout/Triangle mine area, which is partially within the Dewey-Burdock site.[578] The Oglala Sioux Tribe alleges that this Preliminary Assessment is new information or contains new information which should be analyzed as part of the FSEIS.

New Contention 2 is inadmissible. It fails to present sufficient information to show a genuine dispute exists on a material issue of law or fact, as required by 10 C.F.R. § 2.309(f)(1)(vi), and ignores the fact that the environmental concerns related to the abandoned mines are discussed in the FSEIS. Both the FSEIS and the Preliminary Assessment report that: (1) surface soils near the abandoned uranium mines contain levels of radionuclides above health-based standards; (2) surface and water samples taken from the mine pits and nearby streams contain radionuclides; (3) air samples collected at the uranium mines have elevated levels of radionuclides; and (4) groundwater samples contain levels of radionuclides that exceed drinking water standards.[579] The Preliminary Assessment acknowledges that the NRC Staff evaluated these issues in the FSEIS, and the EPA refers to the NRC Staff's conclusions throughout its Preliminary Assessment.[580]

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[576] Id.

[577] Id.

[578] Preliminary Assessment, Ex. OST-026.

[579] Ex. NRC-174, NRC Staff's Responsive Testimony at 5 (Oct. 24, 2014).

[580] See Preliminary Assessment, Ex. OST-026 at 11, 13, 29–30.

The Oglala Sioux Tribe fails to show that the Preliminary Assessment is or contains significant new information requiring that the NRC Staff supplement the FSEIS. The Oglala Sioux Tribe therefore fails to raise a genuine issue of law or fact, as required by 10 C.F.R. § 2.309(f)(1)(vi).

H. Ruling on Motions to Strike filed July 22, 2014

On July 22, 2014 all parties to this proceeding filed various procedural motions in advance of the scheduled August 19–21, 2014 evidentiary hearing. The Oglala Sioux Tribe moved to strike portions of NRC Staff and Powertech pre-filed testimony by claiming that this testimony included analysis and information that purportedly supports the FSEIS, but was not included in the FSEIS itself.[581] The Oglala Sioux Tribe asked the Board to strike this material under the theory that an FSEIS cannot be supplemented or rehabilitated by information not included in the FSEIS, and so this material goes beyond the scope of NEPA. The Oglala Sioux Tribe then pointed to a nonexclusive list of examples that it sought to strike from the record in Exhibits NRC-001, APP-003, APP-005, APP-010, APP-064, APP-053, and APP-070. On July 29, 2014 the NRC Staff and Powertech filed answers in opposition to this motion.[582] The NRC Staff claims that the Oglala Sioux Tribe misunderstands the administrative record rule and its conclusion only stands once the NRC has completed a final agency action, which will not be achieved until after the hearing is complete.[583] Powertech responded that its testimony is not intended to supplement the FSEIS, but instead serves to explain why the FSEIS does not need supplementation.

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[581] Oglala Sioux Tribe's Motion to Strike (July 22, 2014).

[582] Powertech (USA), Inc. Response to NRC Staff's, Consolidated Intervenors' and the Oglala Sioux Tribe's Motions in Limine, Motion for Cross-Examination, and Motion to Strike/Exclude (July 29, 2014); NRC Staff's Response to Prehearing Motions (July 29, 2014).

[583] NRC Staff's Response to Prehearing Motions (July 29, 2014) at 2–3.

The Consolidated Intervenors moved to limit and exclude Powertech's witness testimony where its technical witnesses offer legal opinions or conclusions.[584] Specifically, Consolidated Intervenors moved to strike portions of two Powertech exhibits.[585] The NRC Staff and Powertech opposed Consolidated Intervenors' motion. The NRC Staff submits that there is a connection between each witness' experience and testimony, and that the Board will ensure the testimony carry weight only to the extent it is supported by other evidence in the record. Powertech responds that its witnesses are not offering legal opinions, but rather their own interpretations of regulations and agency guidance in support of Powertech's counsel's legal opinions. In our August 1, 2014 order[586] we deferred ruling on these two motions. We stated we would "be better able to resolve the disputes surrounding the Oglala Sioux Tribe and Consolidated Intervenor motions upon consideration of the full evidentiary record."[587]

The Board now denies both motions. The Oglala Sioux Tribe's motion is denied because the evidentiary hearing is a part of the review of the FSEIS. In an NRC adjudicatory proceeding, even if a Board finds an environmental impact statement prepared by the NRC Staff inadequate in certain respects, the Board's findings, as well as the adjudicatory record, "become, in effect, part of the [final EIS]."[588] Thus, the Board's ultimate NEPA judgments can be made on the basis of the entire adjudicatory record in addition to the NRC Staff's FSEIS.[589]

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[584] Consolidated Intervenors' Motion in Limine (July 22, 2014).

[585] Consolidated Intervenors moved to strike portions of Lynn Sebastian's testimony in Ex. APP-001, Written Testimony of Lynne Sebastian, and portions of Mr. Lawrence's testimony in Lawrence Testimony, Ex. APP-037.

[586] Licensing Board Order (Ruling on Motions in Limine: Motions to Strike and for Cross-Examination) (Aug. 1, 2014) (unpublished).

[587] Id. at 12.

[588] Hydro Res., Inc. CLI-01-4, 53 NRC at 53 (quoting Claiborne, CLI-98-3, 47 NRC at 89).

[589] See La. Energy Servs., L.P. LBP-05-13, 61 NRC 385, 404 (2005), aff'd, CLI-06-22, 64 NRC 37 (2006).

The Consolidated Intervenors' motion is also denied. The witnesses' testimony challenged is admitted in its entirety and has been given the weight it is due based on the qualifications and background of the witnesses. Any legal conclusions in the testimony at issue are accepted as the technical witnesses' understanding of legal requirements.

V. CONCLUSION AND BOARD ORDER

Pursuant to 10 C.F.R. § 2.1210, the Atomic Safety and Licensing Board assigned to hear the contentions raised in this case resolves all issues pending before it and terminates this proceeding as follows:

A. Contention 1A is resolved in favor of the Oglala Sioux Tribe and the Consolidated Intervenors. The Board finds that the NRC Staff has not carried its burden of demonstrating that its FSEIS complies with NEPA and with 10 C.F.R. Part 40. The environmental documents do not satisfy the requirements of the NEPA, as they do not adequately address Sioux tribal cultural, historic and religious resources. The NRC Staff can remedy this deficiency in the Record of Decision in this proceeding by promptly initiating a government-to-government consultation with the Oglala Sioux Tribe to identify any adverse effects to cultural, historic or religious sites of significance to the Oglala Sioux Tribe which may be impacted by the Powertech Dewey-Burdock project, and to adopt measures to mitigate such adverse effects, as necessary. The FSEIS and Record of Decision in this case must be supplemented, if necessary, to include any cultural, historic or religious sites identified and to discuss any mitigation measures necessary to avoid any adverse effects.

B. Contention 1B is resolved in favor of the Oglala Sioux Tribe. Meaningful consultation as required by statute has not occurred. The NRC Staff can remedy this deficiency in the Record of Decision in this proceeding by promptly initiating a government-to-government consultation with the Oglala Sioux Tribe to identify any adverse effects to cultural, historic or religious sites of significance to the Oglala Sioux Tribe which may be impacted by the Powertech Dewey-Burdock project, and to adopt measures to mitigate such adverse effects, as necessary.

C. Contention 2 is resolved in favor of the NRC Staff and Powertech. The NRC Staff has carried its burden of demonstrating that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and that the collection of baseline/background groundwater data in a phased manner as outlined in NUREG-1569 is not a violation of NEPA.

D. Contention 3 is resolved in favor of the NRC Staff and Powertech with an additional license condition. With the addition of a license condition the NRC Staff has carried its burden of demonstrating that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and includes adequate hydrogeological information. NRC License No. SUA-1600 is revised to include a new requirement that:

> Prior to conducting tests for a wellfield data package, the licensee will attempt to locate and properly abandon all historic drill holes located within the perimeter well ring for the wellfield. The licensee will document, and provide to the NRC, such efforts to identify and properly abandon all drill holes in the wellfield data package.

E. Contention 4 is resolved in favor of the NRC Staff and Powertech. The Board finds that the NRC Staff has carried its burden of demonstrating that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and has adequately analyzed groundwater quantity impacts.

F. Contention 6 is resolved in favor of the NRC Staff and Powertech. The Board finds that the NRC Staff has carried its burden of demonstrating that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and has adequately described and analyzed proposed mitigation measures.

G. Contention 9 is resolved in favor of the NRC Staff and Powertech. The Board finds that the NRC Staff has carried its burden of demonstrating that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and has adequately considered connected actions.

H. New Contention 1 is not admitted because it does not meet the standard in 10 C.F.R. § 2.309(c)(2) and fails to raise a genuine dispute as required by 10 CFR 2.309 (f)(1)(vi). It also does not meet the requirements in 10 C.F.R. § 51.92 for supplementing a FSEIS.

I. New Contention 2 is not admitted because it fails to present sufficient information to show a genuine dispute exists on a material issue of law or fact, as required by 10 C.F.R. § 2.309(f)(1)(vi).

J. The Oglala Sioux Tribe Motion to Strike filed July 22, 2014 is denied.

K. The Consolidated Intervenors Motion in Limine filed July 22, 2014 is denied.

L. Pursuant to 10 C.F.R. § 2.1207(a)(3)(iii) the Board, by separate order, is providing to the Commission's Secretary a copy of all questions submitted by the parties prior to and during the course of the evidentiary hearing.

M. The Licensing Board retains jurisdiction over the final resolution of Contentions 1A and 1B. The NRC Staff shall file a monthly report, beginning June 2015, with the Board on its progress in addressing the outstanding issues in Contention 1A and 1B. The NRC Staff's final monthly report shall demonstrate that the FSEIS complies with NEPA and with 10 C.F.R. Part 40 and include an agreement reflecting the parties' settlement of their dispute regarding the contentions or a motion for summary disposition of Contentions 1A and 1B.

In accordance with 10 C.F.R. § 2.1210, as to Contentions 2, 3, 4, 6 and 9, this Partial Initial Decision will constitute a final decision of the Commission 120 days from the date of issuance (or the first agency business day following that date if it is a Saturday, Sunday, or federal holiday, see 10 C.F.R. § 2.306(a)), i.e., on August 28, 2015, unless a petition for review is filed in accordance with 10 C.F.R. § 2.1212, or the Commission directs otherwise. Any party wishing to file a petition for review regarding the Board's rulings on Contenions 2, 3, 4, 6 and 9 on the grounds specified in 10 C.F.R. § 2.341(b)(4) must do so within twenty-five (25) days after service of this Partial Initial Decision. The filing of a petition for review is mandatory for a party to have exhausted its administrative remedies before seeking judicial review. Within 25 days after service of a petition for review, parties to the proceeding may file an answer supporting or

opposing Commission review. Any petition for review and any answer shall conform to the requirements of 10 C.F.R. § 2.341(b)(2)–(3).

It is so ORDERED.

THE ATOMIC SAFETY
AND LICENSING BOARD[590]

/RA/

_____
William J. Froehlich, Chair
ADMINISTRATIVE JUDGE

/RA/

_____
Mark O. Barnett
ADMINISTRATIVE JUDGE

Rockville, Maryland
April 30, 2015

[590] Dr. Richard F. Cole, who served with distinction as a full-time technical member of the Atomic Safety and Licensing Board Panel beginning in 1973, was a member of this Licensing Board from its inception. He participated in the September 19–20, 2013 site visit, the August 18, 2014 limited appearance sessions and the August 19–21, 2014 evidentiary hearing. Judge Cole passed away on December 11, 2014 before this decision was finalized.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
POWERTECH (USA) INC.	)	Docket No. 40-9075-MLA
(Dewey-Burdock In Situ Recovery Facility)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **PARTIAL INITIAL DECISION (LPB-15-16)** have been served upon the following persons by Electronic Information Exchange, and by electronic mail as indicated by an asterisk.

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[Original signed by Clara Sola]
Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 30th day of April, 2015

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