UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	Docket No.: 40-9075-MLA
POWERTECH (USA), INC.	Date: January 29, 2015
(Dewey-Burdock In Situ Uranium Recovery Facility)	

POWERTECH (USA), INC'S REPLY TO PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

Pursuant to 10 CFR § 2.1209 and the Atomic Safety and Licensing Board's (Licensing Board) Order Setting Briefing Dates dated December 10, 2014, the licensee Powertech (USA), Inc. (Powertech)[1] hereby submits this Reply to NRC Staff's, Oglala Sioux Tribe's (Tribe) and Consolidated Intervenors' (CI) Proposed Findings of Fact and Conclusions of Law in the above-captioned proceeding. This proceeding involves seven (7) admitted contentions related to potential concerns associated with Powertech's United States Nuclear Regulatory Commission (NRC)-licensed Dewey-Burdock *in situ* leach uranium recovery (ISR) project in the State of South Dakota. Previously, Powertech submitted proposed findings of fact and conclusions of law, as well as summary argument, on eighteen (18) questions asked by the Licensing Board. These previously submitted proposed findings support NRC Staff's issuance of Powertech's requested license and its accompanying record of decision (ROD) under 10 CFR Parts 40 and 51 and other applicable regulations, criteria, and guidance, as well as construction and operation of

[1] Page 1 of the Tribe's pleading states that "Powertech (USA), Inc." no longer exists. The critical factor here is what is the license-holder's name and what personnel are responsible for compliance with license requirements. To date, these items have not changed and Powertech (USA), Inc. remains in existence.

the Dewey-Burdock ISR Project. In response to the proposed findings of fact and conclusions of law submitted by NRC Staff in support of these items and the CI and Tribe proposed findings of fact and conclusions of law in support of its admitted contentions, Powertech hereby submits this Reply to Proposed Findings of Fact and Conclusions of Law in continued support of NRC Staff's issuance of NRC License No. SUA-1600 and in opposition to any modification of such License under any of the admitted contentions.

I. INTRODUCTION

On January 9, 2015, NRC Staff, CI, the Tribe, and Powertech submitted proposed findings of fact and conclusions of law on each of the seven (7) admitted contentions in this proceeding. In its pleading, NRC Staff argues that the Licensing Board should dismiss Contentions 1A, 1B, 2, 3, 4, 6, and 9 and affirms the fact that Powertech's NRC License No. SUA-1600 should be upheld. NRC Staff's proposed findings of fact and conclusions of law confirm that both NRC Staff and Powertech have met their respective burdens of demonstrating that the ROD, including the Final Supplemental Environmental Impact Statement ("FSEIS" or NUREG-1910, Supplement 4), Safety Evaluation Report (SER) and source and byproduct materials license, adequately satisfy the safety requirements of NRC's 10 CFR Part 40 regulations and Appendix A Criteria, National Environmental Policy Act (NEPA), the Commission's environmental review regulations at 10 CFR Part 51, and the National Historic Preservation Act (NHPA). In its pleading, Intervenors argue that Powertech's license application and the entire ROD is inadequate based on the administrative record under all seven (7) admitted contentions and that the record of decision (ROD) should be vacated. Powertech's proposed findings of fact and conclusions of law support NRC Staff's pleadings and extensively delineate the factual and legal findings that support upholding Powertech's NRC license and the ROD. In

accord with Powertech's and NRC Staff's January 9, 2015, proposed findings of fact and conclusions of law and for the reasons discussed below, Powertech respectfully requests that the Licensing Board find that the analyses performed and conclusions reached by NRC Staff in the ROD are adequate to satisfy 10 CFR Part 40 regulations and Appendix A Criteria, NEPA, 10 CFR Part 51 regulations, and NHPA regulations and that Powertech's NRC License No. SUA-1600 should be upheld.

II. ARGUMENT

A. REPLY TO PROPOSED CONCLUSIONS OF LAW

1. NRC STAFF'S PROPOSED CONCLUSIONS OF LAW ARE CONSISTENT WITH EXISTING LAW

As a general proposition, Powertech concurs with NRC Staff's proposed conclusions of law and NRC Staff's Post-Hearing Order Response, as they pertain to Contentions 1A, 1B, 2, 3, 4, 6, and 9. For purposes of this reply, Powertech will highlight the following conclusions of law proffered by NRC Staff due to their critical importance in this proceeding.

With respect to Contentions 1A and 1B, in Paragraphs 4.12-4.14 of its Proposed Conclusions of Law, NRC Staff addresses the "reasonable and good faith effort" required under the Advisory Council on Historic Preservation's (ACHP) NHPA regulations at 36 CFR § 800.4(b)(1) by stating that this standard is satisfied and its NHPA review can be finalized in a variety of ways including a programmatic agreement (PA). This PA and the other components of the NHPA Section 106 process can be coordinated with any NEPA review conducted by the agency, but need not be conducted in concert. NRC Staff's January 9, 2015 Proposed Findings of Fact and Conclusions of Law at ¶¶ 4.15-4.16. It is permissible to finalize the NHPA Section 106 process separately from a NEPA document such as an SEIS initially conducted in concert with the NHPA Section 106 process, so long as it is done prior to issuance of the requested

agency action (e.g., issuance of an NRC license).[2] *See id.* at ¶¶ 5.19-5.25. NRC Staff's recitation in Paragraph 5.13 of how it complied with the NHPA is consistent with existing law and with Powertech's assessment of legal conclusions in its January 9, 2015, pleading.

Powertech also further emphasizes, as it will in the arguments to CI and the Tribe's January 9, 2015, pleadings that the Advisory Council on Historic Preservation (ACHP) concurred with NRC Staff's conduct of the NHPA Section 106 process under regulations promulgated and reviewed/implemented by the ACHP.[3] On Page 3 of its Post-Hearing Order Response, NRC Staff cites to NRC Staff Exhibit NRC-031, which states that "based on the background documentation, the issues addressed during consultation, and the processes established in the [Programmatic Agreement], the ACHP has concluded that the content and spirit of the Section 106 process has been met by the NRC." NRC Staff Exhibit NRC-031 at 3; *see also* NRC Staff January 9, 2015, Post-Hearing Order Response at 3. This letter and the conclusion of the ACHP stated therein are fundamental evidence that NRC Staff satisfied the "reasonable and good faith effort" requirement and should be dispositive on Contention 1B and NHPA considerations under Contention 1A.

With respect to all environmental contentions, in Paragraph 4.5 of its proposed findings of fact and conclusions of law, NRC Staff cites the legal maxim that "NEPA does not require the Staff to commit virtually infinite study and resources to a proposed project."[4] This maxim is

[2] This conclusion of law also is relevant and accurate with respect to NRC Staff citations on Page 48 of its Proposed Findings of Fact and Conclusions of Law in response to the Tribe's allegations that the FSEIS should not have been issued prior to completion of the PA as part of its allegations of NEPA violations under Contention 6. *See* NRC Staff January 9, 2015, Proposed Findings of Fact and Conclusions of Law at 49. Powertech concurs with NRC Staff's argument here.

[3] As stated in the Execution Statement of the PA, it is acknowledged that NRC met the requirements of Section 106 under the regulations promulgated and implemented by the ACHP. *See* NRC Staff Exhibit NRC-018-A at 14.

[4] *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010) (footnote omitted).

supported further by NRC Staff's citation in Paragraph 4.4 to the fact that it "need not address every impact that could possibly result, but rather only those that are reasonably foreseeable or have some likelihood of occurring."[5] This legal maxim is consistent with the manner in which NRC Staff evaluates ISR projects in the context of 10 CFR Part 40, Appendix A, Criterion 7 "baseline" groundwater quality data gathering and analysis, which embodies the concept that NEPA allows NRC to gather more data but "it must have some discretion to draw the line and move forward with decision-making."[6] This approach to licensing is endorsed by the Commission in several instances including, but not limited to, (1) the *Hydro Resources, Inc.* decision in CLI-06-01, (2) the Commission's endorsed policy of performance-based licensing, and (3) the Commission's endorsement of NUREG-1569 for publication as official Commission guidance in Staff Requirements Memorandum (SRM) SECY-02-0204 entitled *Staff Requirements-SECY-02-0204-Update of Uranium Recovery Guidance Documents*.[7] Indeed, with respect to the SRM cited above, then-Commissioner Dicus stated that, as published, NUREG-1569 and its acceptance criteria "are an acceptable means of implementing the Commission's policy decisions for uranium recovery facilities, *in lieu* of rulemaking."[8] Thus, NRC Staff's approach to NEPA in 10 CFR Part 51, as articulated in NUREG-1569, is consistent with Commission-endorsed policies and has the full weight of unanimous Commission approval as guidance.

NRC Staff's Paragraphs 5.41-5.47 and 5.58 correctly describe the methodology by which Appendix A as interpreted by NUREG-1569 direct license applicants to gather and

[5] *Southern Nuclear Operating Co.* (Early Site Permit for Vogtle ESP Site), LBP-09-07, 69 NRC 613, 631 (2009).
[6] *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010).
[7] United States Nuclear Regulatory Commission, *Staff Requirements-SECY-02-0204-Update of Uranium Recovery Guidance Documents* (May 7, 2003).
[8] *Id.* (*Commissioner Comments on SECY-02-0204* at 1 (Commissioner Dicus Comments)).

analyze Criterion 7 "baseline" groundwater quality data versus Criterion 5B(5) groundwater data. Neither NRC Staff nor Powertech disagree with the proposition that Criterion 7 requires *adequate* "baseline" water quality to properly characterize the potentially affected environment in advance of the submission of a license application, the acquisition of which does not constitute "construction." However, neither Criterion 7 nor NUREG-1569 mandate the establishment of Criterion 5B(5) "Commission-approved background" (CAB) prior to license issuance, which does require "construction" (i.e., installation of a complete monitor well network). NUREG-1569, Chapter 2 entitled *Site Characterization* describes all necessary groundwater data that must be gathered and analyzed in a license application to satisfy Criterion 7 "baseline." On the other hand, NUREG-1569, Chapter 5 entitled *Operations* addresses post-license issuance, pre-operational CAB, which can only be finally established after installation of a complete monitor well network which is prohibited by the Part 40.32(e) "construction rule" prior to the issuance of a license. As discussed previously, Criterion 5B(1) directly connects the license condition-based program required by Criterion 7A to the establishment of the Criterion5B(5) values: "[s]pecified concentration limits are those limits established by the Commission as indicated in paragraph 5B(5) of this criterion." Thus, Criterion 5B(5) CAB cannot be established until after license issuance.

In accordance with the limitations contained in the "construction rule," the FSEIS analyzes the groundwater quality data provided by Powertech for one (1) year prior to license application submission and, consistent with the Commission's decision in CLI-06-01, NRC Staff issued license conditions incorporating detailed procedures per NUREG-1569, Chapter 5 proposed by Powertech in its license application for gathering groundwater data for

establishment of CAB *post-license issuance*.[9] In the *Hydro Resources, Inc.* case cited below (CLI-06-01), the Commission explicitly determined that post-license monitoring and sampling requirements proposed by the licensee as discussed in its final environmental impact statement (FEIS) did not deprive Intervenors of their hearing rights under the AEA. Similarly, such requirements as discussed in Powertech's FSEIS and reflected in License Conditions 10.10, 11.3 and 11.4 do not deprive Intervenors of their right to comment on and evaluate such requirements during the development and completion of NRC's NEPA/10 CFR Part 51 process for the Dewey-Burdock ISR Project.

The case law cited by Powertech previously and its analysis of the differentiation between Criterion 7 "baseline" groundwater quality pre-license application submission and Criterion 5B(5) CAB in light of the "construction rule," is consistent with Commission precedent in *Hydro Resources, Inc.* (CLI-06-01) and its approved NUREG-1569, Chapters 2 and 5 guidance. Therefore, Powertech respectfully submits that the Licensing Board is bound by this precedent and, accordingly, should rule on these issues in favor of Powertech and NRC Staff.

With respect to Contentions 4 and 6, NRC Staff also correctly cites to the appropriate case law regarding the use of and incorporation of other agencies' analyses into an EIS-level document such as an FSEIS. *See generally* NRC Staff January 9, 2015, Post-Hearing Order Response at 20-22, 29-30. Powertech concurs that both the Licensing Board and the Commission have deemed it appropriate for NRC Staff to incorporate such analyses into their EISs. *See id.*

With respect to Contention 6, NRC Staff also accurately addresses the permissibility of draft or "to-be-drafted" mitigation plans in an FSEIS analysis and an ROD. *See generally id.* at

[9] *Hydro Resources, Inc.* (P.O. Box 777, Crownpoint, New Mexico 87313), CLI-06-01, 63 NRC 1, 5-6 (2006) (footnotes omitted).

28-29. It is typical for uranium recovery operations to have plans or standard operating procedures (SOP) implemented after license issuance but prior to pre-operational inspection due to a variety of facility-specific factors. As a result and as cited by NRC Staff, an EIS-level document does not need to contain fully developed mitigation plans that are legally enforceable, fully developed or funded. *See id.* at 29, *see also Hydro Resources, Inc.* (Crownpoint Uranium Project), CLI-06-29, 64 NRC 417, 427 (2006) (discussing that an EIS need not contain "a complete mitigation plan" or even "a detailed explanation of specific [mitigation] measures which will be employed" and stating that mitigation measures "need not be legally enforceable, funded or even in final form to comply with NEPA's procedural requirements."). Thus, Powertech concurs with NRC Staff's assessment of the Licensing Board's Question 3 under Contention 6.

2. INTERVENORS' PROPOSED LEGAL CONCLUSIONS ARE INCONSISTENT WITH EXISTING LAW

Contrary to the legal arguments presented by Powertech and NRC Staff, the conclusions of law offered by CI and the Tribe are inconsistent with existing law and should not be incorporated into the Licensing Board's initial decision on each of the admitted contentions. For purposes of its response to CI and the Tribe's proposed conclusions of law, Powertech will address the general legal maxims offered by each party under each contention.

a. Contentions 1A and 1B: Historic and Cultural Resources

As a general matter, CI and the Tribe ignore many of the fundamental legal arguments proffered by Powertech and NRC Staff with respect to Contentions 1A and 1B. First, with respect to Contention 1A, CI and the Tribe repeatedly confuse the difference between the Level III archaeological survey performed by Augustana College, per Dr. Adrien Hannus' testimony, and the Tribal field surveys performed during the "open site" program made available to

interested Tribes during NRC's NHPA Section 106 process. *See* Tribe January 9, 2015, Pleading at 13-19; *see also* CI January 9, 2015, Pleading at 4-7. The Tribe also claims that Powertech and NRC Staff used the Level III survey to identify TCPs. *See id.* The Level III survey is provided by the *license applicant* pre-license application submission in an attempt to comport with NUREG-1569 guidance for license applications, which is deemed to be accorded special weight when evaluating compliance with NRC regulations. *See* NUREG-1569 at pp. 2-9 through 2-12; NRC Staff Exhibit NRC-013 at 47-50. In contradistinction, the tribal field surveys were used by NRC during the NHPA Section 106 process to ensure that a "reasonable and good faith effort" was made to allow tribes to provide the agency with information on their specific cultural traditions and knowledge-base regarding consultations with the agency on properties of traditional religious and cultural significance (TCP) that could be affected by the undertaking.[10] Seven (7) tribes conducted their field surveys; some chose to provide written reports to NRC, which were addressed in the FSEIS and the NHPA Section 106 process documentation, others chose not to provide this information to the agency. All submitted information was considered during development of the FSEIS and the aforementioned PA.[11] This portion of the ROD involved the Tribes and the federal agency (NRC); however, the Level III survey did not involve the tribes or the federal agency due to the structure of the NRC licensing process.[12] The process,

[10] For example, on page 14 of its pleading, the Tribe states that NRC Staff and Powertech relied "primarily" on the Level III survey and that Dr. Hannus was not qualified to identify TCPs. This statement is wholly inconsistent with the purpose of a Level III study versus a tribal field survey to evaluate potential TCPs as stated above. NRC Staff and Powertech relied on the Archeology Laboratory at Augustana College to identify potential *archaeological* sites, while relying on tribes willing to participate in the tribal field surveys to identify potential sites of religious and cultural significance.

[11] It is important here to re-emphasize the fact that the Tribe opted out of the chance to conduct a field survey at the Dewey-Burdock ISR Project site. The Tribe could have identified sites of religious and cultural significance to it had it availed itself of the opportunity. *Compare* Tribe Pleading at 17-18 (alleging that no "Sioux comments or reports were incorporated into the cultural resource reviews").

[12] It is important to note that the tribes had ample opportunity to comment on the archaeological survey reports and test excavations, all comments of which were taken into account during the NEPA process and the development of the ROD.

however, was supplemented by further site-specific work pursuant to NRC requests. Given that there was no mechanism for tribal involvement during the pre-license application phase, since the federal agency (NRC) was not involved until the application was submitted, and that the subsequent opportunity to participate in tribe-specific TCP field surveys was afforded to the tribes, it is incorrect for CI or the Tribe to claim that the NHPA Section 106 process relied primarily on the Level III survey. It is critical that the Licensing Board understand the difference between these two processes when ruling on Contentions 1A and 1B.

On this point, the Tribe also alleges that the Level III survey "left a significant number of archaeological, historical, and traditional cultural resources on site unevaluated." Tribe January 9, 2015, Pleading at 13. Once again, with respect to TCPs, the Level III survey was not intended, and Powertech has not argued so, to address TCPs. With respect to archaeological sites, the Augustana Level III survey was performed consistent with standard State archaeological compliance practice. It is standard practice in NHPA compliance to leave properties that would require destructive testing to determine National Registry of Historic Places (NRHP) eligibility unevaluated if those properties will not be impacted by the undertaking. Based on current standards, as long as unevaluated sites are protected from disturbance which, in this case, is required under the terms of the PA, by definition, there is no impact or effect to such sites. *See* Powertech Exhibit APP-063 at 3, ¶¶ A.1-A.2 (Dr. Sebastian).

Second, as a general matter, neither CI nor the Tribe makes any attempt to address, much less dispute, the legal conclusions offered by Powertech and NRC Staff regarding the role of the ACHP in the Section 106 process, including the method for compliance with NHPA requirements and what constitutes "reasonable and good faith effort" by an agency such as NRC. *See e.g.*, Tribe January 9, 2015, Pleading at 8. As stated above in Powertech's concurrence with

NRC Staff's legal argument and specifically acknowledged in the Tribe's pleading (Pages 8-9), the ACHP is the federal agency charged with interpreting and implementing regulations and guidance in accordance with NHPA requirements. As noted by NRC Staff, the ACHP concluded that the ACHP's regulations' prescribed "reasonable and good faith effort" requirement was satisfied. Neither CI nor the Tribe has proffered any document or any other information disputing ACHP's concurrence with NRC Staff's conduct of the NHPA Section 106 process.[13]

Third, the Tribe continues to claim that some form of "scientific method" was required to properly assess potential sites of religious and cultural significance (i.e., TCPs). *See e.g.*, Tribe January 9, 2015, Pleading at 19. This claim is completely incorrect as refuted in previous testimony from Dr. Lynne Sebastian on behalf of Powertech. Dr. Sebastian testified that no "scientific method" is employed to identify potential TCP sites, because the identification of such sites is based on Tribal-specific cultural and traditional knowledge and cannot be subject to some arbitrary and uniform method. Indeed, during the "open site" field survey, Tribes were allowed to design their own survey strategies, because each tribe has its own unique methods, knowledge, traditions, and beliefs. The Tribe's attempt to pigeonhole tribal field surveys into one uniform identification method flies in the face of the very purpose of tribal-specific beliefs and site identification efforts.

Fourth, CI and the Tribe consistently mischaracterize the requirements of NEPA and the NHPA as they pertain to historic and cultural resources. For example, on Page 20 of its pleading, the Tribe alleges that, because the PA sets forth detailed, future processes for additional site identification, evaluation of effects on historic properties, and consultations about

[13] On Page 19 of its pleading, the Tribe argues that the "separation" of the NHPA Section 106 process from the NEPA process means that the former is still "ongoing." This is patently false because the NHPA Section 106 process is completed when an agreement document such as a PA is executed. *See* 36 CFR § 800.6. This was completed prior to issuance of Powertech's NRC license.

measures to resolve any adverse effects, NEPA compliance has been inadequate. However, the Tribe fails to recognize that the PA is not intended to be a NEPA document; rather, it is a formal agreement document under ACHP's NHPA regulations at 36 CFR § 800.14(b). The Tribe also ignores joint CEQ/ACHP guidance that allows agencies to incorporate future identification efforts and development of future mitigation measures into PAs issued in conjunction with a NEPA ROD. *See* Tr. at 750, lines 15-18 (Clark), *citing* NRC Staff Ex. NRC-048 at 28. *See also* NRC Staff Ex. NRC-048 at 17: "Only the ROD is a decision document under the CEQ regulations." *See also id.* at 9: "When an EIS is prepared, the NEPA review process is concluded when a record of decision (ROD) is issued." NRC Staff witnesses Yilma and Jamerson testified that the Staff did not issue the ROD for the Dewey-Burdock Project, which is the NEPA decision document, until after the Programmatic Agreement was finalized. *See* NRC Staff Ex. NRC-001 at 88, ¶ A6.14. The Tribe also claims that the PA is not a "legitimate substitute for NEPA compliance" because it does not take a "hard look" at potential impacts to cultural resources and associated mitigation measures. *See* Tribe January 9, 2015, Pleading at 21. This is incorrect because, as stated countless times in cited NEPA case law by Powertech and NRC Staff, the NEPA "hard look" standard does not require an evaluation of potential effects on every single resource. *See Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station, ALAB-919, 30 NRC 29, 44 (1989) (citation omitted).[14][15]

Lastly, CI and the Tribe continue to mischaracterize the use of phased identification of historic properties as being inconsistent with the requirements of 36 CFR 800. In fact, "phased

[14] In addition, it is important to note that the PA was never intended to be used to demonstrate NEPA compliance. The PA is intended to demonstrate that the NHPA Section 106 process is complete, and the ACHP's execution of such agreement demonstrates that the "reasonable and good faith effort" requirement has been satisfied.

[15] If an admitted contention alleges that an environmental review document such as an SEIS is inadequate, "the 'rule of reason' by which NEPA is to be interpreted provides that agencies need not consider 'remote and speculative' risks or 'events whose probabilities they believe to be inconsequentially small.'"

identification" is specifically authorized by regulation at 36 CFR 800.4(b)(2) and has been specifically endorsed by the Commission in the *Hydro Resources, Inc.* proceeding for ISR projects such as the Dewey-Burdock ISR Project. *See e.g., In the Matter of Hydro Resources, Inc.* (Crownpoint Uranium Project), LBP-05-26 (September 16, 2005); *see also* NRC Staff Exhibit NRC-047 at 2. NEPA does not require that a "competent, adequate, and scientifically valid cultural resources inventory and mitigation analysis" be provided in the FSEIS as alleged by the Tribe. For inherently phased projects with multiple corridors, such as highways or those with power-lines, NEPA is often completed without complete, or even substantial, NHPA Section 106 identification efforts, much less specific mitigation analyses. Predictive models, sample surveys, and other methods are used to provide a general characterization of the affected environment for the purposes of evaluating alternatives. Full-scale identification, evaluation of potential effects, resolution of adverse effects, and other appropriate processes are carried out on the selected alternatives under the terms of a PA after the ROD is approved. Powertech witness Dr. Sebastian testified that "[n]ot only is there nothing contrary to the requirements of Section 106 about using a programmatic agreement in this way, it is not even an unusual approach to compliance." Powertech Exhibit APP-063 at 8, ¶ A.13. CI and the Tribe have offered no argument that "phased identification" for inherently phased projects and the controlling Commission case law are inappropriate for the Dewey-Burdock ISR Project.[16]

Based on the entirety of the record of argument, evidence, and testimony offered by Powertech and NRC Staff, Powertech respectfully requests that the Licensing Board rule on the merits of Contentions 1A and 1B in favor of Powertech and NRC Staff and dismiss Contentions 1A and 1B.

[16] This conclusion is supported once again by the fact that the ACHP signed off on the provisions of the PA, of which "phased identification" is contemplated.

b. <u>Contentions 2, 3, and 4:</u> Groundwater Quality, Groundwater Quantity and Hydrogeological Information

With respect to Contentions 2, 3, and 4, neither CI nor the Tribe makes any attempt to address, much less to, distinguish the *Hydro Resources, Inc.* line of cases associated with the differences between the adequate characterization of "baseline" groundwater quality per 10 CFR Part 40, Appendix A, Criterion 7 and "Commission-approved background" (CAB) per Criterion 5B(5) which requires the use of specific post-license *procedures* to determine detailed data regarding site-specific groundwater quality. As often cited by Powertech and NRC Staff in its position statements and proposed conclusions of law, CLI-06-01 delineates the distinction between the data for appropriate site characterization pre-license application submission per Criterion 7, versus what must be gathered post-license issuance per Criterion 5B(5). *See generally* CLI-06-01, 63 NRC 1 (2006). Further, these conclusions are supported by the acceptance criteria in NUREG-1569, Chapters 2 (*Site Characterization*) and 5 (*Operations*), which guidance is to be accorded, at a minimum, special weight according to Commission precedent. *See Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), CLI-05-15, 61 NRC 365, 375, n.26 (2005); *see also Consumers Power Co.* (Big Rock Point Nuclear Plant), ALAB-725, 17 NRC 562, 568 & n.10 (1983) (finding that NUREGs are entitled to considerable prima facie or special weight). Based on a unanimous 2003 Staff Requirements Memorandum (SRM), NUREG-1569's acceptance criteria for groundwater quality data under Criteria 7 and 5B(5) are to be accorded the full weight of Commission-approved guidance. NRC Staff's ROD, including the SER and FSEIS, determined that Powertech complied with these NRC regulations and related guidance which supports issuance of NRC License No. SUA-1600. Powertech has specific license conditions mandating requirements to complete groundwater quality data gathering and analyses post-license issuance and prior to operations. *See* License Conditions

10.10, 11.3 and 11.4, NRC Staff Exhibit NRC-012 at 8-10. These license conditions are consistent with the Commission's finding in CLI-06-01, and cited by the Licensing Board in the recent *Strata Energy, Inc.* case, dismissing a contention similar to Contention 2:

> "Waiting until after licensing (although before mining operations begin) to establish definitively the groundwater quality baselines and upper control limits is . . . '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 . . . ."

Strata Energy, Inc., LBP-15-3, slip op. at 25.

Neither CI nor the Tribe has offered any legal citation or other reference that shows that compliance with these regulations and guidance should not result in license issuance. In fact, any argument offered by CI and the Tribe would be inconsistent with the Licensing Board's *Strata Energy, Inc.* ruling:

> "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."

LBP-15-3, at 26.

It also would be inconsistent with the *Strata Energy, Inc.* Licensing Board's conclusion that post-license issuance (and indeed post-hearing) processes to address items such as UCLs is in accord with Commission precedent:

> "Particularly in the NEPA context, the path SEI and the staff must follow relative to LC 10.12 is sufficiently clear such that continuing to hold this hearing open while it is completed would be an unnecessary extension of the adjudicatory process."

Id. at 95, fn. 66, *citing Hydro Resources Inc.*, CLI-06-01, 63 NRC at 5-6.

Thus, CI and the Tribe's arguments under Contention 2 on appropriate groundwater quality data should fail.

Prior to addressing Contention 3's specifics, it is important to note that CI and the Tribe have consistently made claims about Dewey-Burdock site hydrology based on *regional* studies that do not show the presence of alleged surface or subsurface features that potentially could impact fluid containment within the license boundary of the Dewey-Burdock ISR Project site. As noted in previous pleadings offered by Powertech and NRC Staff, CI and the Tribe's attempts to evaluate site-specific data, including the recently disclosed borehole log data, have provided no credible *site-specific* information regarding potential surface/subsurface features at the Dewey-Burdock ISR Project site. The claims advanced by the Tribe's expert Dr. LaGarry fail to address the extensive, site-specific evidence offered by Powertech in its license application and responses to requests for additional information (RAI), such as geologic maps constructed using data from thousands of exploration boreholes and geologic cross-sections constructed throughout all potential wellfields. Powertech rests on the data and analyses in the ROD and its expert testimony offered by its witnesses and those offered by NRC Staff and conclude that Intervenors have offered nothing of merit that should result in a modification of the ROD under Contention 3.

Additionally, with respect to Contention 3 specifics, as is the case with Contention 2, CI and the Tribe make no attempt to refute the relevance of CLI-06-01 and the line of *Hydro Resources, Inc.* cases regarding development of wellfield-specific hydrogeological data to establish a post-license issuance, pre-operational program for developing CAB and excursion monitoring, including establishing upper control limits (UCL) and demonstrating the adequacy of the monitor well network. CLI-06-01 specifically identifies these items that are associated

with detection of excursions from a specific wellfield to a perimeter monitor well as items that need not be completed prior to license issuance. *See* CLI-06-01, 63 NRC at 5-6. This aspect of NRC's license application review was properly documented in both the SER and the FSEIS. *See* Powertech Proposed Conclusions of Law at ¶ 6.5. Further documented in these reports is the fact that NRC Staff has imposed additional license conditions on Powertech relating to wellfields proposed in the portion of the license area where the Chilson aquifer is partially saturated, including license amendment and monitoring requirements. *See* License Conditions 10.10(B) and 12.7. CI and the Tribe have not offered any concrete evidence that the data and analyses offered by Powertech in its license application and subsequent written submissions to NRC Staff, the analyses conducted and conclusions reached by NRC Staff in the ROD, and the expert testimony offered by both Powertech and NRC Staff in its initial and rebuttal statements of position statements and subsequent pleadings on the recently disclosed borehole log data demonstrate that NRC License No. SUA-1600 and the ROD should be modified.[17]

With respect to Contention 4, on Pages 59-60 of its pleading, the Tribe argues that the FSEIS is inadequate due to the reliance on SDDENR analyses regarding groundwater usage in a manner similar to its generic argument that NRC Staff cannot rely on other agency analyses. As is discussed in the argument on mitigation measures below, NRC Staff is free, and encouraged, to rely on other agency analyses to the extent that they are consistent with its AEA statutory mandate. The CEQ's regulations encourage agencies to consider an applicant's compliance with environmental quality standards imposed by other federal, state, and local agencies with responsibility for environmental protection. 40 C.F.R. § 1502.16(h) and § 1505.2(c). This approach results in an FSEIS analysis that does not "re-invent the wheel" and takes into account

[17] On Pages 46-47 of its pleading, the Tribe alleges that 10 CFR Part 40, Appendix A, Criterion 5G(2) is applicable to the Dewey-Burdock ISR Project. This Criterion is applicable to "tailings disposal systems" which are not used at ISR facilities.

all aspects of groundwater usage for the Dewey-Burdock ISR Project. In addition, the Tribe's allegation that reliance on SDDENR resulted as a "tiered" document is misguided. *See* Tribe January 9, 2015, Pleading at 59. The FSEIS is tiered off of NUREG-1910 as a supplement (Supplement 4), but it is not intended to be tiered off of any State-prepared analytical document. NRC Staff merely used, to the extent practicable, the analyses offered by SDDENR which is required to address water usage and its potential impacts, as well as those provided by Powertech and its own independent analyses, to complete the FSEIS' analysis of groundwater usage. As such, Powertech asserts that Contention 4 does not serve as grounds for modification of the ROD.

c. <u>Contentions 6 and 9:</u> Mitigation Measures and Connected Actions

With respect to Contentions 6 and 9, CI and the Tribe continue to offer the same legal arguments as offered previously in their initial and rebuttal position statements, which already have been adequately refuted by Powertech and NRC Staff. More specifically, as discussed above and in Powertech's and NRC Staff's proposed conclusions of law, NRC Staff is permitted to rely on the review authority of other agencies during the course of the FSEIS' development. *See* NRC Staff Post-Hearing Order Response at 18-20 and 29-30. This is directly contrary to the Tribe's allegation that "[t]he FSEIS cannot rely so completely on EPA and South Dakota permitting processes to excuse NRC's responsibilities to fully review the environmental impacts." Tribe January 9, 2015, Pleading at 78. As stated previously by Powertech, NRC Staff is free to state that any and/or all evaluations or permitting processes performed by another agency are inadequate to satisfy their AEA-based statutory mandate. However, in the instant case, NRC Staff determined that the extent to which it relied on other agencies' evaluations and permitting processes was adequate to satisfy its statutory mandate. Thus, the Licensing Board

should consider NRC Staff's acceptance of these evaluations and permitting processes as a tacit approval of their substance in accord with its AEA statutory mandate.

The Tribe's argument regarding the mitigation decision in *Hydro Resources, Inc.* case and the Commission's evaluation of the use of future development of mitigation measures is equally without merit. As stated above, federal case law does not require that complete, enforceable mitigation plans be in effect at the time of licensing. *See Holy Cross Wilderness Fund v. Madigan*, 960 F.2d 1515, 1522 (10th Cir. 1992), *quoting Methow Valley*, 490 U.S. at 352-53; *see also Hydro Resources, Inc.* (Crownpoint Uranium Project), CLI-06-29, 64 NRC 417, 427 (2006). The Tribe's argument is merely a complaint that the Commission was incorrect in its ruling and appears to imply that additional evidence was added to the *Hydro Resources, Inc.* record after licensing. However, this is not the case. When referring to the "overall record for the licensing action," the Commission referred to the ROD's elements specifically associated with cultural resources, including the express endorsement of the use of "phased identification." *See* 36 CFR § 800.4(b)(2). Given that mitigation measures can be developed post-licensing, the Tribe's allegation here is without merit.

The Tribe's allegation that NRC Staff failed to address the "effectiveness" of mitigation measures is equally without merit. Powertech does not dispute that NRC Staff needed to consider the "effectiveness" of mitigation measures. Indeed, Section 5.5 of NUREG-1748 specifically directs NRC Staff to address this issue. *See* NRC Staff Exhibit NRC-014 at 118. But, Powertech concurs with NRC Staff's statement in its Initial Statement of Position and its Post-Hearing Order Response that several cases demonstrate that the FSEIS satisfied NEPA requirements for addressing such "effectiveness." *See* NRC Staff Initial Statement of Position at 43-47; *see also* NRC Staff Post-Hearing Order Response at 23-27.

On Page 79 of its pleading, the Tribe alleges that Powertech is planning to utilize a Class I UIC deep disposal well rather than a Class V well, as specifically proposed to EPA by Powertech in its Class V UIC permit application. Without weighing in on the potential jurisdictional issues associated with the Tribe's reference to South Dakota's prohibition on the use of Class I UIC deep disposal wells, Powertech is fully committed to the use of a Class V well for disposal of liquid 11e.(2) byproduct material, including its strict compliance with NRC's 10 CFR Part 20 release criteria for disposition of liquid waste in such a well. NRC Staff's FSEIS incorporated the criteria associated with the use of a Class V well into its analyses for groundwater usage and waste management, as well as evaluating other alternatives to liquid 11e.(2) byproduct material management, including the use of evaporation ponds and/or land application. *See* NRC Staff Exhibit NRC-008-A-1 at 145. Thus, the Tribe's allegation here is inconsistent with the permit application for a Class V UIC well evaluated by NRC Staff when addressing potential proposed liquid waste disposal alternatives in the FSEIS.

Lastly, on Pages 55-56 of CI's pleading, CI refers to the testimony of Peggy Detmers. On August 1, 2014, and at the evidentiary hearing, the Licensing Board granted Powertech's motion to strike her testimony. August 1, 2014, Order Ruling on Motions in Limine at 7. Based on this, Powertech requests that the Licensing Board not consider all references to Ms. Detmers' testimony from CI's January 9, 2015, pleading when formulating its initial decision.

B. REPLY TO PROPOSED FINDINGS OF FACT

1. REPLY TO NRC STAFF'S PROPOSED FINDINGS OF FACT

a. CONTENTIONS 1A AND 1B

Powertech has reviewed and supports NRC Staff's proposed findings of fact on Contentions 1A and 1B.

b. CONTENTION 2

Powertech has reviewed and supports NRC Staff's proposed findings of fact on Contention 2. Following are specific examples where Powertech supports NRC Staff's proposed findings of fact and offers additional supporting information from the record.

i. Intervenor Witnesses

Powertech agrees that Intervenors rely on declarations and testimony from Dr. Moran with regard to Contention 2. NRC Staff Proposed Findings at 22, ¶ 5.39. Regarding the Staff's reference to the report by Dr. Abitz that is included in Tribe Ex. OST-011 at 85-90 and CI Ex. INT-002, Intervenors have provided no testimony indicating how or even whether this report is applicable to the Dewey-Burdock Project.

ii. Commission-Approved Background Groundwater Quality

Powertech agrees that the adequacy of the Staff's analysis of baseline groundwater quality in the FSEIS does not rely on wellfield-specific background data that will be collected prior to operating each wellfield. NRC Staff Proposed Findings at 23-25, ¶¶ 5.40-5.47. Powertech agrees that adequate baseline groundwater quality data must be submitted to NRC Staff in an Environmental Report as required by 10 CFR § 51.45(b) and 10 CFR Part 40, Appendix A, Criterion 7. *Id.* at 23, ¶ 5.42. Powertech adds that its license application includes

groundwater quality sampling results from 31 wells, resulting in analyses of over 19,000 chemical and radiological parameters. Powertech Proposed Findings at 60, ¶ 10.76 and at 68, ¶ 10.99. Powertech also agrees that background data required by 10 CFR Part 40, Appendix A, Criterion 5B(5) are not used to characterize the site generally, but instead are used to establish upper control limits (UCLs) and aquifer restoration standards prior to operating each wellfield. NRC Staff Proposed Findings at 23, ¶ 5.43. Powertech adds that LCs 11.3 and 11.4 enforce the procedures to establish CAB, UCLs and target restoration goals (TRGs) prior to operating each wellfield in conformance with Criterion 5B(5). Powertech Proposed Findings at 57, ¶ 10.63. Powertech further notes that such operational data are required pursuant to 10 CFR Part 40, Appendix A, Criterion 7A. Powertech Ex. APP-037 at 10-11, ¶ A.26 (Lawrence).

Powertech agrees that the data submitted in the license application and RAI responses allowed the Staff to adequately evaluate the quality of groundwater that may be affected by ISR activities and determine how those activities might reasonably affect water quality. NRC Staff Proposed Findings at 24, ¶ 5.44. Powertech adds that NUREG-1569 explains how an applicant can comply with 10 CFR § 51.45(b) by satisfying all applicable acceptance criteria in NUREG-1569 Chapter 2. *Id.* at 29, footnote 115. The SER documents the Staff's determination that Powertech complied with these acceptance criteria, and Intervenors have not challenged this determination. Powertech Proposed Findings at 62, ¶¶ 10.80-10.81.

Powertech agrees that Intervenors have not challenged the procedures to collect wellfield-specific background water quality data or the license conditions memorializing these procedures. NRC Staff Proposed Findings at 24, ¶ 5.46. Powertech adds that these procedures are described in the license application and FSEIS. Powertech Proposed Findings at 57, ¶ 10.62.

Powertech agrees that the Staff did not need to consider background data required under Criterion 5B(5) when preparing the FSEIS in order to comply with NEPA. NRC Staff Proposed Findings at 25, ¶ 5.47. Powertech adds that NRC Staff's well-documented position is that pre-license construction of a wellfield monitoring network needed to establish CAB, TRGs and UCLs is prohibited as meeting the definition of "construction" under 10 CFR § 40.32(e). Powertech Proposed Findings at 59, ¶ 10.71.

iii. Potential Impacts from Historical Mining Operations

Powertech agrees that NRC Staff adequately considered the potential impacts from historical uranium mining under the cumulative impacts analysis in Chapter 5 of the FSEIS. NRC Staff Proposed Findings at 25-26, ¶¶ 5.48-5.51. Powertech adds that the license application includes a comparison between historical (1979-1984) and recent (2007-2008) samples from nine wells that supports the conclusion that no widespread groundwater quality degradation resulted from the historical mining or exploration activities. Powertech Proposed Findings at 66, ¶ 10.93.

iv. Baseline Groundwater Quality Constituents

Powertech agrees that NRC Staff evaluated baseline groundwater quality for all constituents listed in Table 2.7.3-1 of NUREG-1569 and Table 7.3-1 of the FSEIS, since Powertech's license application contained analyses of all of these constituents. NRC Staff Proposed Findings at 27, ¶ 5.54. Powertech agrees that it was not necessary to reproduce all of the information contained in the license application in the FSEIS. *Id.* at 28, ¶ 5.55. Powertech notes that Intervenor witnesses commonly complain that the length of the documents in this proceeding hinders their review, while at the same time alleging that more of the license application should have been repeated in the FSEIS. *See* December 14, 2012, Joint Motion from

the Tribe and CI for extension of time to submit DSEIS contentions at 2 ("First, the current deadline falls so that the time period for review of the **800+ page DSEIS document** …" [emphasis added]). *See also* Tr. at 1018 (Dr. Moran: "I mean, I seem to recall in some documents, the **tens of thousands of pages** we've all seen …" [emphasis added]).

v. Leach Testing Analyses

Powertech agrees that Intervenors have failed to show that the Staff needed to obtain additional information in order to adequately assess baseline groundwater quality, including analyses of pregnant solutions resulting from leach testing. NRC Staff Proposed Findings at 28, ¶ 5.56. Powertech adds that the license application includes an estimate of the post-ISR groundwater quality (prior to groundwater restoration) in the ore zone based on leach testing results and data from operating ISR facilities. Powertech Ex. APP-015-C at 242-243.

vi. 2 km Sampling Radius for Existing Wells

Powertech agrees that Intervenors have failed to show why it should have been necessary to include baseline groundwater quality data from all wells within 2 miles of the project boundary. NRC Staff Proposed Findings at 29-30, ¶ 5.58. Powertech agrees that the 2-km guidance in Regulatory Guide 4.14 for sampling existing wells prior to operations is adequately supported. *Id.* at 29-30, ¶¶ 5.58-5.59. Powertech adds that LC 12.15 requires Powertech to identify any new water supply wells within 2 miles of the license boundary prior to operations. NRC Staff Ex. NRC-012 at 13.

vii. EPA Preliminary Assessment

Powertech agrees that the EPA Preliminary Assessment in Tribe Ex. OST-026 and the associated announcement in Tribe Ex. OST-025 do not show any deficiency in the Staff's

evaluation of baseline groundwater quality in the FSEIS. NRC Staff Proposed Findings at 31-32, ¶¶ 5.61-5.65. Powertech agrees that the purpose of the Preliminary Assessment was not to evaluate the existing environment under NEPA, but to determine whether the site might be eligible for cleanup under CERCLA. *Id.* at 31, ¶ 5.62. Powertech adds that the "data gaps" discussed in Section 8 of the Preliminary Assessment have to do with whether further CERCLA investigation is required to meet EPA's regulatory criteria necessary for a potential Superfund listing and not whether the affected environment is adequately assessed under NEPA. Contrary to allegations by the Intervenors that the Preliminary Assessment shows a cause and effect between groundwater quality and the historical mine pits, the Preliminary Assessment announcement actually makes it clear that this was not determined in the Preliminary Assessment. Tribe Ex. OST-025 at 2 ("Additional sampling is needed to determine … if the radionuclides found in ground water and surface water are attributed to a release from the abandoned uranium mines …").

Powertech agrees that the Preliminary Assessment states that Powertech's Technical Report was the source of information used to prepare the Preliminary Assessment. NRC Staff Proposed Findings at 31, ¶ 5.63. This is clearly stated in both the Preliminary Assessment and the accompanying announcement. Tribe Ex. OST-026 at 8 ("The technical report completed by Powertech included results of baseline sampling within the PAA [Powertech's Proposed Action Area, which is the same as the license area]. Sampling data from the area of the Site obtained during that effort were used for this PA to evaluate conditions at the Site.") *See also* Tribe Ex. OST-025 at 1 ("The PA considered existing environmental data collected by Powertech for the proposed Dewey-Burdock ln-Situ Uranium Recovery Project.")

Powertech agrees that EPA's comments on the DSEIS did not raise concerns about the adequacy of the Staff's NEPA analysis of the potential cumulative impacts of the historical mine pits. NRC Staff Proposed Findings at 32, ¶ 5.64. Powertech adds that the same holds true for EPA's comments on the FSEIS. *See* NRC Staff Ex. NRC-093.

c. CONTENTION 3

Powertech has reviewed and supports NRC Staff's proposed findings of fact on Contention 3. Following are specific examples where Powertech supports NRC Staff's proposed findings of fact and offers additional supporting information from the record.

i. Confirmatory Hydrogeological Data

Powertech agrees that the requirement, enforced by license condition, to submit future "confirmatory" hydrogeological data does not establish any deficiency in the FSEIS. NRC Staff Proposed Findings at 33-34, ¶¶ 5.69-5.72. Regarding the wellfield hydrogeologic data packages, Powertech agrees that one of the primary purposes of these data packages is to demonstrate that the perimeter monitoring wells are hydrologically connected to the production zone and overlying and underlying monitoring wells are hydrologically isolated from the production zone. *Id.* at 33, ¶ 5.70. Powertech adds that such data are clearly used to evaluate the adequacy of the operational, excursion monitoring network and are not site characterization data. Powertech Proposed Findings at 72, ¶ 10.110 and 104-105, ¶ 10.206.

Powertech agrees that it is standard practice for ISR licensees to submit wellfield packages after license issuance but prior to operating in each wellfield. NRC Staff Proposed Findings at 33, ¶ 5.70. Powertech adds that this practice is provided for and specified in NUREG-1569. Powertech Proposed Findings at 72, ¶ 10.110. Powertech further adds that NRC Staff's well-documented position is that pre-license construction of a wellfield monitoring

network needed to prepare wellfield packages is prohibited as meeting the definition of "construction" under 10 CFR § 40.32(e). *Id.* at 59, ¶ 10.71.

Powertech agrees that LC 10.10 specifies what must be included in each wellfield package. NRC Staff Proposed Findings at 33, ¶ 5.70. Powertech adds that the procedures to conduct wellfield-scale pumping tests and prepare wellfield hydrogeologic data packages are also described in the FSEIS and in the license application. Powertech Proposed Findings at 104-105, ¶ 10.206. The SER documents the Staff's determination that that these procedures will be adequate to confirm production zone confinement and monitoring network adequacy for each wellfield. *Id.* Intervenors have not challenged these procedures, which are embodied in license conditions. *Id.* at 57, ¶ 10.65.

Powertech agrees that extensive information describing the hydrogeology of the proposed license area was submitted in the license application. NRC Staff Proposed Findings at 33-34, ¶ 5.71. Powertech adds that this included the June 2011 TR RAI responses, which specifically focused on four key issues identified during the Staff's review that are all related to Contention 3 (historical exploration boreholes, underground mine workings, hydraulic confinement and breccia pipes). Powertech Proposed Findings at 73, ¶ 10.112.

ii. Adequacy of Hydrogeological Data

Powertech agrees that the FSEIS documents the Staff's use of "numerous other sources" of information on hydrogeologic characterization. NRC Staff Proposed Findings at 33-34, ¶ 5.71. Powertech agrees that the record shows that the Staff reviewed numerous references when preparing the FSEIS, including almost all of the sources cited by Dr. Moran. *Id.* at 43, ¶ 5.102.

Powertech agrees that the Staff consulted a number of sources to obtain information on breccia pipes and collapse structures. *Id.* at 43, ¶ 5.102. Powertech adds that the regional studies

cited by Intervenors do not show breccia pipes or even "topographic depressions" or other "structures of possible solution origin" within the license area. Powertech Proposed Findings at 84-85, ¶ 10.144.

Powertech agrees that the reference works cited by Intervenors address regional geology or stratigraphy and not the Dewey-Burdock area specifically. NRC Staff Proposed Findings at 43-44, ¶ 5.104. Powertech adds that these regional studies frequently cited by Intervenors have orders of magnitude lower data density than the site-specific information in Powertech's license application. Powertech Proposed Findings at 85, ¶ 10.146.

Powertech agrees that the FSEIS considers regional groundwater flow patterns when assessing the directional flow of groundwater in relevant aquifers within the project area. NRC Staff Proposed Findings at 35, ¶ 5.76. Powertech adds that the numerical groundwater model frequently cited in the FSEIS, which is not required by NRC regulations or guidance for a license application but was included in Powertech's license application in February 2012, includes additional information on regional and local flow patterns. Powertech Proposed Findings at 73-74, ¶ 10.114.

iii. NRC Staff's Review of Borehole Log Data

Powertech agrees that NRC Staff's review of the recently disclosed borehole log data included reviewing location information based on the digitized logs on DVD, followed by onsite review of borehole logs and other data in Powertech's Edgemont office to reevaluate the validity of the structure and isopach maps presented in the license application and to evaluate the validity of claims by Intervenor witnesses that there may be faults or breccia pipes in specific areas. NRC Staff Proposed Findings at 36-37, ¶¶ 5.80-5.81. Powertech adds that this approach of determining whether the borehole log data reinforces the information already reviewed by the

Staff in the FSEIS is consistent with the approach recommended by the Licensing Board during the evidentiary hearing. Powertech Proposed Findings at 108, ¶ 10.213.

Powertech agrees that the Staff's review of the borehole log data focused on geophysical logs, while Dr. LaGarry's review focused on handwritten "drillers' notes." NRC Staff Proposed Findings at 37-38, ¶¶ 5.82-5.84. Powertech adds that the Staff's review focused on evaluating multiple, closely spaced borehole logs to evaluate the continuity of the Fuson Shale confining unit (i.e., by constructing fence diagrams in areas alleged by Dr. Moran to contain faults or breccia pipes). Intervenors did not submit any evidence supporting their allegations from multiple borehole logs interpreted together, despite their acknowledgement that the value of borehole logs increases when interpreted together: "These logs will tell you, especially when interpreted together, a great deal about the rock types, the depths at which the formations occur …" Tr. at 940, lines 9-11 (Dr. Moran, emphasis added).

Powertech agrees that the drillers' notes submitted by the Tribe do not provide additional evidence to support the Tribe's position regarding open boreholes and artesian flow, since these issues were fully addressed in FSEIS. NRC Staff Proposed Findings at 38, ¶ 5.85. Powertech adds that the phrase "open borehole" in the drillers' notes only refers to the fact that most boreholes were logged in uncased exploration holes, which must be open for the logging tool to be lowered down the hole, while logging "through steel" is done less commonly and refers to instances where it is necessary to log the borehole through the drill pipe. Powertech Proposed Findings at 111-112, ¶ 10.221. Such notes do not provide evidence of improperly plugged boreholes, since the drillers' notes do not contain hole plugging procedures and State of South Dakota hole plugging standards applied whether the borehole was logged as an "open borehole" or "through steel." *Id.*

Powertech agrees that the drillers' notes allegedly providing evidence of faults actually do not provide evidence in cases where a question mark appears after the word "fault" or when the phrases "broken up and caving" or "offset" are misinterpreted. Powertech adds that the term "offset" clearly refers to horizontal offset between holes (i.e., horizontal distance between two closely spaced boreholes) and not a vertical offset that would indicate a fault. Powertech Proposed Findings at 81-82, ¶ 10.139.

Powertech agrees that NRC Staff previously reviewed borehole log data in Powertech's license application, including the Fuson Shale isopach map, which was constructed using data from over 1,800 borehole logs. NRC Staff Proposed Findings at 39-40, ¶¶ 5.88-5.89. Powertech adds that the FSEIS documents the fact that the Staff had used data from more than 1,000 borehole logs to independently construct isopach maps of the Fuson Shale, which were in good agreement with the isopach map constructed by Powertech. Powertech Proposed Findings at 96, ¶ 10.181. Powertech further adds that the Staff had previously reviewed dozens of geophysical logs that were used to construct the geologic cross sections in Powertech's license application. *Id.* at 109, ¶ 10.215.

iv. Ability to Contain Fluid Migration

Powertech agrees that the FSEIS adequately considers whether Powertech will be able to prevent contaminants from migrating outside the ore zone by considering data from historical excursions at operating ISR facilities, discussing Powertech's commitments to identify potential unplugged or improperly plugged boreholes or wells, and describing Powertech's requirement to conduct operational excursion monitoring. NRC Staff Proposed Findings at 40-42, ¶¶ 5.92-5.96. Powertech adds that one of the primary excursion controls discussed in FSEIS Section 4.5.2.1.1.2.2 is Powertech's commitment, enforced by LC 10.7, to maintain a net inward

hydraulic gradient in each wellfield during operation. Powertech Proposed Findings at 92-93, ¶ 10.170. Powertech further adds that excursions are not indicators of environmental impacts but are the early detection of nonhazardous indicator parameters within the exempted aquifer that provide early warning that corrective actions are needed to prevent groundwater contamination. *Id.* at 91, ¶ 10.165. Powertech further adds that Intervenors have not submitted any evidence that contradicts the statement in NRC Staff Ex. NRC-091 that "The Staff is unaware of any situation indicating that: (1) the quality of groundwater at a nearby water supply well has been degraded, (2) the use of a water supply well has been discontinued, or (3) a well has been relocated because of impacts attributed to an ISR facility." *Id.* at 92, ¶ 10.169.

v. Distinction between Groundwater and Surface Water

Powertech agrees that the FSEIS adequately distinguishes between groundwater, surface water, wetlands and other water sources. NRC Staff Proposed Findings at 42, ¶¶ 5.97-5.100. Powertech adds that the FSEIS also describes how Powertech conducted extensive additional investigation into potential interactions between groundwater and surface water in the June 2011 TR RAI responses in response to questions from the Staff and did not find any evidence of discharge to the alluvium along Beaver Creek and Pass Creek based on an alluvial drilling program, field investigations and potentiometric surface evaluations. Powertech Proposed Findings at 88, ¶ 10.155. *See also* Powertech Ex. APP-037 at 29, ¶ A.67 (Lawrence).

d. CONTENTION 4

Powertech has reviewed and supports NRC Staff's proposed findings of fact on Contention 4. Following are specific examples where Powertech supports NRC Staff's proposed findings of fact and offers additional supporting information from the record.

i. Water Balance

Powertech agrees that the FSEIS includes a water balance in Section 2.1.1.1.3.3, including Figure 2.1-14, which provides a graphic illustration of the water balance. NRC Staff Proposed Findings at 44-45, ¶¶ 5.107-5.108. Powertech adds that the water balance diagram presented in Powertech's license application and summarized in the FSEIS is consistent with guidance in NUREG-1569 Section 3.1.2. Powertech Proposed Findings at 117-118, ¶ 10.237. Powertech also adds that the water balance depicts a net zero balance, which Intervenors did not dispute during the evidentiary hearing. *Id.* at 118, ¶ 10.239.

e. CONTENTION 6

Powertech has reviewed and supports NRC Staff's proposed findings of fact on Contention 6. Following are specific examples where Powertech supports NRC Staff's proposed findings of fact and offers additional supporting information from the record.

i. Mitigation Measure Effectiveness

Powertech agrees that the FSEIS adequately addresses the effectiveness of mitigation measures. NRC Staff Proposed Findings at 46-48, ¶¶ 5.115-5.120. Powertech adds that the effectiveness of many mitigation measures is enforced by binding commitments in Powertech's license application and by license conditions. Powertech Proposed Findings at 122, ¶ 10.250. Powertech also adds that the Staff's evaluation of the effectiveness of mitigation measures considers Powertech's compliance with regulations and permit conditions imposed by other Federal, State and local agencies and that Powertech is required by LC 12.1 to obtain all necessary permits and approvals from the appropriate regulatory agencies prior to operating its facility. *Id.* at 122-123, ¶ 10.251.

ii. Programmatic Agreement

Powertech agrees that the Staff did not need to withhold issuing the FSEIS until after the Programmatic Agreement was finalized. NRC Staff Proposed Findings at 48-49, ¶¶ 5.121-5.126. Powertech adds that NRC Staff Ex. NRC-048 at 9 makes it clear that the NEPA review process is concluded when the ROD is issued, not when the EIS (or FSEIS) is issued. Powertech Proposed Findings at 55, ¶ 10.57. Further, mitigation measures for protection of historic and cultural resources are described in the FSEIS on p. 4-167. Powertech Ex. APP-046 at 12, ¶ A.22 (Fritz).

Powertech agrees that NRC Staff provided sufficient opportunity for tribes and other interested persons to comment on the draft Programmatic Agreement. NRC Staff Proposed Findings at 50, ¶¶ 5.127-5.131. Powertech adds that execution of the Programmatic Agreement by all required signatories, including ACHP and SD SHPO, demonstrates that NRC's conduct of its Section 106 process complies with the requirements of the NHPA.

iii. Mitigation Measures Developed by Other Agencies

Powertech agrees that NRC Staff appropriately considered mitigation measures that will be developed by other agencies. NRC Staff Proposed Findings at 50-52, ¶¶ 5.132-5.136. Powertech adds that the information in Powertech's non-purposeful bald eagle take permit application to the USFWS and the draft Avian Plan is consistent with mitigation measures evaluated in the FSEIS and does not call into question the analyses or determinations presented in the FSEIS. Powertech Proposed Findings at 129, ¶ 10.267. Powertech also adds that the FSEIS describes mitigation measures designed to prevent or reduce potential impacts from land application, including mitigation measures required by Powertech's NRC license and others required by the State of South Dakota. *Id.* at 130-131, ¶¶ 10.271-10.273. Powertech also adds

that all mitigation measures used to minimize and control potential adverse impacts to groundwater quality are the same procedures and controls that NRC Staff reviewed in the SER to ensure that the facility will be operated in a manner that protects public health and the environment in accordance with federal regulations. *Id.* at 124-125, ¶ 10.256.

iv. Best Management Practices

Powertech agrees that best management practices (BMPs) that can be used as mitigation measures are adequately addressed in the FSEIS. NRC Staff Proposed Findings at 52-53, ¶¶ 5.137-5.141. Powertech adds that in addition to BMPs drawn from the GEIS, Powertech proposed certain BMPs in its license application. Powertech Proposed Findings at 121-122, ¶ 10.249. In addition, Powertech's adherence to license conditions and proper implementation of BMPs will be evaluated during the pre-operational inspection that is required prior to commencing operations. *Id.* at 122, ¶ 10.250. Further, BMPs developed by the Avian Power Line Interaction Committee (APLIC) for protecting birds perched on power lines are referenced in the FSEIS. *Id.* at 129, ¶ 10.268.

v. Alternative Actions

Powertech agrees that the Staff sufficiently considered mitigation measures that might be applied to alternative actions. NRC Staff Proposed Findings at 53, ¶ 5.142-5.145.

f. CONTENTION 9

Powertech has reviewed and supports NRC Staff's proposed findings of fact on Contention 9. Following are specific examples where Powertech supports NRC Staff's proposed findings of fact and offers additional supporting information from the record.

Powertech agrees that the FSEIS adequately analyzed the potential impacts of the Dewey-Burdock Project while taking into account regulations and permitting requirements from other agencies. NRC Staff Proposed Findings at 54-55, ¶¶ 5.146-5.150. Powertech adds that the Staff followed CEQ guidance encouraging federal agencies to integrate draft EISs with environmental impact analyses prepared by other agencies and with related surveys and studies required by other statutes. Powertech Proposed Findings at 132-133, ¶ 10.276. Powertech further adds that in addition to working closely with EPA, the FSEIS demonstrates that the Staff fully engaged BLM as a cooperating agency and appropriately considered South Dakota permitting requirements. *Id.* at 133, ¶¶ 10.277-10.279 and at 137-139, ¶¶ 10.292-10.294.

2. REPLY TO INTERVENORS' PROPOSED FINDINGS OF FACT

a. CONTENTION 1A

i. Distinction between Level III Archeological Survey and Tribal Field Surveys

The Tribe asserts that NRC Staff primarily relied on information supplied by Powertech, including the Level III archeological survey provided by Augustana College, for identification of all types of historic and cultural properties. Tribe Proposed Findings at 13. What this allegation fails to acknowledge is that the purpose of the Level III survey was to identify archeological sites and historic structures, not historic properties of religious and cultural significance to the tribes, and that the NRC Staff accomplished the latter through tribal field surveys. Powertech Proposed Findings at 42-44, ¶¶ 10.22-10.26.

The Level III archeological survey performed by the Archeology Laboratory at Augustana College (ALAC) was conducted according to Level III archeological survey standards as defined by the SD SHPO based on federal standards. Powertech Proposed Findings at 34-35, ¶ 10.1. It was conducted by personnel experienced and qualified to conduct Level III

archeological surveys. *Id.* at 35-36, ¶ 10.4. The Assistant State Archeologist, Mr. Fosha, testified that the Level III survey exceeded the applicable State standards for such surveys. *Id.* at 36, ¶ 10.6. In order to assess potential NRHP-eligibility of historic properties identified during the Level III archeological survey, subsurface testing was performed as appropriate. *Id.* at 36-37, ¶¶ 10.7-10.10.

The Level III archeological survey was never intended to provide information on traditional cultural properties (TCPs). Subsequent tribal field identifications were used to provide that information along with reviews of ethnographic literature. The individual tribal survey approach allowed each tribe to evaluate the entire project area in a manner culturally appropriate for that tribe. Powertech Proposed Findings at 42, ¶ 10.22. A similar approach to tribal field identification has also been used by other federal agencies to identify historic properties of interest to tribes. *Id.* at 42, ¶ 10.22.

The Tribe similarly alleges that "NRC Staff relied on Augustana to conduct all of the initial and follow up field survey work at the site, with the exception of the three non-Sioux tribes that submitted reports." Tribe Proposed Findings at 15. Again, this fails to acknowledge that the Staff only relied on ALAC to identify potential archeological sites, while the Staff relied on the tribes willing to participate in the tribal field surveys to identify potential TCPs. This allegation also fails to acknowledge that all potentially interested tribes had the opportunity to participate in field surveys, with financial support from Powertech.

The Tribe also mischaracterizes the roles of Dr. Sebastian and SRI Foundation in the efforts to identify TCPs by alleging that "NRC Staff prompted the applicant to bring in Dr. Sabastian [sic] and her firm to coordinate this review." Tribe Proposed Findings at 15. Similarly, the Tribe inaccurately states that Dr. Sebastian and SRI Foundation were asked to "provide the

additional [tribal field survey] information. *Id.* at 28. Dr. Sebastian and SRI Foundation were not engaged in order to identify TCPs, but to facilitate discussions with the tribes as to how they wanted to go about identifying TCPs. Tr. at 792-793 (Dr. Sebastian). The decision to proceed with tribal field surveys instead of ethnographic studies was a result of the consultation efforts, not the cause. Powertech Proposed Findings at 40, ¶ 10.17.

Also regarding Dr. Sebastian and SRI Foundation, the Tribe inaccurately states that Dr. Sebastian and SRI Foundation served as "contracted investigators as satisfying the required 'government-to-government' consultation requirements." Tribe Proposed Findings at 28-29. SRI Foundation did not conduct any tribal consultation, much less government-to-government consultation. SRI Foundation's intended role was to serve in a facilitation capacity by organizing meetings, etc. However, at the initial face-to-face meeting, the tribes indicated that they would not work directly with Powertech or SRI Foundation. Powertech Ex. APP-001 at 6, ¶ A.15 (Dr. Sebastian).

The Tribe continues to attempt to confuse the distinction between Level III archeological surveys and tribal cultural resources surveys by alleging that Mr. Fosha was somehow involved in the latter. Tribe Proposed Findings at 16. However, Mr. Fosha's involvement was limited to reviewing Powertech's Level III archeological survey reports in his role as Assistant State Archeologist. As a result of this review, he determined that the Level III surveys exceeded State standards. Powertech Proposed Findings at 36, ¶ 10.6.

Similarly, the Tribe alleges that NRC Staff witness Dr. Luhman "admitted to relying exclusively on Augustana for both the initial field work and the follow up field studies, even though Dr. Hannus' testimony had confirmed that Augustana had no culturally relevant experience." Tribe Proposed Findings at 16. CI similarly alleges that "Dr. Luhman testified that a

Level 3 survey would not, in and of itself, identify all TCPs." CI Proposed Findings at 5. Again, these allegations fail to acknowledge that the Staff and their consultant, Dr. Luhman, relied on ALAC only to identify potential archeological sites through the Level III archeological survey, while relying on the tribes that participated in the tribal field surveys to identify potential TCPs. The tribes were invited and offered financial support to come to the project area and identify potential TCPs, and seven of them did so.

The Tribe cites testimony from Dr. Luhman describing how concurrent identification of archeological sites and TCPs happens on some federal projects. Tribe Proposed Findings at 16-17. However, this is not possible for an NRC license application, because the archeological survey is required before the application can be submitted. *See* NUREG-1569 Section 2.4, NRC Staff Ex. NRC-013 at 47-51. Identification of TCPs requires tribal involvement, and the tribal consultation process must be conducted on a government-to-government basis between the tribes and the federal agency. Since there was no federal agency involved prior to submittal of the license application, tribal involvement and consultation concerning identification of TCPs could not have started until Powertech submitted its license application and federal involvement began.

ii. Adequacy of Level III Archeological Survey

CI alleges that the Level III archeological survey conducted by ALAC demonstrated a "failure of protocols … due to a failure of sub-surface testing." CI Proposed Findings at 2. However, they fail to acknowledge that subsurface testing was performed, in coordination with the Assistant State Archeologist and NRC Staff, in order to make NRHP eligibility determinations for sites that might be directly affected by the project. Powertech Proposed Findings at 36-37, ¶¶ 10.5, 10.7. The Assistant State Archeologist, Mr. Fosha, whose office

oversees archeological survey requirements in South Dakota, testified that the Level III survey exceeded the applicable State standards for such surveys. *Id.* at 36, ¶ 10.6.

iii. Ethnographic Study

The Tribe cites testimony from NRC Staff witness Dr. Hsueh stating that TCPs typically are identified through ethnographic research, while in some cases there is also a field component. Tribe Proposed Findings at 28. Then they attempt to show that the identification efforts at the Dewey-Burdock Project were not typical, since an ethnographic study was not conducted by the Staff. *Id.* However, NRC Staff witness Yilma explained that the tribes informed the staff, during a face-to-face meeting, that a field survey, rather than ethnographic research, was what they considered appropriate for identification of properties of religious and cultural significance. Thus, the decision to proceed with tribal field surveys instead of ethnographic studies was made in response to expressed tribal preferences as result of the consultation efforts. Powertech Proposed Findings at 40, ¶ 10.17.

CI incorrectly asserts that the $10,000 stipend with an invitation to each tribe to send up to three representatives to participate in the field surveys was done "instead of actually doing" an ethnographic study. CI Proposed Findings at 12-13. However, this similarly fails to acknowledge that the decision to use field identification rather than ethnographic studies to identify TCPs was made in response to the request by the tribes. Powertech Proposed Findings at 40, ¶ 10.17. The stipend, along with travel costs and per diem, were offered to enable the tribes to perform field identification of properties of concern to them.

iv. Scientific Methodology

Intervenors continue to allege that there was a lack of "proper scientific expertise" in the field surveys. Tribe Proposed Findings at 19. *See also* CI Proposed Findings at 2. Similarly, the

Tribe alleges that the open-site survey approach "lacked any organized or scientifically determined methodology." Tribe Proposed Findings at 31. However, the only field survey requiring scientific expertise was the Level III archeological survey conducted by ALAC. That survey was conducted in accordance with SD SHPO requirements and exceeded the applicable State standards. Powertech Proposed Findings at 36, ¶ 10.6. NRC Staff did not try to impose a uniform set of methods on identification of places of religious and cultural significance to the tribes, since all tribes have unique methods, knowledge, types of properties, and beliefs and identification of such places depends on the knowledge of the traditional cultural practitioners, not on the exercise of a scientific discipline or method. *Id.* at 44, ¶ 10.26. The individual tribal survey approach allowed each tribe to evaluate the entire project area in a manner culturally appropriate for that tribe. *Id.* at 42, ¶ 10.22. Each tribe was allowed to design its own approach, and tribes participating in the field surveys developed priorities and methods prior to beginning the field surveys. *Id.* at 43, ¶ 10.24. Moreover, the tribal representatives participating in the field surveys elected to use conventional survey transect methods using global positioning system equipment. NRC Staff Proposed Findings at 16, ¶ 5.9.

v. Tribal Field Surveys

The Tribe inaccurately states that SRI Foundation was "tasked … to develop a scope of work" for the tribal field surveys. Tribe Proposed Findings at 29. This fails to acknowledge that the tribes initially indicated during the February 2012 face-to-face meeting that they would provide a scope of work within a short period of time, but they did not do this within several months. Tr. at 793, lines 5-10 (Dr. Sebastian). Dr. Sebastian testified that as a result SRI Foundation was asked to provide a draft scope of work in order for the tribes "to have something to work against or to have a structure to begin saying we don't like this, we do like that." Tr. at

793, lines 10-15. Dr. Sebastian further testified that tribes provided no comments on the draft scope of work but provided some feedback during a teleconference that the SRI Foundation incorporated into a second draft, on which the tribes also refused to comment. Tr. at 793, lines 16-23.

Some six to seven months after the February 2012 meeting, the tribes submitted a proposed scope of work that the Tribe alleges "contained specifics related to timeframes, cost, and reporting requirements." Tribe Proposed Findings at 30. However, NRC Staff witness Yilma testified that the initial proposed work scope from the Tribe did not include this information:

> MS. YILMA: In general terms, the proposal that we received, the initial proposal that we received from the tribes didn't actually have specifics in it. And so we had to go back out and ask for specifics to be included in the statement of work because we weren't able to determine how long the survey would take or what type of survey -- methodologies of the survey and also the cost and the duration. That was not included in the original, the tribes' statement of work.

Tr. at 794-795.

The Tribe also asserts that the total cost of the Tribe's proposal "was close to $1 million." Tribe Proposed Findings at 30 and 33. However, this fails to acknowledge that the Tribe's proposal only covered the area of direct disturbance, or approximately 2,600 acres (25%) of the approximately 10,500-acre project area. Tr. at 807, lines 12-13 ("DR. SEBASTIAN: That was just for the small part.").

CI alleges that the reason the Staff "refused to consider the Tribe's proposal to hire Archaeologist Tim Mentz firm to lead the Tribe's TCP review is that too much time had elapsed pursuing Section 106 consultations." CI Proposed Findings at 12. However, the reason was not that too much time had elapsed during the Section 106 process, but as described in the testimony from NRC Staff witness Yilma, the proposed time until results would be reported and costs for field work and reporting were far beyond standard practice:

> the proposal … had a significant amount of time between when they conducted the field survey and provided us with the information that we needed for our NEPA and Section 106 compliance…
>
> And so we looked through the proposal and compared this with other proposals that other federal agencies have done for similar type of activities and determined that the proposal that was submitted by the tribes' contractor was significantly larger in dollar amount and also duration than others that we have seen.

Tr. at 804-805 (Yilma).

The Tribe describes how the Standing Rock Sioux tribe submitted a letter objecting to the geographic scope of the NRC Staff proposed survey, which at that time was limited to the area of direct effects. Tribe Proposed Findings at 31. However, they fail to acknowledge that NRC Staff then changed the scope of the identification efforts to 100 percent of the entire project area, or approximately 10,500 acres. Powertech Proposed Findings at 43, ¶ 10.24. *See also* Powertech Ex. APP-063 at 7, ¶ A.10 (Dr. Sebastian).

The Tribe incorrectly asserts that "only three (3) Tribes" participated in the tribal field surveys and "none of them Sioux." Tribe Proposed Findings at 19. In fact, seven tribes participated in the field surveys, including two Sioux tribes. Powertech Proposed Findings at 43-44, ¶¶ 10.24-10.25. *See also* FSEIS at p. 3-87:

> Seven tribes participated in the field survey at the proposed Dewey-Burdock site. These tribes included the Northern Arapaho Tribe, Northern Cheyenne Tribe, Turtle Mountain Band of Chippewa Indians, Crow Creek Sioux Tribe, Cheyenne and Arapaho Tribes of Oklahoma, Crow Nation, and Santee Sioux Tribe.

NRC Staff Ex. NRC-008-A-1 at 259.

The Tribe further asserts that NRC Staff "unilaterally deem[ed] the analysis sufficient." Tribe Proposed Findings at 19. However, NRC has the authority to determine what constitutes a "reasonable and good faith effort" to consult with federally recognized Native American tribes concerning the Dewey-Burdock Project. Powertech Proposed Findings at 39, ¶ 10.15. The record demonstrates that the Staff consulted extensively, and in good faith, with interested tribes

concerning historic properties. *Id.* at 52, ¶ 10.48. Further, the ACHP, the agency charged with administering the NHPA through regulations it has promulgated pursuant to the NHPA, concluded that the "content and spirit of the Section 106 process has been met by NRC." *Id.* at 54, ¶ 10.53.

vi. Unevaluated Sites

The Tribe alleges that potential impacts have not been addressed since "the Augustana College survey left a significant number of archaeological, historical, and traditional cultural resources on site unevaluated." Tribe Proposed Findings at 13. Similarly, the Tribe alleges that "scores of sites have not been evaluated for listing eligibility." *Id.* at 24. First, it should be noted that the Level III archeological survey conducted by ALAC did not identify traditional cultural resources. The tribes participating in the tribal field surveys identified these properties, and in some cases chose not to provide suggestions as to NRHP eligibility. In terms of the ALAC Level III survey, it is standard archeological and NHPA compliance practice to avoid destructive testing of properties that will not be impacted by an undertaking. As long as unevaluated sites are protected from disturbance – as these are under the provisions of the Programmatic Agreement – there is no effect to them by definition.. Powertech Proposed Findings at 36-37, ¶¶ 10.7-10.10. In addition, under the terms of the Programmatic Agreement, all unevaluated properties, including properties of religious and cultural significance identified by the tribes, will be protected from disturbance for the duration of the project. *Id.* at 51, ¶ 10.45.

vii. NEPA Evaluation

The Tribe asserts that "the PA is not a legitimate substitute for NEPA compliance," since NEPA requires a "hard look" at potential impacts and mitigation for "all cultural resources, not just those eligible for listing on the NRHP." Tribe Proposed Findings at 21. Similarly, the Tribe

alleges that provisions in the Programmatic Agreement are provided "to comply with NEPA's requirements." *Id.* at 22. Similarly, CI alleges that there was "improper separation of compliance" between NHPA Section 106 and NEPA. CI Proposed Findings at 2. However, these allegations fail to acknowledge that the Staff appropriately coordinated the NEPA and NHPA Section 106 review processes, there is no requirement that a Programmatic Agreement be analyzed in a NEPA document and NRC Staff did not use the Programmatic Agreement to comply with NEPA. Powertech Ex. APP-001 at 5-6, ¶¶ A.10-A.11 (Dr. Sebastian). *See also* Powertech Proposed Findings at 55, ¶ 10.57, *citing* NRC Staff Ex. NRC-048 (CEQ/ACHP joint guidance on integrating NEPA and Section 106). *See also* Powertech Ex. APP-063 at 10-11, ¶ A.21 (Dr. Sebastian). The Staff's NEPA review was not limited to eligible or potentially eligible properties protected under NHPA, but instead it considered such properties to be a subset of the broader cultural resources that were evaluated in the Staff's NEPA review. Powertech Proposed Findings at 47, ¶ 10.34. Regarding the Staff's NEPA review, FSEIS Chapter 4 includes information from the tribal field surveys and NRHP eligibility determinations conducted under the Staff's NHPA review process, demonstrating that properties of religious and cultural significance to the tribes were appropriately considered in the Staff's NEPA review. *Id.* at 47, ¶ 10.35. FSEIS Sections 3.9.3 and 4.9 also describe other information reviewed and evaluated during the Staff's NEPA review, including a variety of ethnographic studies to characterize the affected environment and the Level III archeological survey and other information used to identify historic properties. *Id.* This allegation also fails to acknowledge that mitigation measures for protection of historic and cultural resources are described in the FSEIS on p. 4-167. Powertech Ex. APP-046 at 12, ¶ A.22 (Fritz), *citing* NRC Staff Ex. NRC-008-A-2 at 167. The FSEIS describes how Powertech has committed to protect NRHP-eligible and unevaluated sites

by avoidance or protective fencing; Powertech is required by LC 9.8 to stop any work resulting in the discovery of previously unknown cultural artifacts; all newly discovered properties will be inventoried and evaluated for NRHP eligibility; work will not restart without authorization from NRC, SD SHPO and BLM where relevant to proceed; and a license condition will enforce the implementation of mitigation measures in the Programmatic Agreement. NRC Staff Ex. NRC-008-A-2 at 167. Thus, the NRC Staff evaluated mitigation measures for protection of historic and cultural resources when assessing the potential environmental impacts of the Dewey-Burdock Project in the FSEIS. Moreover, the NHPA Section 106 process was concluded with the execution of the Programmatic Agreement prior to issuance of the ROD, which is the NEPA decision document. Powertech Proposed Findings at 55, ¶ 10.57. The Tribe acknowledges that this is consistent with proper coordination between NEPA and NHPA:

> Exhibit NRC-048 specifically states that a "key concept" for integrating NEPA and NHPA is to "complete Section 106 and the appropriate NEPA (Categorical Exclusion, EA, EIS) before issuing a final agency decision."

Tribe Proposed Findings at 24, *citing* NRC Staff Ex. NRC-048 at 5.

The Tribe alleges that "NEPA requires the analysis of Sioux cultural resources" in the agency's "hard look" analysis under NEPA. Tribe Proposed Findings at 22. CI similarly alleges that only the Tribe can identify sacred places to the Tribe. CI Proposed Findings at 5. First of all, NEPA does not require analyses of all possible resources of any type; it required sufficient evaluation to characterize the affected environment. Secondly, all interested tribes were invited to participate in the tribal field surveys; two Sioux tribes chose to do so, but the Tribe did not. NRC cannot analyze effects on resources that the tribes who chose not to participate in the field surveys did not identify.

The Tribe alleges that the NEPA analysis was deficient, since all identification efforts and resolution of adverse effects were not "presented for public review and comment as part of

the NEPA process." However, information about properties of religious and cultural significance to the tribes is generally not disclosed to the public in any case, but is usually kept confidential under the provisions of Section 304 of the NHPA.

b. CONTENTION 1B

i. Sioux Participation in Tribal Consultation

The Tribe alleges that NRC Staff "either neglected or refused to incorporate any Sioux perspectives into its cultural resources review." Tribe Proposed Findings at 2. However, the evidentiary record demonstrates a long record of consultation directly with multiple Sioux tribes. For example, the NRC Staff decided to a field survey approach to identify sites of cultural and historical significance to the tribes, rather than the more standard ethnographic study approach, based on requests by the Tribe and many other tribes for the opportunity to identify such sites through field survey. Powertech Proposed Findings at 40, ¶ 10.17. Seven tribes, including two Sioux tribes, then participated in the field survey, which provided an equal opportunity for participation by all tribes. *Id.* at 43-44, ¶¶ 10.24-10.25. The Tribe initially accepted the Staff's invitation to participate in the field surveys but later declined to participate. *Id.* All Sioux tribes had the opportunity to participate in the drafting of the Programmatic Agreement, and several chose to do so. The Programmatic Agreement was modified in response to written comments received from two Sioux tribes, including the Tribe. *Id.* at 49, ¶¶ 10.41-10.42. In addition, the Programmatic Agreement also provides for extensive consultation with interested tribes about identification efforts to be completed in the future, about further evaluations of NRHP eligibility, about determinations of effect on historic properties, and about measures to avoid, minimize or mitigate adverse effects on historic properties, including those of religious, historic or cultural

significance to tribes during the course of the project, regardless of whether the tribe participated in development of or signed the Programmatic Agreement. *Id.* at 51, ¶ 10.45.

The Tribe also alleges that "no cultural resources review or field study incorporating any Sioux cultural expertise was ever conducted at the site or incorporated into any NEPA document." Tribe Proposed Findings at 17-18. This allegation ignores the participation of two Sioux tribes in the field identification surveys and fails to acknowledge that all tribes had the opportunity to participate in these field surveys to identify properties of religious and cultural significance. Powertech Proposed Findings at 42, ¶ 10.22. NRC Staff provided the opportunity for the Tribe and other Sioux tribes to participate in the field surveys, with Powertech paying travel expenses plus a per diem and a grant to participating tribes. *Id.* at 42-43, ¶ 10.23. Two Sioux tribes were among the seven tribes participating in the field surveys. *Id.* at 43-44, ¶ 10.25. The fact that no Sioux tribes submitted written reports following the field surveys was out of NRC Staff's control; all tribes were invited to participate and submit their findings to NRC Staff.

CI alleges that NRC Staff inappropriately used a "one size fits all" approach in not prioritizing interactions with interested tribes during the consultation process. CI Proposed Findings at 9 and 16. However, the Section 106 regulation requires federal agencies to consult with <u>all</u> federally recognized tribes that may ascribe religious and cultural significance to historic properties that may be affected by the undertaking. It is left to the tribes, not to the agency, to decide whether a tribe participates in consultation. Agencies cannot and should not make value judgments as to which tribes are more deserving of consultation. Following the requirements of the Section 106 regulation, NRC Staff did not prioritize the tribes; any tribe with historical ties to the area was viewed as having the same importance. Powertech Proposed Findings at 53, ¶ 10.49.

CI cites testimony from Mr. CatchesEnemy that states that methodologies to identify sites of religious or cultural significance to the Tribe "may have a little bit of difference or intricacies when we get out to the field." CI Proposed Findings at 10. That is precisely what the open-site field survey approach allowed the tribes to do – conduct field identification efforts in a manner appropriate to each tribe. Powertech Proposed Findings at 42, ¶ 10.22.

CI alleges that the treatment of the Tribe was "rejection." CI Proposed Findings at 14-15. However, the Tribe was not rejected in any sense. NRC Staff consulted extensively with the Tribe and offered the Tribe the same opportunity to participate in the field surveys as all of the other tribes. The Tribe chose not to participate in the field surveys.

ii. Use of Programmatic Agreement to Conclude Section 106 Process

The Tribe incorrectly asserts that the "NHPA [Section] 106 process is still ongoing." This fails to acknowledge that the Section 106 process is completed when the agreement document is executed. Powertech Ex. APP-063 at 8, ¶ A.12 (Dr. Sebastian). Many historic property related activities take place under the requirements and direction of the Section 106 agreement document after that document is signed, but the Section 106 process itself is completed with the filing of the agreement document with the ACHP. Powertech Proposed Findings at 38-39, ¶ 10.14. In this case, the use of a Programmatic Agreement to complete the Section 106 process was appropriate based on the need to develop a future utility corridor in a currently unknown location and on the uncertainty regarding the wastewater disposal mechanism. *Id.* at 132, ¶ 10.275. Execution of the Programmatic Agreement by the ACHP and all required signatories indicates that the Section 106 process has been concluded successfully. *Id.* at 50, ¶ 10.43.

The Tribe asserts that "NRC Staff deferred necessary cultural resources impact reviews, and **all** analysis of mitigation measures for these impacts, as well as project alternatives that

result from that impact and mitigation analysis, to a process outside any NEPA-recognized environmental documents." Tribe Proposed Findings at 19 (emphasis in original). However, this fails to acknowledge that the use of a Programmatic Agreement to specify a process for resolution of adverse effects, including commitments from the applicant to implement the identified mitigation measures, is entirely in accordance with Section 106 regulations and nationwide precedent:

> The Section 106 regulation (at 36 CFR 800.14(b)) specifically provides for agencies to be able to use programmatic agreements to complete the Section 106 process for undertakings like the Dewey-Burdock Project. Not only is there is nothing contrary to the requirements of Section 106 about using a programmatic agreement in this way, it is not even an unusual approach to compliance. Nationwide, roughly 30-40 Section 106 undertakings a year are completed through the development and execution of programmatic agreements.

Powertech Ex. APP-063 at 8, ¶ A.13 (Dr. Sebastian). This allegation also fails to acknowledge that measures to ensure protection of eligible, unevaluated, and currently unidentified historic and cultural resources are described in the FSEIS on p. 4-167, in the Programmatic Agreement, and in the license conditions, including the requirement in LC 9.8 that Powertech stop any work resulting in the discovery of previously unknown cultural artifacts and inventory and evaluate such sites for NRHP eligibility. Powertech Ex. APP-046 at 12, ¶ A.22 (Fritz), *citing* NRC Staff Ex. NRC-008-A-2 at 167.

The Tribe incorrectly asserts that "the NRC Staff's consultation was not 'reasonable' or in 'good faith' under the circumstances presented here." Tribe Proposed Findings at 27. As described above, the decision as to what is reasonable and in good faith is left to the lead federal agency (NRC), not to the consulting parties. ACHP's signature on the Programmatic Agreement indicates that NRC has met the statutory requirements for Section 106 by taking into account the effects of the undertaking on historic properties and providing the ACHP with an opportunity to comment.

CI cites testimony from Mr. CatchesEnemy stating that NRC Staff "were going to just promote this PA regardless of our participation in the identification of historic properties." CI Proposed Findings at 11. NRC was required by 36 CFR § 800.6 to develop an agreement document, either a Programmatic Agreement or a Memorandum of Agreement, because the agency had determined that the Dewey-Burdock Project would have an adverse effect on historic properties. Powertech Proposed Findings at 38-39, ¶ 10.14. NRC Staff offered the Tribe the opportunity to participate in the field surveys (the Tribe even initially accepted the invitation to participate, but later chose to decline) and consulted the Tribe during development of the Programmatic Agreement. Powertech Proposed Findings at 43-44, ¶ 10.25. All interested tribes had the opportunity to participate in the drafting of the Programmatic Agreement, and some chose to do so. *Id.* at 49, ¶ 10.41. In addition, all interested tribes will have the opportunity to participate in future consultations under the Programmatic Agreement regardless of whether they participated in development of or signed the Programmatic Agreement. *Id.* at 51, ¶ 10.45.

iii. Government-to-Government Consultation

CI cites testimony from Mr. CatchesEnemy that alleges that NRC did not send its "decision makers to the table to discuss certain matters." CI Proposed Findings at 17. However, Dr. Hsueh was present during the tribal consultation process. Dr. Hsueh was the Chief of the Environmental Review Branch in NRC's Office of Federal and State Materials and Environmental Management Programs, in which capacity he managed the Staff's NEPA review in the FSEIS and its NHPA Section 106 review. NRC Staff Ex. NRC-151 at 1, ¶ A1a (Dr. Hsueh).

CI states that teleconferences are not "a substitute for in person face-to-face to consultations." CI Proposed Findings at 17. In fact, however, several face-to-face consultations

were held, and the Section 106 regulation defines consultation as "the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the Section 106 process" without specifying any particular approach to such consultations. Powertech Proposed Findings at 54, ¶ 10.52. Standard approaches to Section 106 consultations include a combination of correspondence, telephone calls, teleconferences, emails, face-to-face meetings, field meetings, and various other activities. It is up to the federal agency (NRC) to determine when it has made a reasonable and good faith effort to consult. Powertech Ex. APP-063 at 12, ¶ A.23 (Dr. Sebastian).

c. CONTENTION 2

i. Adequacy of Baseline Groundwater Quality Characterization

The Tribe continues to allege that a "credible baseline" for groundwater quality has not yet been established. Tribe Proposed Findings at 39. However, the FSEIS describes how Powertech conducted baseline groundwater quality sampling consistent with guidance in NUREG-1569 by (i) using acceptable sample collection methods, (ii) using a sample parameter list appropriate for the site and ISR method, and (iii) collecting samples sufficient to represent the natural spatial and temporal variations in water quality. *See* NRC Staff Ex. NRC-008-B-2 at 262. NRC Staff's determination that Powertech's license application satisfied applicable NUREG-1569 acceptance criteria for baseline groundwater quality characterization is documented in the SER. Powertech Proposed Findings at 62, ¶ 10.80. Intervenors have not challenged this determination or any of the conclusions in the SER. *Id.* at 62, ¶ 10.81.

NUREG-1569 explains how an applicant can comply with the requirement in 10 CFR § 51.45(b) to provide "a description of the affected environment" by satisfying all applicable acceptance criteria in NUREG-1569 Chapter 2. NRC Staff Proposed Findings at 29,

footnote 115. Therefore, NRC Staff's determination that Powertech's license application satisfied all applicable NUREG-1569 acceptance criteria for baseline groundwater quality characterization also supports the conclusion that the 10 CFR § 51.45(b) requirements were satisfied. NRC Staff also determined that the license application satisfied 10 CFR Part 40, Appendix A, Criterion 7 requirements for baseline groundwater quality characterization. Powertech Proposed Findings at 62-63, ¶¶ 10.82-10.83.

ii. Commission-approved Background Groundwater Quality

The Tribe alleges that because the FSEIS does not include wellfield-specific background data required under 10 CFR Part 40, Appendix A, Criterion 5B(5), it does not include "information necessary to gauge the scope of impacts." Tribe Proposed Findings at 39. CI similarly alleges that "[t]he delayed production of this critical baseline information until after licensing is not scientifically defensible." CI Proposed Findings at 25. However, these allegations fail to acknowledge that the purpose of the background data obtained prior to operating each wellfield is not for site characterization, but instead to define the primary aquifer restoration goal (CAB) and to establish standards for determining when an excursion has occurred (UCLs). Powertech Proposed Findings at 56-57, ¶ 10.61. The purpose is not to "fill in any gaps" as alleged by the Tribe. Tribe Proposed Findings at 40.

Wellfield-specific background data are not necessary to assess the potential impacts of the Dewey-Burdock Project, since the baseline data Powertech was required to submit under 10 CFR § 51.45(b) and Criterion 7 of 10 CFR Part 40, Appendix A allowed the Staff to adequately evaluate the quality of groundwater that may be affected by ISR operations and to determine how those activities might reasonably affect water quality. NRC Staff Proposed Findings at 24, ¶ 5.44. Moreover, NRC Staff's well-documented position is that pre-license

construction of a wellfield monitoring network needed to establish CAB, TRGs and UCLs is prohibited as meeting the definition of "construction" under 10 CFR § 40.32(e). Powertech Proposed Findings at 59, ¶ 10.71.

Regarding the Tribe's allegation that Powertech witness Demuth "admitted that additional data is necessary to provide complete baseline data" (Tribe Proposed Findings at 40, *citing* Tr. at 1012, lines 16-20), Mr. Demuth did not indicate that wellfield-scale information is needed to provide "complete baseline data," but instead that "additional confirmatory information [is obtained] on a wellfield scale." Tr. at 1012, lines 20-22. Mr. Demuth was specifically referring to wellfield-scale pumping tests and not water quality data in the cited testimony:

> JUDGE BARNETT: So you need additional information other than what's available today to determine whether the wellfield can be operated safely? Am I reading that correctly?
>
> MR. DEMUTH: Yes, you are. It would be additional confirmatory information on a wellfield scale, and that is one of the premises of [NUREG-]1569 and historic regulation of ISR facilities. [NUREG-]1569 mandates us really to collect data on a regional scale for a permit application which is prudent and warranted. As we move into a wellfield scale, then there's additional information. And one example is the pump test where you verify that your monitor wells are connected and there are valid monitoring points and also demonstrate confinement above and below. So, yes, that would be further confirmation, but it's part of a well-established process.

Tr. at 1012-1013.

The Tribe continues to allege that the FSEIS fails to define baseline water quality in the "ore zones and peripheral zones, both vertically and horizontally." Tribe Proposed Findings at 42. CI similarly alleges that the FSEIS failed to provide "adequate determination of baseline water quality in all horizons in and around the ore bodies in the aquifers proposed to be mined." CI Proposed Findings at 24. However, Powertech provided adequate groundwater quality data for the production zone and surrounding areas in its license application. Powertech Proposed

Findings at 61, ¶ 10.78. Powertech also provided groundwater quality results from the ore zone aquifers (Fall River and Chilson), overlying aquifer (alluvium) and underlying aquifer (Sundance/Unkpapa). Powertech Ex. APP-037 at 9, ¶ A.22 (Lawrence).

The Tribe alleges that "complete" baseline groundwater quality analysis has not been provided, since strontium and lithium were not included in the baseline groundwater quality analyses. Tribe Proposed Findings at 40. However, strontium was one of the additional parameters that Powertech analyzed beyond the recommended list from NUREG-1569 Table 2.7.3-1. *See* Powertech Ex. APP-037 at 8, ¶ A.20 (Lawrence), *citing* Ex. APP-016-M at 926-1072. Lithium was not analyzed, nor is it included in the recommended list of parameters in NUREG-1569 Table 2.7.3-1. *See* NRC Staff Ex. NRC-013 at 63. Lithium also is not included in Table 2.2-1 of the GEIS, which provides a list of constituents that are expected to increase as the result of ISR activities. NRC Staff Proposed Findings at 28-29, ¶ 5.57. Dr. Moran did not provide any evidence that lithium is expected to increase as the result of ISR activities or any other testimony explaining why lithium should have been included.

CI alleges that the FSEIS is inadequate because it does not include long-term aquifer testing coupled with simultaneous water quality sampling. CI Proposed Findings at 24. However, Powertech witness Lawrence addressed the duration of historical and recent aquifer pumping tests in his initial written testimony, including that the duration ranged from 2 to 11 days, which is consistent with more than 40 tests conducted by Petrotek Engineering Corporation and the durations of pump testing at recently and historically licensed ISR facilities. Powertech Ex. APP-037 at 36-37, ¶¶ A.85-A.86. NRC Staff documented that Powertech's pumping tests were consistent with NUREG-1569 acceptance criteria and federal regulations in the SER. *Id.* at 37, ¶ A.87. Intervenors have not cited any regulations or guidance specifying that a license

application should include simultaneous water quality sampling along with pump testing results. Dr. Moran testified that he does not have experience in licensing uranium ISR facilities. Tr. at 1000-1001.

CI alleges that the FSEIS should have contained "detailed chemical compositions" of all "operating fluids, such as pregnant lixiviant solutions." CI Proposed Findings at 24-25. However, such operational data cannot be obtained until after licensed ISR operations commence. Furthermore, the license application includes an estimate of the post-ISR groundwater quality (prior to groundwater restoration) in the ore zone based on leach testing results and data from operating ISR facilities. *See* Powertech Ex. APP-015-C at 242-243.

CI alleges that the FSEIS inadequately evaluates baseline groundwater quality because it doesn't contain "identification of chemical constituents that will be used for aquifer restoration and clean-up standards/criteria for each constituent" or "a list of chemical constituents likely to require an ACL based on similar projects." CI Proposed Findings at 25. Identification of chemicals used during aquifer restoration and chemicals potentially requiring an ACL are outside of the scope of Contention 2. Nevertheless, the FSEIS describes the aquifer restoration procedures in Section 2.1.1.1.4.1, including that no chemicals will be used for aquifer restoration other than nearly pure water (permeate). NRC Staff Ex. NRC-008-A-2 at 134. FSEIS Appendix B also describes the process for reviewing and approving ACLs. NRC Staff Ex. NRC-008-B-2 at 169-171. *See also* NRC Staff Exs. NRC-001 at 84-85, ¶ A6.9 and NRC-151 at 18, ¶ A2.6.

CI also alleges that the FSEIS inadequately evaluates baseline groundwater quality because it does not specify the "actual waste disposal method to be employed." CI Proposed Findings at 25. Again, wastewater disposal is outside of the scope of Contention 2. Nevertheless,

the FSEIS fully evaluates the potential impacts of three wastewater disposal options: deep disposal wells (preferred), land application, or a combination of deep disposal wells and land application.

CI also alleges that the FSEIS inadequately evaluates baseline groundwater quality because it does not include "detailed analyses and data related to specific Underground Injection Control Well studies required by federal Environmental Protection Agency (EPA) for approval of an Underground Injection Control (UIC) well permit." CI Proposed Findings at 25. Again, neither CI nor Dr. Moran, whose initial testimony is cited by CI, makes any attempt to describe how this is relevant to the issues within the scope of Contention 2. Intervenors have provided no evidence or testimony describing what is meant by "detailed analyses and data" related to EPA UIC permits or even indicated whether this refers to the Class III UIC permit, Class V UIC permit or both. The FSEIS documents that the Staff reviewed Powertech's UIC permit applications and included relevant information from the Class III and V UIC permit applications in the FSEIS. NRC Staff Ex. NRC-151 at 19-20, ¶ A2.8 (Prikryl and Lancaster).

CI also alleges that the FSEIS should have included "additional structural geologic information, including faults, breccia pipe information, and human-induced connectivity." CI Proposed Findings at 25. These issues are clearly outside of the scope of Contention 2 but are all addressed under Contention 3.

iii. Regulatory Guide 4.14

The Tribe continues to assert that the FSEIS improperly relies on Regulatory Guide 4.14 in specifying the sample radius for private wells. Tribe Proposed Findings at 42. However, justification for applying the 2-km guideline from Regulatory Guide 4.14 is provided in the SER and validated in NUREG/CR-6705 based on examination of radiological plume dispersion from

mill tailings disposal areas at Uranium Mill Tailings Remedial Action (UMTRA) sites in the U.S. Powertech Proposed Findings at 63-64, ¶ 10.86. Applying the 2-km radius to the perimeter monitor well ring rather than the wellfield pattern area is a conservative application of the guidance, since it is ISR injection wells and not the perimeter monitoring wells that are the potential temporary source of groundwater contamination. *Id.* at 64, ¶ 10.87. This is also supported by data from NRC-licensed ISR facilities showing there are no reported instances of groundwater contamination beyond 2 km from any ISR wellfields. *Id.* at 64, ¶ 10.88.

iv. Potential Impacts from Historical Mining

The Intervenors continue to allege that the FSEIS failed to analyze the potential impacts from past mining activities. Tribe Proposed Findings at 39 and CI Proposed Findings at 24. However, pre-operational baseline groundwater quality refers to the existing environmental conditions within the project area, and the purpose of defining pre-operational baseline groundwater quality is not to evaluate the impacts of past uranium mining activities. Powertech Proposed Findings at 65-66, ¶ 10.92. The FSEIS evaluates the potential impacts from historical mining as "cumulative effects" in FSEIS Chapter 5. *Id.* Further, the license application includes a comparison between historical (1979-1984) and recent (2007-2008) samples from nine wells that supports the conclusion that no widespread groundwater quality degradation resulted from the historical mining or exploration activities. *Id.* at 66, ¶ 10.93.

v. Potential Impacts from Historical Exploration Boreholes

CI alleges that the FSEIS failed to analyze the potential impacts from "thousands of improperly plugged boreholes from prior uranium exploration." CI Proposed Findings at 24. However, Intervenors have provided no evidence that there are thousands of "improperly plugged" boreholes. To the contrary, Powertech has submitted evidence that historical TVA

boreholes were plugged in accordance with State standards effective at the time and that there is only one isolated area, known as the "alkali area," where seepage to the ground surface is attributed to historical exploration boreholes. Powertech Proposed Findings at 88, ¶¶ 10.154-10.156. As described previously, potential impacts from historical mining and exploration activities were evaluated as "cumulative effects" in the FSEIS, and there is no evidence that widespread groundwater quality degradation resulted from historical mining or exploration activities.

vi. Unbiased Data

The Tribe asserts that there is a "potential bias of the data thus far provided." Tribe Proposed Findings at 39. However, the license application presents all baseline groundwater quality data as unbiased, factual values, including all laboratory results and summary tables of groundwater quality by well and by formation. Powertech Proposed Findings at 68-69, ¶¶ 10.99-10.101. The FSEIS summarizes the groundwater quality results and provides a comparison with EPA MCLs to inform the public as to whether existing conditions are such that the water could be used as a source of drinking water. *Id.* at 69, ¶¶ 10.102-10.103. There is no need to demonstrate that groundwater quality exceeds EPA MCLs, since the requested aquifer exemption from EPA is not based on groundwater quality but on the basis that 1) the proposed exempted aquifer does not currently serve as a source of drinking water, and 2) the proposed exempted aquifer is capable of producing minerals and contains minerals that are expected to be commercially producible. *Id.* at 69-70, ¶ 10.104. Comparing sample results to EPA MCLs also is consistent with guidance in NUREG-1569. *Id.* at 69, ¶ 10.103.

d. CONTENTION 3

i. Adequacy of Hydrogeological Characterization

The Tribe alleges that the FSEIS relies solely on information submitted by Powertech in its license application; they allege that this is confirmed in the response to public comments in the FSEIS, where changes were not made in response to public comments. Tribe Proposed Findings at 45. Initially, this demonstrates a complete lack of understanding of the NRC regulatory system wherein the primary responsibility for safe possession/use of AEA materials rests with the license applicant. With respect to the statement that "no change was made to the SEIS" in response to a public comment, this merely reflects the Staff's determination at the time of the FSEIS of the adequacy of the license application, including environmental analyses, and other materials reviewed when preparing the FSEIS. This allegation also fails to acknowledge that the DSEIS came out in November 2012, or some 17 months after Powertech submitted its TR RAI responses in June 2011. The RAI responses contain additional information on key issues associated with confinement and fluid migration that was provided by Powertech to answer specific questions raised by the Staff. Powertech Proposed Findings at 73, ¶ 10.112. Since the DSEIS already addressed issues such as historical exploration boreholes and breccia pipes, by considering information in Powertech's license application (including TR RAI responses) and other sources of information (NRC Staff Proposed Findings at 43-44, ¶¶ 5.101-5.105), there was no need to modify the FSEIS in response to questions about these issues.

The Tribe also alleges that where the FSEIS contains any changes, it was modified to indicate that Powertech will be required to submit "adequate hydrogeologic data … only after the NEPA process is completed, after a license is issued, and with no chance for any public review." Tribe Proposed Findings at 45, *citing* FSEIS at E-51. However, the cited response to public

comment merely clarifies that all wellfield packages must be submitted to NRC Staff for review, review and written verification, or review and approval. NRC Staff Ex. NRC-008-B-2 at 281-282. The comment response describes the role of the SERP to review and evaluate wellfield packages under Commission-approved performance-based license conditions. However, it notes that the FSEIS was updated to clarify that in addition to SERP review, all wellfield packages must be submitted to NRC Staff. NRC Staff witnesses testified that it is standard practice for operators of NRC-licensed ISR facilities to submit wellfield packages after license issuance but prior to operating each wellfield. Powertech Proposed Findings at 72, ¶ 10.111. *See also* NRC Staff Proposed Findings at 33, ¶ 5.70. Furthermore, the comment response describes the purpose of the wellfield data packages, which is not to supplement the site characterization data evaluated in the FSEIS, but to demonstrate the adequacy of the excursion monitoring network and demonstrate for each wellfield that "ISR solutions can be controlled with typical bleed rates and to identify and detect leakage due to anomalies such as improperly plugged wells and exploration boreholes." NRC Staff Ex. NRC-008-B-2 at 281. Although no formal public review process will be conducted for wellfield packages, it is inaccurate for the Tribe to state that there will be "no chance for any public review," since it is anticipated that these data packages will be publicly available on ADAMS. Powertech Proposed Findings at 58, ¶ 10.68. Regarding the allegation that wellfield packages are required to establish "adequate" hydrogeologic data, Section 2 of NUREG-1569 specifies what information a license applicant should include to demonstrate the adequacy of site characterization data. *Id.* at 72, ¶ 10.110. The SER documents NRC Staff's determination that Powertech's license application satisfied applicable NUREG-1569 Section 2 acceptance criteria regarding the adequacy of hydrogeologic information, and Intervenors have not challenged this determination. *Id.* at 62, ¶ 10.81 and 74, ¶ 10.116.

The Tribe alleges that the data collection approach violates 10 CFR 40, Appendix A, Criterion 5G(2). Tribe Proposed Findings at 46. However, Criterion 5G(2) applies to "tailings disposal systems" and is not directly applicable to a uranium ISR facility. It describes information that must be submitted by an "applicant/operator" of "a tailings disposal system proposal" in regard to "[t]he characteristics of the underlying soil and geologic formations … within the proposed impoundment area"- that is, under a conventional mill tailings impoundment. 10 CFR Part 40, Appendix A, Criterion 5G(2). Even if it was relevant/applicable to ISR facilities, Criterion 5G(2) is a safety contention identifying information that an applicant must include in its TR; it is not an environmental standard governing the Staff's preparation of an FSEIS. NRC Staff Rebuttal Position Statement at 13-14. Nevertheless, information gathered from borings across the entire license area is presented in the license application and FSEIS that demonstrates that there is no evidence of "significant discontinuities, fractures, and channel deposits of high hydraulic conductivity." *See, e.g.,* Powertech Proposed Findings at 79-83, ¶¶ 10.130-10.141.

CI alleges that Powertech has asserted that the Dewey-Burdock Project area is "sufficiently hydro-geologically identical to other ISL mines as to permit an evaluation concluding 'standard' plans would work in the proposed mine." CI Proposed Findings at 29. CI further alleges that NRC Staff unquestioningly accepted this assertion. *Id.* However, this allegation fails to acknowledge that the FSEIS recognizes that there are hydrogeologic features at the Dewey-Burdock Project that are similar to those at other ISR facilities, while also evaluating potential impacts from site-specific hydrogeologic conditions:

> Many of the hydrogeologic conditions at the proposed Dewey-Burdock ISR Project are similar to those at other ISR facilities. Groundwater in the production zone aquifers displays sufficient hydraulic conductivity to minimize excursions during ISR activities.

> However, the Dewey-Burdock site has several distinctive man-made and hydrogeological features that could contribute to potential vertical or horizontal excursions …

NRC Staff Ex. NRC-008-A-2 at 64. This allegation also fails to address that the GEIS describes common features such as fluvial deposition systems that are typical of ISR facilities. Powertech Proposed Findings at 76, ¶ 10.121. It also fails to recognize that Powertech's license contains not only standard license conditions but also facility-specific license conditions that were written to address site-specific conditions. For example, LC 12.7 requires Powertech to provide a monitoring well network for the Fall River aquifer where ISR wellfields will target the Chilson aquifer. This facility-specific license condition was written to address potential drawdown-induced migration of potential contaminants from the historical mine pits. *Id.* at 103, ¶ 10.201, 125, ¶ 10.257. Powertech has never asserted that the Dewey-Burdock Project is "hydro-geologically identical to other ISL mines." Extensive, site-specific hydrogeological information would not have been included in Powertech's license application if Powertech believed this to be true.

CI asserts that "models, conclusions, and opinions of insiders who stand to benefit from the future contracts related to this project" should be "troubling to this Board." CI Proposed Findings at 30. This allegation fails to acknowledge that virtually every license applicant and licensee hires experts for various purposes as necessary to satisfy NRC's detailed requirements. For example, Powertech witness Lawrence testified that Petrotek Engineering Corporation has conducted more than 40 wellfield pump tests at uranium ISR facilities in Texas, Wyoming and Nebraska. Powertech Ex. APP-037 at 36, ¶ A.85. This is the crucial difference between the information in Powertech's license application and the testimony from Powertech's witnesses in this evidentiary hearing, all of which has been prepared by people with direct and extensive experience in licensing uranium ISR facilities, and allegations from Intervenor witnesses, none

of whom has indicated any prior experience in licensing ISR facilities, conducting pumping tests for ISR facilities or preparing numerical groundwater models.

CI alleges that the FSEIS is premised on there being "a complete absence" of faults, thinning or pinching out of confining layers, and improperly plugged boreholes or wells. CI Proposed Findings at 32. With respect to faults, the FSEIS provides documentation that NRC Staff reviewed the USGS Quaternary Fault and Fold Database and concluded from this and other published reports that there are not any faults mapped within the project area. Powertech Proposed Findings at 80-81, ¶ 10.134. This finding is consistent with testimony from Intervenor witnesses, who acknowledged that there are not any mapped faults within the project area. *Id.* at 79-80, ¶ 10.131. This finding also is consistent with the Staff's review of the recently disclosed borehole log data, including the construction and evaluation of transects using closely spaced borehole logs that provided further evidence against the presence of faults in the project area. *Id.* at 81, ¶ 10.136. Powertech's license application also provides extensive evidence that there are not any significant faults within the project area based on detailed subsurface mapping based on thousands of boreholes, numerical groundwater modeling, and potentiometric surface and water quality evaluations. *Id.* at 80, ¶¶ 10.132-10.133. Powertech's field investigations and subsurface evaluations in the vicinity of four boreholes alleged by Dr. LaGarry to provide evidence of faulting demonstrate that there is no evidence of faulting in these areas. Powertech Proposed Findings at 81-82, ¶ 10.139.

CI's assertion that the FSEIS assumes a complete absence of thinning confining layers is without merit, since the FSEIS acknowledges that the Fuson Shale thins in a portion of the Burdock area that is 1,000 feet outside of the initial planned Burdock wellfield. *Id.* at 96, ¶ 10.181. NRC Staff's review of the recently disclosed borehole log data supports the conclusion

that there is no significant thickening or thinning in the Fuson Shale confining unit in the areas evaluated using closely spaced borehole logs. *Id.* at 109-110, ¶ 10.216.

Similarly, CI's assertion that the FSEIS assumes a complete absence of unplugged or improperly plugged boreholes within the project area is not supported. The FSEIS documents that the "alkali area" is an area where seepage to the ground surface is attributed to discharge through improperly plugged exploration boreholes. NRC Staff Ex. NRC-008-A-1 at 193. The fact that flowing artesian conditions are present throughout much of the license area means that there would be obvious surface expression if free flowing, improperly plugged boreholes occur in these areas; the alkali area demonstrates the signature of leaking boreholes in a limited area. Powertech Proposed Findings at 88-90, ¶¶ 10.156 and 10.161. The FSEIS does not assume that all exploration boreholes have been properly plugged and abandoned: "These boreholes may provide pathways to aquifers above and below production zone confining units." NRC Staff Ex. NRC-008-A-2 at 64. The FSEIS considered the possibility that historical exploration boreholes may provide hydraulic connections between aquifers when assessing the potential impacts of the Dewey-Burdock Project. NRC Staff Proposed Findings at 34-35, ¶ 5.74.

CI alleges that the FSEIS does not include "a comprehensive review of the geologic literature" and that it references "outdated scientific literature" with "a general lack of review of recent study." CI Proposed Findings at 32. However, the FSEIS does in fact document that NRC Staff reviewed numerous reference sources when preparing the FSEIS, including almost all of the sources cited by Dr. Moran. NRC Staff Proposed Findings at 43, ¶ 5.102. In fact, the record shows that the Staff considered a wide range of information when assessing the affected environment and evaluating potential impacts in the FSEIS, including information provided by Powertech in its original license application, additional information provided in response to

questions from the Staff during review of the license application, and numerous reference sources. *Id.* at 44, ¶ 5.105. This allegation also fails to acknowledge that the FSEIS was tiered off of the GEIS, which itself reviewed extensive geologic literature and materials regarding historical ISR activities. Intervenors have failed to show that there are any more recent published studies of the geology and stratigraphy of the Dewey-Burdock Project area than those referenced in the FSEIS. Moreover, Intervenors have stated that they consider studies conducted prior to the 1980s to be outdated (CI Proposed Findings at 33, *citing* CI Ex. INT-013 at 7), yet they repeatedly reference regional, pre-1980 references such as Keene (1973) and Gott et al. (1974) to support their allegations. Powertech Ex. APP-066 at 7-8, ¶ A.5 (Lawrence). Intervenors refer to lack of recent study, yet there is an abundance of site-specific data in the license application supporting the hydrogeological conceptualization of the project area. *Id.* Examples of recent information in the license application include hydrologic data from an extensive monitor well network (including water quality, aquifer properties and potentiometric data), CIR imagery, detailed assessment of historical mine workings, and site field investigations, all focused on the Dewey-Burdock Project area. *Id.*

ii. Hydraulic Isolation of the Production Zone

The Tribe alleges that there is an "overwhelming body of evidence undermining the FSEIS conclusion that the production zone is hydraulically isolated from surrounding aquifers." Tribe Proposed Findings at 46. To the contrary, there is extensive evidence that the production zone is hydraulically isolated sufficiently to conduct ISR safely, including: (1) the thickness and continuity of the major confining units (Graneros Group, Fuson Shale and Morrison Formation), (2) differing potentiometric water level elevations in paired wells completed in different aquifers, (3) aquifer testing results, (4) numerical groundwater modeling results, and (5) water quality

differences between aquifers based on USGS research. Powertech Proposed Findings at 74-79, ¶¶ 10.117-10.129.

The Tribe alleges that "inter-fingering sediments" will provide potential pathways for groundwater conductivity. Tribe Proposed Findings at 46. However, the FSEIS considers the "interbedded and inter-fingering nature of sediments," which is addressed in the numerical groundwater model and are typical of other ISR facilities in Wyoming, Nebraska, New Mexico and Texas. Powertech Proposed Findings at 76, ¶¶ 10.120-10.121. This allegation also fails to acknowledge that Powertech will be required by LC 10.7 to maintain a net inward hydraulic gradient in each wellfield during operation, which Intervenors acknowledge will reduce the likelihood of fluids migrating away from the production zone. Powertech Proposed Findings at 93-94, ¶ 10.173.

The Tribe also alleges that there is a "trench" in the potentiometric surface of the Fall River aquifer where the Cheyenne River flows through the Inyan Kara. Tribe Proposed Findings at 47. However, no such "trench" is apparent within the license area, and the Cheyenne River is not even present. Plate 2.6-15 in Powertech's TR shows that the Cheyenne River does not cross the outcrop of the Inyan Kara Group (containing the Fall River aquifer) until 15 to 20 miles southeast (and downgradient) of the license area. Powertech Ex. APP-015-F at 5. On the other hand, the FSEIS portrays the direction of groundwater flow in the Fall River and Chilson aquifers as being southwest according to potentiometric surfaces presented in the license application, which are consistent with regional flow patterns. Powertech Ex. APP-037 at 31-32, ¶ A.73 (Lawrence). Potentiometric surface maps for the Fall River and Chilson aquifers demonstrate the southwesterly groundwater flow direction and the lack of a "trench" in the potentiometric surfaces within the project area. Powertech Ex. APP-015-B at 288-289.

iii. Pumping Tests

The Tribe alleges that pumping tests demonstrate that the aquitards at the site are leaky. Tribe Proposed Findings at 47. Similarly, CI alleges that the historical TVA pump tests provide evidence that the Fuson Shale is a leaky confining unit due to geologic features such as joints or fractures. CI Proposed Findings at 35-36. While communication has been observed in some of the historical and recent pumping tests, it has been limited to a specific area within the Burdock portion of the project area and to the intermediate confining unit between the Fall River and Chilson aquifers (Fuson Shale); it is not a site-wide phenomenon, nor does it call into question the adequacy of the major overlying and underlying confining units (Graneros Group and Morrison Formation). In the vicinity of these Burdock-area pumping tests, there is a well that is known to be constructed with open intervals in the Fall River and Chilson aquifers; when Powertech placed a temporary plug in this well, a potentiometric head difference was observed between the two aquifers, providing evidence that the aquifers are hydraulically isolated in this area but for the improperly constructed historical well. Powertech Proposed Findings at 77, ¶ 10.123. The "alkali area," which is the only known area of seepage from improperly plugged exploration boreholes, also is in the Burdock portion of the project area. *Id.* at 88, ¶ 10.156; *compare* Powertech Ex. APP-015-B at 300 (TR Figure 2.7-23) with Ex. APP-015-B at 309 (TR Figure 2.7-28). TVA acknowledged that communication was "believed to be the result of numerous old, unplugged uranium exploration boreholes in the test vicinity." Powertech Proposed Findings at 77, ¶ 10.123, *citing* Powertech Ex. APP-016-R at 26. CI acknowledged this conclusion from TVA. CI Proposed Findings at 41-42. Numerical modeling further supports the conclusion that hydraulic communication, where observed in the historical and recent pumping tests, occurred through improperly installed wells or improperly abandoned boreholes and not

through the rock matrix itself. Powertech Proposed Findings at 78, ¶ 10.125. Moreover, it is not necessary that the Fuson Shale be a completely impermeable barrier, but only that it sufficiently restricts flow such that ISR can be safely conducted. *Id.* at 78, ¶ 10.126. This demonstration will be required for each wellfield prior to conducting ISR operations. *Id.* at 98-99, ¶ 10.188.

The Tribe alleges that "sufficient study has not been completed to demonstrate the ability to contain the mining fluids" and that wellfield-scale pumping tests used to confirm that there is adequate hydraulic isolation of the production zone in each wellfield is "deferred until after the NEPA process." Tribe Proposed Findings at 48-49. However, there is extensive information in the license application and FSEIS supporting the conclusion that the production zone is hydraulically isolated sufficiently to conduct ISR safely, including (1) the thickness and continuity of the major confining units (Graneros Group, Fuson Shale and Morrison Formation), (2) differing potentiometric water level elevations in paired wells completed in different aquifers, (3) aquifer testing results, (4) numerical groundwater modeling results, and (5) water quality differences between aquifers based on USGS research. Powertech Proposed Findings at 74-79, ¶¶ 10.117-10.129. Furthermore, the procedures to conduct wellfield-scale pumping tests and perform additional evaluations during preparation of the wellfield hydrogeologic data packages, including potentiometric surface evaluations and geologic investigations, are fully described in the license application, FSEIS and SER. *Id.* at 104-105, ¶ 10.206. Intervenors have not challenged these procedures, which are embodied in LC 10.10. *Id.* at 57, ¶ 10.65.

It is standard industry practice to demonstrate the adequacy of the monitoring network (including that overlying and underlying monitor wells are hydraulically isolated from the production zone) through wellfield package development post license issuance. NRC Staff Proposed Findings at 33, ¶ 5.70. As Powertech testified during the evidentiary hearing, if a

wellfield-scale pumping test identifies that leakage is occurring, such as through an improperly abandoned borehole or improperly constructed well, the situation is remedied and the test repeated until adequate hydraulic isolation of the production zone is demonstrated. Powertech Proposed Findings at 98-99, ¶ 10.188.

The Tribe incorrectly asserts that the FSEIS "provides no information even on where this mysterious leaking borehole is." Tribe Proposed Findings at 49. The Tribe also alleges that Powertech "failed to provide a credible explanation" for the hydraulic communication observed in the historical pumping tests. *Id.* at 51. However, the FSEIS documents that the "alkali area" is an area attributed to discharge through improperly plugged exploration boreholes. NRC Staff Ex. NRC-008-A-1 at 193. The location of the alkali area is shown in Powertech's June 2011 TR RAI responses, which are referenced in the FSEIS as the source of information about the alkali area. Powertech Ex. APP-016-C at 72. *See also* Powertech Ex. APP-015-B at 300. Powertech's testimony identified Well 668 as the well that is known to be constructed with open intervals in the Fall River and Chilson aquifers. The location of this well is shown on Figure 2.2-4 in Powertech's TR. Powertech Ex. APP-015-B at 78. The most credible explanation for the hydraulic communication observed in the historical and recent pumping tests is that leakage through the Fuson Shale occurred due to an improperly constructed well (Well 668) and/or unplugged or improperly plugged exploration boreholes in a limited area. Powertech Proposed Findings at 77, ¶ 10.123. This is supported by the conclusions of the authors of the TVA pumping test report and by numerical modeling, which demonstrates that the Fuson Shale is not leaking through the rock matrix itself. *Id.* at 77, ¶ 10.123 and at 97-98, ¶ 10.186.

Regarding Powertech's requirement to confirm that adequate confinement is available to safely conduct ISR prior to operating each wellfield, the Tribe asserts that the "NEPA analysis

unacceptably leaves the public in the dark as to whether this mitigation will work or what the potential impacts may be should the remedy not be successful." Tribe Proposed Findings at 49. However, Powertech's witnesses Demuth and Lawrence testified that pumping tests have been used to identify improperly constructed wells or improperly abandoned boreholes. Tr. at 1028, lines 16-18 (Demuth) and Tr. at 1051-1052 (Lawrence). Moreover, this allegation fails to acknowledge Powertech's requirement to demonstrate, through wellfield-scale pump testing, that the production zone is adequately isolated is only one of the mitigation measures to reduce or avoid the potential impacts from historical exploration boreholes. Mitigation measures evaluated in the FSEIS include: (1) Powertech's commitment to identify unplugged or improperly plugged boreholes in the vicinity of each wellfield using historical records, color infrared imagery, field investigations and potentiometric surface evaluation and pumping tests, and (2) Powertech's commitment to plugging and abandoning (using State-approved hole plugging methods) or otherwise mitigating any unplugged or improperly plugged exploration boreholes or wells that have the potential to impact the control and containment of wellfield solutions. Powertech Proposed Findings at 88-89, ¶ 10.157. Powertech's commitment to plug and abandon (using State-approved hole plugging methods) or otherwise mitigate any unplugged or improperly plugged exploration boreholes or wells that have the potential to impact the control and containment of wellfield solutions is enforced by LC 9.2:

> Whenever the words "will" or "shall" are used in the above referenced documents, it shall denote a requirement. The use of "verification" in this license with respect to a document submitted for NRC staff review means a written acknowledgement by U.S. Nuclear Regulatory Commission (NRC) staff that the specified submitted material is consistent with commitments in the approved license application, or requirements in a license condition or regulation.

NRC Staff Ex. NRC-012 at 1 (LC 9.2). Should Powertech operate a wellfield without adhering to this commitment, it would be in violation of its license requirements and subject to enforcement

action. LC 10.10 requires Powertech to submit all wellfield packages to NRC Staff for review, review and written verification, or review and approval. Therefore, NRC Staff will review and evaluate the results of pump testing and any well or borehole abandonment or mitigation efforts prior to Powertech operating each wellfield. Powertech Proposed Findings at 105-106, ¶ 10.208. If an improperly completed well or improperly abandoned borehole were to remain undetected during the wellfield-scale pumping test, it would manifest as a vertical excursion, which would be detected during Powertech's mandated excursion monitoring program required by LC 11.5, which also requires corrective actions and follow-up reporting. *Id.* at 94, ¶ 10.174.

The Tribe alleges that neither Mr. Prikryl nor Mr. Lancaster reviewed the historical pumping test results. Tribe Proposed Findings at 50. However, the cited testimony in the transcript does not support this allegation. Mr. Lancaster testified that Powertech provided the historical pumping test reports in the TR RAI responses following a request from the Staff. Tr. at 1056-1057. Mr. Lancaster then described how the pumping tests show that leakage occurred, but that Powertech's numerical groundwater model showed that it can only be explained by "a leaky borehole situation." Tr. at 1057, lines 7-19. The FSEIS also documents the Staff's review of the historical pumping test results. Powertech Proposed Findings at 97-98, ¶ 10.186.

iv. Faults and Fractures

The Tribe alleges that fractures and faults will provide potential pathways for groundwater conductivity. Tribe Proposed Findings at 46. However, there is extensive evidence that faults or fractures will not affect Powertech's ability to contain fluid migration, including structure contour maps, isopach maps, geologic cross sections, potentiometric surface evaluations, water quality evaluations, numerical modeling and pumping tests. Powertech Proposed Findings at 79-83, ¶¶ 10.130-10.141. Further, pre-operational controls (pumping tests

and other evaluations in wellfield hydrogeologic data packages) and operational controls (including the requirement to maintain an inward hydraulic gradient and conduct excursion monitoring) provide further assurance that ISR solutions will be maintained within the production zone. *Id.* at 92-94, ¶¶ 10.170-10.174.

The Tribe alleges that the TVA Draft Environmental Statement (DES) "demonstrates faults and fractures are prevalent in the area." Tribe Proposed Findings at 51, *citing* Tribe Ex. OST-009 at 60. However, the cited DES page discusses the same regional fault systems (Dewey Fault and Long Mountain Structural Zone) that are described in the FSEIS and are not present within the project area. Powertech witness Lawrence addressed this issue during the evidentiary hearing: "That looks to me more like a statement of recognition that we have the Dewey and Long Mountain structural zones. It doesn't say that those faults are within the permit area." Tr. at 1070-1071. While the Tribe would have the Board believe that Mr. Lawrence stated that the TVA DES "does not conclusively demonstrate fractures in the precise permit area at issue" (Tribe Proposed Findings at 51), Mr. Lawrence only stated that it is well understood that there are regional fault systems including the Dewey Fault and Long Mountain Structural Zone, but these are outside of the project area. The FSEIS discusses the presence of these regional fault systems. Powertech Proposed Findings at 79, ¶ 10.130.

The Tribe alleges that the TVA DES and Gott et al. (1974) show "faults, fractures and breccia pipes in the immediate area of the proposed project." Tribe Proposed Findings at 52. However, as described above the TVA DES merely describes the same regional fault systems that are considered in the FSEIS. Intervenor witnesses acknowledge that the Dewey Fault Zone and Long Mountain Structural Zone are not within the project area. Powertech Proposed Findings at 79-80, ¶ 10.131. Further, it was established during the evidentiary hearing that the

Gott et al. map does not depict breccia pipes or even "topographic depressions" or "structures of possible solution origin" within the project area. *Id.* at 84-85, ¶ 10.144.

CI alleges that regional studies provide evidence of faults that is contrary to the evaluation in the FSEIS. CI Proposed Findings at 33-37. However, they have provided no evidence that any of the cited studies identifies any faults within the project area.

The Tribe alleges that there is a lack of site-specific data regarding potential faults or other structural features, claiming that there is not "any actual empirical data or detailed site investigation" supporting the conclusion that there are no major faults, fractures or breccia pipes within the project area. Tribe Proposed Findings at 52. To the contrary, the license application contains extensive, site-specific data supporting the conclusion that such features are not present, including interpretation of thousands of geophysical logs used to construct the structure contour maps and isopach maps, use of hundreds of geophysical logs to develop the numerical groundwater model, inclusion of dozens of geophysical logs in nine geologic cross sections, and evaluation of groundwater quality information, potentiometric surfaces and historical and recent pumping tests. Powertech Proposed Findings at 109, ¶ 10.215. NRC Staff also conducted an evaluation of the recently disclosed borehole log data at locations alleged by Intervenors to contain faults and breccia pipes and found no evidence to support these allegations. To the contrary, they found that the Fuson Shale was laterally continuous through these locations with no significant vertical displacement. *Id.* at 109-110, ¶ 10.216.

CI alleges that faults and joints will be "capable of transmitting uranium-contaminated waters from depth onto the land surface." CI Proposed Findings at 36. However, the potentiometric surfaces of the Fall River and Chilson aquifers are above ground surface throughout much of the license area; as a result, if there were faults and joints capable of

transmitting water from these aquifers to the land surface, it would be occurring today. Powertech Proposed Findings at 89-90, ¶ 10.161. Powertech conducted extensive field investigations and potentiometric surface evaluations to evaluate potential groundwater discharge to surface water or shallow groundwater (alluvium). Except for the alkali area, no other areas have been identified. *Id.* at 88, ¶¶ 10.155-10.156.

CI further alleges that "photographs of the photos in the geology section of the Technical Report" show "unmapped joints and faults." CI Proposed Findings at 36. However, Intervenors have not submitted any testimony describing how these photographs allegedly depict "unmapped joints and faults." The only photographs in the geology section of the TR (Section 2.6) are photographs of formation outcrops outside of the license area that were taken as part of Powertech's evaluation of potential breccia pipes. Powertech Ex. APP-015-B at 213, 219-220, 222. These photographs are clearly labeled "outside project area." *Id.* The locations of these photographs are depicted on Plate 2.6-15 in Powertech's TR, which clearly shows all photographs to have been taken well outside of the project area. Powertech Ex. APP-015-F at 5.

v. Breccia Pipes

The Tribe alleges that breccia pipes and/or collapse structures will provide potential pathways for groundwater conductivity. Tribe Proposed Findings at 46. However, there is extensive evidence to support the conclusion that breccia pipes or collapse structures will not affect Powertech's ability to contain fluid migration, including: (1) the dissolution front mapped by the USGS, representing the probable downgradient limit of dissolution in the Minnelusa Formation, is more than 6 miles upgradient of the project area; (2) detailed isopach maps, structure contour maps and geologic cross sections do not indicate the presence of breccia pipes within the project area; (3) USGS Professional Paper 763 (Gott et al., 1974) does not map

breccia pipes or even "topographic depressions" or "structures of possible solution origin" within the project area; (4) the Staff evaluated other published sources when determining that breccia pipes are not present within the project area; (5) field investigations by Powertech demonstrate that the area alleged by Intervenor witness Dr. Moran to contain a sinkhole or breccia pipe is simply an erosional feature through which drainage passes; (6) there is no evidence from potentiometric surfaces supporting the hypothesis that breccia pipes are recharging the Fall River or Chilson aquifers; (7) there is no evidence that breccia pipes are present in Powertech's evaluation of color infrared imagery and data from thousands of boreholes; (8) NRC Staff's review of the recently disclosed borehole log data does not support the conclusion that there is any evidence of a breccia pipe or sinkhole in the area alleged by Dr. Moran to contain such a feature; and (9) Powertech witness Lichnovsky explained that the hand-drawn sketch in Tribe Ex. OST-033 that allegedly depicts a sinkhole actually depicts a domal feature, which has not been observed within the project area. Powertech Proposed Findings at 83-87, ¶¶ 10.142-10.152.

vi. Exploration Boreholes

The Tribe incorrectly asserts that there are "4000 to 6000 **unidentified** exploration boreholes present at the mine site." Tribe Proposed Findings at 46 (emphasis added). This is factually incorrect, since the locations of nearly 6,000 exploration boreholes within 0.5-mile of the license area are provided in TR Appendix 2.6-A. Powertech Ex. APP-074 at 6, ¶ A.6b (Demuth), *citing* Powertech Ex. APP-015-J at 3-142. Powertech witness Demuth testified that the Dewey-Burdock Project is not unique with respect to the presence of historical exploration drilling, but that there are several advantages that make it even less likely that historical exploration boreholes will impact the control of ISR solutions, including: (1) documentation that State regulations were in place during historical exploration drilling of all TVA test holes,

(2) documentation that TVA plugged historical exploration boreholes in compliance with existing State requirements, (3) flowing artesian conditions in the Fall River and Chilson aquifers throughout much of the project area, which makes it easier to identify unplugged or improperly plugged boreholes, and (4) documentation of the location of historical exploration boreholes. Powertech Proposed Findings at 87, ¶ 10.153.

CI alleges that most of the historical exploration boreholes are "likely improperly plugged." CI Proposed Findings at 40. However, Intervenors have not submitted any evidence that most exploration holes are "improperly plugged" or even described what that assertion means. To the contrary, Powertech has provided evidence that to the best of TVA's knowledge, all TVA exploration boreholes were plugged in accordance with State standards. Powertech Proposed Findings at 88, ¶ 10.154. Furthermore, flowing artesian conditions in the Fall River and Chilson aquifers throughout much of the project area make it easy to identify improperly plugged boreholes, yet only one such area is known to exist. *Id.* at 87-88, ¶¶ 10.153 and 10.156. In any event, Powertech has committed to specific procedures, which are enforceable by license condition, to identify and mitigate potential impacts from improperly plugged boreholes, including: (1) using historical records, (2) evaluating color infrared imagery, (3) performing field investigations, (4) performing potentiometric surface evaluation and pumping tests within each wellfield, and (5) plugging and abandoning (in accordance with State standards) or otherwise mitigating any unplugged exploration boreholes or wells that have the potential to impact the control and containment of wellfield solutions. *Id.* at 88-89, ¶¶ 10.157-10.159. Further, operational controls (including the requirement to maintain an inward hydraulic gradient and conduct excursion monitoring) provide further assurance that ISR solutions will be maintained within the production zone. *Id.* at 92-94, ¶¶ 10.170-10.174.

The Tribe alleges that Powertech's witnesses contradict themselves by claiming that boreholes may have closed by themselves but that open boreholes "have rendered the pump test data suspect." Tribe Proposed Findings at 47. However, there is no contradiction in saying there is a well-known natural tendency for boreholes to self-seal, especially given the thickness and composition of the Graneros Group through which most boreholes were drilled (i.e., so it is likely that "some" of the thousands of boreholes have self-sealed), and acknowledging that there is an isolated area where communication between the Fall River and Chilson occurs through a well that is known to be constructed with open intervals in both aquifers and, potentially, through one or more unplugged or improperly plugged boreholes. Powertech Proposed Findings at 97, ¶ 10.184.

vii. Artesian Conditions

CI alleges that artesian flow could transmit lixiviant onto the land surface. CI Proposed Findings at 43. However, the fact that flowing artesian conditions are present throughout much of the license area means that there would be obvious surface expression if free flowing, improperly plugged boreholes occur in these areas. Powertech Proposed Findings at 89-90, ¶ 10.161. Moreover, artesian conditions actually demonstrate overlying confinement, since they are impossible to have without overlying confinement. *Id.* at 90, ¶ 10.162. The FSEIS documents the presence of flowing artesian conditions and evaluates Powertech's procedures to mitigate potential impacts from flowing artesian wells, including: (1) removing all domestic wells within the project area from private use prior to beginning operations; (2) removing all stock wells within 0.25 mile of any wellfield from private use prior to operation of that wellfield; (3) monitoring all domestic, livestock and crop irrigation wells within 2 km of the boundary of any wellfield during operations; (4) conducting excursion monitoring as required by LC 11.5;

and (5) maintaining a net inward hydraulic gradient in each wellfield as required by LC 10.7. *Id.* at 90, ¶¶ 10.163-10.164.

viii. Groundwater Velocity

CI continues to assert that Powertech's license application reports a horizontal groundwater flow velocity of up to 35.5 meters per day. CI Proposed Findings at 43-44. However, this allegation is based on faulty conclusions drawn from the data presented in Powertech's license application. Powertech Ex. APP-037 at 32-33, ¶ A.76 (Lawrence). The estimated groundwater velocity based on numerical groundwater modeling is 6 to 7 feet per year. *Id.* at 33, ¶ A.77. This velocity is consistent with over a dozen other permitted ISR facilities and with an independent estimate of the groundwater velocity in the license area by the USGS. *Id.* at 33, ¶ A.78.

ix. Black Hills Ordnance Depot

CI alleges that lixiviant from the Dewey-Burdock Project might "rust any metal-contained ordnance [at the Black Hills Ordnance Depot] and release its contents into the environment." CI Proposed Findings at 43. However, NRC Staff evaluated the potential impacts related to the Black Hills Ordnance Depot (also referred to as the Black Hills Army Depot) and concluded in the FSEIS that there will not be any impacts to or from the Ordnance Depot due to: (1) its distance from the Dewey-Burdock Project (14 miles); (2) the fact that the Ordnance Depot is downgradient; (3) the fact that impacts from the Ordnance Depot are limited to shallow aquifers that are hydraulically separated from the Fall River aquifer by over 1,000 feet of low-permeability shales; and (4) consideration of the monitoring and mitigation measures that will be implemented at the Dewey-Burdock Project, including the requirement to maintain a net inward

hydraulic gradient and perform excursion monitoring in each wellfield. Powertech Proposed Findings at 66-67, ¶¶ 10.95-10.97.

x. ISR Operations and Potential Excursions

CI would have the Board equate successful ISR operation with a facility that has zero excursions. CI Proposed Findings at 29. However, excursions are not indicators of environmental impacts but are the early detection of nonhazardous indicator parameters within the exempted aquifer that provide early warning that corrective actions are needed to prevent groundwater contamination. Powertech Proposed Findings at 91, ¶ 10.165. The FSEIS and GEIS include information on excursions that have occurred at operating ISR facilities, and the FSEIS documents NRC Staff's conclusion in NRC Staff Ex. NRC-091 that excursions at NRC-licensed ISR facilities have not resulted in impacts to the non-exempted portions of the aquifer. *Id.* at 91-92, ¶ 10.167.

CI alleges that Powertech proposes to conduct ISR in two aquifers simultaneously. CI Proposed Findings at 29. However, Powertech witness Lawrence testified during the evidentiary hearing that wellfields will target discrete mineralized zones in the Fall River or the Chilson, but not both, and that Powertech will be required to maintain fluids within the Fall River or Chilson. Tr. at 1046-1047.

CI also alleges that Powertech's TR describes "periodic releases of water from storage ponds." CI Proposed Findings at 30, *citing* Powertech Ex. APP-015-A. However, the only reference to "periodic releases of water from storage ponds" in Powertech Ex. APP-015-A is in the change index at 6, which describes how the paragraph in the previous version of the TR describing periodic releases from storage ponds for crop irrigation was deleted in accordance with the TR RAI P&R-14(b) response. Powertech Ex. APP-015-A at 6. The referenced TR RAI

response (P&R-14(b)) explains that either deep well disposal, land application or a combination of both will be used for wastewater disposal; none of these options involves "periodic releases of water from storage ponds." Powertech Ex. APP-016-B at 88-91. The wastewater disposal options are clearly described in FSEIS Chapter 2, and the potential impacts are evaluated for each option throughout Chapter 4. The FSEIS does not describe any releases from storage ponds; to the contrary, it describes how freeboard will be required to be maintained in all ponds: "All ponds will be designed to store the amount of water discharged to them while maintaining 0.9 m [3 ft] of freeboard." NRC Staff Ex. NRC-008-A-1 at 122.

xi. Numerical Groundwater Model

The Tribe alleges that the only additional information provided by Powertech regarding Contention 3 since its admission was the 2012 numerical groundwater model report and the borehole log data. Tribe Proposed Findings at 53. However, this allegation fails to acknowledge that the license application was significantly updated with respect to four key issues identified during the Staff's review that are all related to Contention 3 (historical exploration boreholes, underground mine workings, hydraulic confinement and breccia pipes), when Powertech submitted its TR RAI responses. Powertech Proposed Findings at 73, ¶ 10.112. The TR RAI responses were submitted in June 2011, or 8 months after Contention 3 was admitted in LBP-10-16.

The Tribe also alleges that the numerical groundwater modeling report is "unreliable as a scientific tool" to predict the ability of the hydrogeology to contain fluid migration. Tribe Proposed Findings at 54. However, Powertech witness Lawrence testified that he has the experience and qualifications to prepare numerical groundwater models for ISR facilities. Powertech Ex. APP-037 at 37-38, ¶ A.89. Mr. Lawrence testified that the numerical model was

developed based on the hydrogeologic conceptual model, which was developed from analysis of site-specific data, including geologic information from thousands of exploratory boreholes and available maps of surface geology, aquifer properties derived from pumping tests, and water level elevation data from the site monitor well network. Powertech Ex. APP-066 at 6, ¶ A.3. Mr. Lawrence also testified that the numerical groundwater model was calibrated to potentiometric surfaces determined from monitor wells and verified to the historical and recent pumping test results. *Id.* at 9-11, ¶ A.7. NRC Staff reviewed the model and determined it was appropriately developed and sufficiently calibrated, and therefore sufficient to use as a predictive tool. Powertech Proposed Findings at 97-98, ¶ 10.186. Intervenors have not challenged NRC Staff's detailed evaluation of the numerical groundwater model in Appendix B of the SER. NRC Staff Ex. NRC-134 at 250-258.

The Tribe incorrectly asserts that the model assumes that "no water flows vertically." Tribe Proposed Findings at 54. Mr. Lawrence testified that the vertical hydraulic conductivity was built into the model for the Fuson Shale, which was not assumed to be an impervious barrier:

> Now the data that was derived out of these pump tests was incorporated into the numerical model to address the site conditions. So we didn't ignore this data. The numbers that you see up there for the Fuson vertical hydraulic conductivity, the permeability of the Fuson are on the order of the 10 to the minus 4 feet per day.

Tr. at 1058-1059 (Lawrence). Further, Mr. Lawrence testified that there is no such thing as a completely impermeable hydraulic barrier, and this was not assumed for the Fuson Shale in the numerical groundwater model:

> What I did was I put the parameter values in that were measured in the field. So I was honoring the data that was available and again, we get back to this nothing is impermeable. Under enough stress, you can cause concrete to leak.

Tr. at 1060, lines 20-24 (Lawrence).

CI alleges that the numerical groundwater model is inadequate since "simple analytical methods cannot be applied with an acceptable level of confidence." CI Proposed Findings at 45. However, Powertech witness Lawrence testified that the numerical groundwater flow model is much more complex than an analytical curve matching method. Tr. at 1060, lines 9-11. As described previously, NRC Staff performed a detailed review of Powertech's numerical groundwater model and determined that it was appropriately developed and sufficiently calibrated to use as a predictive tool. Powertech Proposed Findings at 97-98, ¶ 10.186.

xii. NRC Staff's Review of Borehole Log Data

CI alleges that "the vast majority" of the historical borehole logs were not obtained until after the FSEIS was issued. CI Proposed Findings at 37. Similarly, they allege that "[w]hile data from extensive drilling existed, it was not obtained … until after the preparation of the FSEIS." *Id.* at 40. These allegations fail to acknowledge that Powertech's evaluation of the site hydrogeological conditions in its license application included interpretation of thousands of geophysical logs, use of hundreds of geophysical logs to develop the numerical groundwater model and inclusion of dozens of geophysical logs in nine geologic cross sections. Powertech Proposed Findings at 109, ¶ 10.215. Powertech Chief Executive Officer Richard Clement, Jr. stated in a sworn affidavit that the recently acquired borehole logs are surrounded by geophysical logs previously in Powertech's possession:

> To the best of my knowledge, there are no electric logs acquired or yet to be acquired from Energy Fuels that are not surrounded by and encompassed by the drill hole data from thousands of electric logs already in Powertech's possession that were used to prepare the project geologic model and which formed the basis for the understanding of site stratigraphy.

Affidavit of Richard Clement, Jr. accompanying Powertech's Response to the Licensing Board Order Regarding Data Disclosure, August 12, 2014.

CI alleges that NRC Staff's review of the borehole log data was limited to a "spot check" of 34 data points. CI Proposed Findings at 39. However, this mischaracterizes the scope of NRC Staff's review, which included (1) evaluating the locations of approximately 3,076 digitized geophysical logs provided on CD by cross-referencing with Appendix 2.6-A of the revised TR; (2) comparing drill hole locations in TR Appendix 2.6-A with maps in Powertech's revised TR; (3) reviewing selected drill hole plugging reports containing independent drill hole location information with the locations presented in TR Plate 2.6-8 and Appendix 2.6-A; (4) conducting a spot-check analysis of randomly selected geophysical logs to reevaluate the validity of the structure and isopach maps presented in Powertech's revised TR; (5) analyzing closely spaced geophysical logs by constructing fence diagrams to evaluate whether displacement of the Fuson Shale due to faulting or fracturing is present; and (6) analyzing closely spaced geophysical logs by constructing fence diagrams to evaluate potential displacement and thickness variations that could be indicative of a breccia pipe or collapse feature in the area alleged by Intervenor witness Dr. Moran to contain a potential sinkhole. Powertech Proposed Findings at 108-109, ¶ 10.214. *See also* NRC Staff Ex. NRC-175 at 13, ¶ A23 (Prikryl and Lancaster).

NRC Staff's review of the borehole log data focused specifically on the Fuson Shale and areas alleged by Intervenors to contain faults or breccia pipes. NRC Staff Proposed Findings at 37, ¶ 5.81. The purpose of the Staff's review was to evaluate claims made by Intervenors concerning secondary porosity, breccia pipes and sinkholes. *Id.* Another purpose was to determine whether the borehole log data could affect interpretations of site hydrogeological characteristics presented in the FSEIS, which was consistent with the approach recommended by the Licensing Board during the evidentiary hearing. Powertech Proposed Findings at 108-110, ¶¶ 10.213, 10.216. NRC Staff witnesses testified that their review of the borehole log data

supported the findings in the FSEIS. *Id.* at 109-110, ¶ 10.216. Staff witnesses also stated that it was not necessary to review a statistically significant sample of borehole logs from the entire license area to verify whether the borehole log data supported Intervenor allegations or merely confirmed information already contained in the FSEIS. NRC Staff Ex. NRC-175 at 15, ¶ A26 (Prikryl and Lancaster).

xiii. Dr. LaGarry's Review of Borehole Log Data

Intervenors allege that Dr. LaGarry's review demonstrates "140 cases of open, uncased holes …" etc. Tribe Proposed Findings at 54 and CI Proposed Findings at 39. However, the Tribe only submitted 12 records from drillers' notes, which they claim provide support for their allegations. Powertech Proposed Findings at 110-111, ¶ 10.217. Powertech witness Lichnovsky testified that these 12 records do not support Intervenors' allegations, including: one record that is a hand-drawn sketch of a domal feature with no indication of where it is located (if even in the license area); two records that are misinterpretations of the word "offset"; four records that were investigated by Powertech geologists, who determined there is no evidence of surface expression nor subsurface evidence of potential faults in these areas; one record that was alleged to depict deliberate masking but actually does not; and the remaining records that are misinterpretations of commonly used drilling terms such as "open hole" or "logged through steel." *Id.* at 110-112, ¶¶ 10.217-10.221.

CI alleges that the similar responses by Powertech and NRC Staff witnesses regarding boreholes marked with wooden fence posts and boreholes logged through drill pipe provide evidence that NRC Staff did not conduct an independent evaluation. CI Proposed Findings at 45-46. However, the fact that multiple expert witnesses commented that it is standard drilling practice to leave a broken drill pipe in the ground while plugging the hole with cement merely

supports Powertech's position that Intervenor expert Dr. LaGarry failed to recognize that the term "broken steel" has nothing to do with hole plugging methods. Powertech witness Lichnovsky testified that historical TVA and recent exploration drilling programs were subject to State of South Dakota hole plugging regulations, which required exploration boreholes to be filled with bentonite plugging gel or cement grout, regardless of whether broken drill pipe was cemented in place. Powertech Ex. APP-074 at 10-11, ¶ A.15. Mr. Lichnovsky further testified that the plugging method of cementing the drill pipe in place does not provide a conduit for groundwater flow. *Id.* at 11, ¶ A.16.a.

Regarding Dr. LaGarry's allegation that wooden fence posts were used to plug holes, Intervenors did not submit any examples of this allegation into evidence. *Id.* at 10-11, ¶¶ A.15-A.16.a. Powertech witness Lichnovsky testified that wooden posts may have been used to mark the tops of the holes, since State hole plugging standards allow the top 3 feet to be filled with native material. *Id.*

xiv. EPA Preliminary Assessment

The Tribe alleges that the EPA Preliminary Assessment "documents for the first time the causation link … between the unreclaimed surface mines … and ground water contamination." Tribe Proposed Findings at 55. However, the Preliminary Assessment announcement states that additional sampling is needed to make this determination: "Additional sampling is needed to determine … if the radionuclides found in ground water and surface water are attributed to a release from the abandoned uranium mines …" Tribe Ex. OST-025 at 2. Rather than demonstrating causation, the EPA Preliminary Assessment merely describes how "groundwater in the area of the Site contains concentrations of radionuclides that exceed MCLs for uranium, Ra-226, and gross alpha." Tribe Ex. OST-026 at 30. This is entirely consistent with Sec. 3.5.3.5

of the FSEIS, which describes how "28 out of 31 groundwater samples exceeded the MCLs for primary drinking water standards … for arsenic …, lead …, uranium, Ra-226, and gross alpha." NRC Staff Ex. NRC-008-A-1 at 210.

The fact that both documents found that groundwater exceeded some MCLs should not be surprising, since both relied on the same groundwater quality data. This is stated in both the Preliminary Assessment and the accompanying announcement: "The technical report completed by Powertech included results of baseline sampling within the PAA [Powertech's Proposed Action Area, which is the same as the license area]. Sampling data from the area of the Site obtained during that effort were used for this PA to evaluate conditions at the Site." Tribe Ex. OST-026 at 8. *See also* Tribe Ex. OST-025 at 1: "The PA considered existing environmental data collected by Powertech for the proposed Dewey-Burdock ln-Situ Uranium Recovery Project."

Furthermore, the fact that water quality data from 28 of 31 wells that were sampled across the entire license area exceeded some EPA MCLs does not provide evidence of causation between the historical mine pits, which are limited to areas within and adjacent to the far eastern extents of the project area, and the groundwater throughout the entire project area. To the contrary, the license application includes a comparison between historical (1979-1984) and recent (2007-2008) samples from nine wells that supports the conclusion that no widespread groundwater quality degradation resulted from the historical mining or exploration activities. Powertech Proposed Findings at 66, ¶ 10.93. Consistent groundwater quality in these nine wells distributed throughout the project area over nearly 30 years does not support the conclusion that the historical mine pits are actively degrading the groundwater quality throughout the project area. In any event, the affected environment evaluated in the FSEIS is the baseline groundwater

quality as it exists today, which includes any potential impacts from the historical mine pits. *Id.* at 65-66, ¶ 10.92.

The Tribe also alleges that the EPA Preliminary Assessment demonstrates that "additional data and sample collection for soils and surface waters is needed beyond what NRC Staff required." Tribe Proposed Findings at 55. In addition to being outside of the scope of Contention 3, this allegation fails to acknowledge the purpose of the Preliminary Assessment, which was not to evaluate the existing environment under NEPA, but to determine whether portions of the site might be eligible for cleanup under CERCLA. NRC Staff Proposed Findings at 31, ¶ 5.62.

The Tribe also alleges that the EPA Preliminary Assessment demonstrates a "lack of ground water sampling data from near and upgradient" of the historical mine pits. Tribe Proposed Findings at 56. Again, this allegation is outside of the scope of Contention 3 and fails to acknowledge that the purpose of the Preliminary Assessment was not to evaluate the existing environment under NEPA, but to determine whether the site might be eligible for cleanup under CERCLA. Furthermore, since the historical mine pits all target the Fall River Formation at its exposed outcrop, it is not possible in most circumstances to obtain upgradient groundwater samples, since the Fall River Formation does not exist upgradient of its outcrop. *See, generally,* Powertech Proposed Findings at 102, ¶ 10.198.

e. CONTENTION 4

i. Water Usage

Intervenors continue to allege that the FSEIS "presents conflicting information on ground water consumption." Tribe Proposed Findings at 56 and CI Proposed Findings at 51. However, Intervenors have not provided any examples of where this purportedly occurs. To the contrary,

the FSEIS contains consistent estimates of groundwater consumption from the Inyan Kara and Madison aquifers. Powertech Proposed Findings at 113, ¶ 10.224.

The Tribe alleges that Powertech witness Fritz provided non-expert testimony regarding groundwater usage based on his statement during the evidentiary hearing that "I'm not a chemical engineer." Tribe Proposed Findings at 57, *citing* Tr. at 1156, line 25. However, when read in context, Mr. Fritz's testimony answered the question from Judge Cole by explaining that reverse osmosis will only be used in the deep disposal well option, since the brine may be disposed in the deep disposal wells. Tr. at 1156-1159.

The Tribe also alleges that the underlying basis for the quantity of water lost to reverse osmosis was never established. Tribe Proposed Findings at 57. However, Powertech witness Fritz testified that in the reverse osmosis units, approximately 70 percent of the water will be recovered as nearly pure permeate, while 30 percent will be disposed as brine in deep disposal wells. Tr. at 1157, lines 17-21 and Tr. at 1158, lines 7-15. This testimony is consistent with information in the FSEIS on typical recovery rates from reverse osmosis units. Exs. NRC-008-A-1 at 132 ("About 70 percent of the water withdrawn from the wellfields and passed through the RO membranes will be recovered as permeates") and NRC-008-B-2 at 448-449 (explaining that the GEIS discusses the RO process in greater detail).

ii. Water Balance

Intervenors allege that the quantity of water lost to evaporation was never established. Tribe Proposed Findings at 57 and CI Proposed Findings at 52. However, evaporation will not affect project water usage, since a) water that is recirculated will remain within a closed system of pipes and vessels and not be subject to evaporation, and b) any water lost to evaporation in the

ponds merely represents less water requiring disposal in deep disposal wells or land application systems. Powertech Proposed Findings at 119, ¶ 10.241.

Intervenors also allege that the quantity of water injected in deep disposal wells was never established. Tribe Proposed Findings at 57 and CI Proposed Findings at 52. However, the water balance diagram in the FSEIS clearly shows the typical quantity of water disposed via Class V well injection during each project phase. NRC Staff Ex. NRC-008-A-1 at 130.

Intervenors continue to allege that the water balance should include "measured data for all water inputs and outputs." Tribe Proposed Findings at 58 and CI Proposed Findings at 51-52. However, this is not possible, since measured data will not be available until after operations commence. Powertech Proposed Findings at 119, ¶ 10.242.

The Tribe alleges that the water balance should have included the "volumes of ground water available in the various aquifers." Tribe Proposed Findings at 58. However, a water balance alone is not capable of predicting potential impacts from consumptive groundwater usage; as described in the FSEIS, a numerical groundwater model was used to estimate the potential drawdown in the Inyan Kara aquifer. Powertech Proposed Findings at 119, ¶ 10.240. Powertech also developed a flow-net analysis for the Madison aquifer in the vicinity of the project area based on methods also used by USGS that was used to provide justification that there is a reasonable probability that sufficient water is available in the Madison aquifer to support the project usage. *Id.* at 115-116, ¶ 10.231. In addition, NRC Staff developed a three-layer model of the Madison aquifer to estimate potential impacts to nearby water supply wells. *Id.* at 116, ¶ 10.232. The FSEIS also documents SDDENR's assessment of water availability in the Inyan Kara and Madison aquifers as part of the review of Powertech's water right permit applications. *Id.* at 116, ¶ 10.233.

Finally, Intervenors continue to allege that the water balance does not actually balance. Tribe Proposed Findings at 58. CI Proposed Findings at 52. However, the inputs from the Inyan Kara and Madison aquifers equal the output for liquid waste disposal in each wastewater disposal option and for each phase of operations; therefore, the water balance diagram depicts an actual net zero balance. Powertech Proposed Findings at 118, ¶ 10.239. Intervenor witness Dr. Moran did not dispute this during the hearing. *Id.* Dr. Moran also failed to cite any NRC-led EISs that include the kind of water balance he alleges is lacking. *Id.* at 119, ¶ 10.243.

iii. Potential Water Consumption Impacts

CI alleges that NRC Staff failed to "insist upon the Applicant investing sufficient resources to conduct the necessary studies and thereby obtain the detailed information" necessary for the Staff to conduct a "responsible analysis of the potential impacts on water quantity" in the Inyan Kara aquifer. CI Proposed Findings at 49. However, potential drawdown-related impacts to local wells were evaluated for the Fall River and Chilson aquifers based on numerical modeling, which demonstrated that the aquifers are capable of sustaining the anticipated extraction rate. Powertech Proposed Findings at 114, ¶ 10.228. NRC Staff conducted a detailed review of Powertech's numerical groundwater model and found that it is sufficient to use as a predictive tool. *Id.* at 115, ¶ 10.229. The FSEIS also documents SDDENR's evaluation of Powertech's Inyan Kara water right permit application and SDDENR's conclusion that (i) withdrawal at the permitted rates will not result in average annual withdrawals that exceed the average annual recharge to the aquifers, (ii) there is a reasonable probability of adequate unappropriated water available, and (iii) there is a reasonable probability that the withdrawals proposed by Powertech can be made without unlawful impairment of existing water rights or domestic wells. *Id.* at 116, ¶ 10.233. The FSEIS also documents Powertech's commitment to

implement specific mitigation measures to protect existing water supply wells during operations, including: (1) removing all domestic wells within the project area from private use prior to beginning operations; (2) removing all stock wells within 0.25 mile of any wellfield from private use prior to operation of that wellfield; (3) providing replacement water supplies for wells removed from private use, as needed; and (4) monitoring all domestic, livestock and crop irrigation wells within 2 km of the boundary of any wellfield during operations. *Id.* at 117-118, ¶ 10.237.

CI also asserts that "the determination of a recharge rate is extremely important" in groundwater studies. CI Proposed Findings at 49-50. However, they fail to acknowledge that the numerical groundwater model includes an estimate of the recharge rate to the Fall River and Chilson aquifers based on a combination of infiltration and precipitation and from overland flow in the outcrop areas of the two aquifers to the east and north of the project area. Powertech Ex. APP-065 at 5, ¶ A.6 (Demuth). Mr. Demuth also testified that NRC Staff reviewed the numerical groundwater model and found that it was sufficient to "[e]nhance 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 (available and sustainable resources)." *Id.* at 5, ¶ A.8.

CI also alleges that the FSEIS fails to consider recharge of the Inyan Kara aquifer by the Minnelusa Formation through fault zones. CI Proposed Findings at 52. However, for evidence of this allegation they cite a regional report, Keene (1973), without providing any testimony on whether this report identifies any faults within the project area. To the contrary, there is extensive evidence that there are not any significant faults in the license area, including structure contour maps, isopach maps, geologic cross sections, potentiometric surface evaluations, water

quality evaluations, numerical modeling and pumping tests. Powertech Proposed Findings at 79-83, ¶¶ 10.130-10.141. Powertech witness Demuth testified that there is also evidence that the Minnelusa and Madison aquifers are hydraulically isolated beneath the project site. Powertech Ex. APP-013 at 16-17, ¶¶ A.34-A.37. This supports the conclusion that groundwater is not recharging shallower aquifers such as the Inyan Kara aquifer from the Minnelusa. In any event, if there were to be additional recharge to the Inyan Kara aquifer from deeper formations, such as through a fault or breccia pipe, it would reduce the potential groundwater consumption impacts, since more water would be available for project usage:

> Furthermore, as the NRC points out in the SER, even if there were an artificial or natural discontinuity through the Morrison Formation, groundwater would move from the Unkpapa into the Chilson, not the other way around (Exhibit NRC-134 at PDF page 59).

Powertech Ex. APP-066 at 10, ¶ A.7 (Lawrence), *citing* NRC Staff Ex. NRC-134 at 59.

CI continues to allege that the project "will use and contaminate tremendous quantities of ground water, thereby preventing/restricting the use of these waters by others." CI Proposed Findings at 50. However, this allegation fails to acknowledge that ISR only will take place within an aquifer that has been permanently exempted from the USDW designation. Powertech Proposed Findings at 70, ¶ 10.105 and 95, ¶¶ 10.177-10.178. The FSEIS also documents Powertech's requirement, by LC 10.6, to restore groundwater to meet the standards of 10 CFR Part 40, Appendix A, Criterion 5B(5). *Id.* at 126-127, ¶¶ 10.260-10.261. Further, the FSEIS documents NRC Staff's evaluation of groundwater restoration data from three NRC-licensed ISR facilities and its determination that "the impacts to the exempted aquifer for each of the approved restorations do not pose a threat to human health and the environment." Powertech Ex. APP-013 at 27-28, ¶ A.54 (Demuth), *citing* NRC Staff Exs. NRC-008-A-2 at 67 and NRC-008-B-2 at 291. Powertech witness Demuth also testified that the groundwater in the exempted aquifer is not currently suitable for drinking and will not be suitable in the future. Powertech Proposed

Findings at 95, ¶ 10.178. Intervenors have failed to show how groundwater usage will be prevented/restricted from use given all of these considerations, summarized as: (1) groundwater is not currently suitable for drinking; (2) ISR will take place within a permanently exempted aquifer; (3) groundwater restoration is required to meet Criterion 5B(5) standards; and (4) groundwater restoration data from three NRC-licensed ISR facilities demonstrates that restored groundwater does not pose a threat to human health or the environment.

Regarding the allegation that groundwater usage will be "tremendous," Powertech's requested Inyan Kara aquifer usage is less than the amount recently requested by one of the Consolidated Intervenors, Mr. Dayton Hyde, and approved by SDDENR to irrigate 139 acres of land; therefore, it should not be considered "massive" or "tremendous" relative to typical agricultural usage. *Id.* at 114, ¶ 10.226.

f. CONTENTION 6

i. Mitigation Measure Description and Evaluation of Effectiveness

The Tribe alleges that the FSEIS contains "mere mentions and snippets related to mitigation." Tribe Proposed Findings at 61-62, 73. However, mitigation measures are described and evaluated throughout the FSEIS, including Chapter 4, which explains how proposed mitigation measures will be effective in avoiding or reducing potential environmental impacts, and Chapters 2, 6 and 7. Powertech Proposed Findings at 120, ¶ 10.246. *See also* NRC Staff Proposed Findings at 46, ¶ 5.115.

The Tribe also continues to allege that the FSEIS does not contain evaluation of the effectiveness of mitigation measures. Tribe Proposed Findings at 66. However, the FSEIS evaluates the effectiveness of mitigation measures by explaining how they will avoid or reduce potential impacts in various resource areas. Powertech Proposed Findings at 121, ¶ 10.248.

Further, many mitigation measures also are enforced by binding commitments in Powertech's license application and license conditions. *Id.* at 122, ¶ 10.250. Further, the evaluation of the effectiveness of mitigation measures in the FSEIS also considers Powertech's compliance with regulations and permit conditions imposed by other Federal, State and local agencies. *Id.* at 122-123, ¶ 10.251.

ii. Mitigation Measures Developed by Other Agencies

The Tribe alleges that it is impossible for NRC Staff to have evaluated "still-developing mitigation" related to the July 8, 2014, BLM letter requesting additional information on Powertech's proposed plan of operations (Ex. OST-022), the draft Avian Plan (Ex. OST-023) and the USFWS take permit application (Ex. OST-024). Tribe Proposed Findings at 63. However, NRC Staff witnesses have testified that the information in Powertech's non-purposeful bald eagle take permit application to the USFWS and the draft Avian Plan is consistent with mitigation measures evaluated in the FSEIS and does not call into question the analyses or determinations presented in the FSEIS. Powertech Proposed Findings at 129, ¶ 10.267. The Staff also determined that the BLM RAI letter is not "significant new information that in itself requires supplementing the FSEIS." NRC Staff Ex. NRC-157 at 9, ¶ A19 (Yilma, Jamerson and Hester).

iii. Best Management Practices

The Tribe alleges that there is a "lack of any detail" on best management practices (BMPs) in the FSEIS. Tribe Proposed Findings at 71. To the contrary, the FSEIS defines BMPs as "processes, techniques, procedures or considerations that could be used to effectively avoid or reduce potential environmental impacts." Powertech Proposed Findings at 121-122, ¶ 10.249. The FSEIS describes BMPs that Powertech proposed in its license application and other BMPs

that are based on knowledge of what is commonly done at other ISR facilities. *Id.* The FSEIS also considered BMPs developed by other agencies such as EPA. *Id*. The FSEIS also provides references to BMPs such as those developed by the Avian Power Line Interaction Committee (APLIC) for protecting birds perched on power lines. *Id.* at 129, ¶ 10.268. Further, BMPs in the FSEIS also were drawn from those previously identified in Chapter 7 of the GEIS. NRC Staff Proposed Findings at 52-53, ¶¶ 5.138-5.139.

iv. Pump Tests and Wellfield Hydrogeologic Data Packages

The Tribe alleges that the wellfield-scale pump tests and development of wellfield hydrogeologic data packages are "as-yet [un]developed mitigation" measures. Tribe Proposed Findings at 64 and 69. However, FSEIS Section 2.1.1.1.2.3.3 describes the methodology and performance criteria for the pumping tests that will be conducted prior to operating each wellfield to demonstrate production zone confinement and monitoring network adequacy. Powertech Proposed Findings at 104-105, ¶ 10.206. In addition, FSEIS Section 2.1.1.1.2.3.4 documents the procedures Powertech will follow to prepare and submit wellfield hydrogeologic data packages. *Id.* at 58, ¶ 10.69. Thus, the plans and procedures for conducting pumping tests and preparing wellfield hydrogeologic data packages have been developed and are described and evaluated in the FSEIS, embodied in LC 10.10 and unchallenged by Intervenors. *Id.* at 57, ¶ 10.65.

v. Mitigation of Potential Impacts from Historical Exploration Boreholes and Wells

The Tribe alleges that the FSEIS relies on plans to be submitted in the future to locate and plug unplugged or improperly plugged boreholes and wells. Tribe Proposed Findings at 69. However, this fails to acknowledge that Powertech has committed to following specific

procedures to locate unplugged or improperly plugged boreholes and wells, including: (1) using historical records, (2) evaluating color infrared imagery, (3) performing field investigations, and (4) performing potentiometric surface evaluation and pumping tests within each wellfield. Powertech Proposed Findings at 88-89, ¶¶ 10.157-10.158. The allegation also fails to acknowledge that the procedures are described in the FSEIS. NRC Staff Ex. NRC-008-A-2 at 64. Regarding hole plugging methods, the FSEIS describes Powertech's commitment to follow South Dakota regulations for plugging exploration boreholes and wells using bentonite or cement grout. Powertech Proposed Findings at 89, ¶ 10.159.

vi. Mitigation of Potential Impacts from Historical Mine Pits

The Tribe continues to allege that the proposed monitor well network for the Fall River Formation in the vicinity of the historical mine pits is "proposed, but unevaluated." Tribe Proposed Findings at 70. However, this allegation fails to acknowledge that the "proposed" monitor well network is actually a requirement enforced by LC 12.7. Powertech witness Demuth testified that the purpose of this monitoring network is described in the FSEIS and is to help ensure that ISR in the underlying Chilson in the vicinity of the historical mine pits does not cause drawdown-induced migration of contaminants from the historical mine pits. Powertech Ex. APP-013 at 29, ¶ A.58. Mr. Demuth further testified that the requirement to install this monitor well network is only one of the mitigation measures that the FSEIS describes and evaluates to minimize potential impacts from historical mine pits. Other mitigation measures include Powertech's commitment, enforceable by license condition, to evaluate the integrity of the Fuson Shale in each wellfield in the vicinity of the historical mine pits through pumping tests and the development of the wellfield hydrogeologic data packages and Powertech's commitment to plug

and abandon unplugged or improperly plugged exploration boreholes and wells in the vicinity of ISR wellfields. Powertech Proposed Findings at 125, ¶ 10.257.

vii. Groundwater Restoration Mitigation Measures

The Tribe alleges that there is no support for the plan to conduct groundwater restoration stability monitoring for 12 months. Tribe Proposed Findings at 69. However, Powertech witness Demuth addressed this issue in his initial written testimony by clarifying that the FSEIS specifies that groundwater restoration will be conducted for a minimum of 12 months. Powertech Ex. APP-013 at 34, ¶ A.66. Furthermore, LC 10.6 requires Powertech to continue the stability monitoring until "the data show that the most recent four consecutive quarters indicate no statistically significant increasing trend for all constituents of concern that would lead to an exceedance above the respective standard in 10 CFR Part 40, Appendix A, Criterion 5B(5)." *Id*. NRC Staff's review of Powertech's groundwater restoration and stability monitoring procedures is documented in the SER and has not been challenged by Intervenors. Powertech Proposed Findings at 126, ¶ 10.260.

The Tribe also alleges that no ISR facility has "ever actually restored an aquifer used to conduct" uranium ISR. Tribe Proposed Findings at 70. However, this fails to acknowledge that Powertech will be required by LC 10.6 to restore groundwater to meet the standards of 10 CFR Part 40, Appendix A, Criterion 5B(5). Powertech Proposed Findings at 126, ¶ 10.260. Further, the FSEIS evaluates the effectiveness of Powertech's proposed groundwater restoration methods through consideration of available groundwater restoration data from three NRC-licensed ISR facilities. *Id.* The broad generalization that no ISR facility has "ever actually restored an aquifer" is unfounded, since the FSEIS provides examples of existing ISR facilities at which aquifer

restoration has been successful and approved by relevant regulatory agencies. *Id.* at 127, ¶ 10.261.

The Tribe also alleges that the FSEIS did not evaluate groundwater mitigation measures for restoration to standards other than those in 10 CFR Part 40, Appendix A, Criterion 5B(5). Tribe Proposed Findings at 72. The Tribe also alleges that the FSEIS "merely assumed that Powertech will comply with NRC regulations" for groundwater restoration. *Id*. However, these allegations also fails to acknowledge that Powertech will be required by LC 10.6 to restore groundwater to meet the standards of 10 CFR Part 40, Appendix A, Criterion 5B(5). Violation of this or any other license requirement will be subject to enforcement action. Powertech Proposed Findings at 107-108, ¶ 10.211.

viii. Land Application Mitigation Measures

The Tribe alleges that the testimony of Mr. Fritz "confirms the FSEIS failed to disclose and analyze" a monitoring and mitigation plan for the State of South Dakota associated with land application. Tribe Proposed Findings at 64. However, the quoted testimony describes the monitoring and mitigation plan but does not indicate that it was not analyzed in the FSEIS. In fact, the FSEIS describes the extensive mitigation measures designed to prevent or reduce potential impacts from land application. Regarding South Dakota requirements, the FSEIS documents that land application water will be treated to meet South Dakota requirements and Powertech will need to adhere to South Dakota compliance limits for alluvial wells downgradient from land application systems. The FSEIS also provides frequent references to Powertech's State permit applications associated with land application. Powertech Proposed Findings at 130-131, ¶¶ 10.271-10.273.

The Tribe continues to allege that land disposal of "radioactive waste" will occur. Tribe Proposed Findings at 71. However, as explained throughout the FSEIS, wastewater will have to be treated to meet NRC release requirements for radionuclides in 10 CFR Part 20, Appendix B and to meet SDDENR requirements imposed by the groundwater discharge plan (GDP) permit. Powertech Ex. APP-046 at 16-17, ¶ A.25 (Fritz).

ix. Wildlife Protection Mitigation Measures

The Tribe alleges that Powertech witness McKee's testimony confirmed the lack of necessary analysis of mitigation measures for wildlife protection in the FSEIS. Tribe Proposed Findings at 65. The Tribe also alleges that the FSEIS simply requires plans to be submitted in the future to address wildlife protection. *Id.* at 71-72. To the contrary, Ms. McKee testified that mitigation measures available to deter avian species from ponds are described in the FSEIS, including netting, visual deterrents and sound hazing devices. Powertech Proposed Findings at 130, ¶ 10.270. In addition, Ms. McKee's initial written testimony provides numerous references to the locations in the FSEIS where mitigation measures for protecting wildlife are described and evaluated. Powertech Ex. APP-053 at 5-6, ¶ A.8. Regarding the draft Avian Plan, Ms. McKee testified that mitigation measures for the protection of raptors and other avian species are described in the license application and FSEIS in conformance with NUREG-1569 Acceptance Criterion 2.8.3(4), which does not indicate the need to develop and finalize a specific mitigation plan. Powertech Proposed Findings at 128-129, ¶ 10.266. Moreover, NRC Staff witnesses testified that the draft Avian Plan is consistent with mitigation measures evaluated in the FSEIS and does not call into question the analyses or determinations presented in the FSEIS. *Id.* at 129, ¶ 10.267. Ms. McKee testified that the combination of wildlife protection mitigation measures specifically listed in the FSEIS, along with references to guidance from organizations with

expertise in wildlife protection and Powertech's requirement to abide by State permitting requirements for wildlife protection, is thorough and comprehensive. *Id.* at 128, ¶ 10.265.

x. Surface Water and Wetland Mitigation Measures

The Tribe alleges that the FSEIS relies on future submission and potential issuance of a National Discharge Pollutant Discharge Elimination System (NPDES) permit to specify mitigation measures to prevent and clean up spills. Tribe Proposed Findings at 71. However, FSEIS Section 4.5.1.1.1.1 describes the mitigation measures that were evaluated when determining the potential impacts to surface water and wetlands during construction, including: (1) Powertech's commitment to implement erosion control, stormwater runoff and sedimentation mitigation measures; (2) Powertech's requirement to comply with U.S. Army Corps of Engineers permitting requirements for protection of wetlands; (3) Powertech's requirement to comply with NPDES permit requirements for stormwater discharges; and (4) Powertech's requirement to follow NRC regulations for pond construction. These and other mitigation measures such as emergency response plans to identify and clean up accidental spills and leaks were evaluated to determine the potential impacts during the operations phase. Powertech Proposed Findings at 127-128, ¶ 10.263.

Regarding the NPDES permits specifically, in the FSEIS the Staff evaluated regulations governing stormwater discharge and NPDES permit requirements and concluded that the potential environmental impacts from stormwater runoff will be small based on the reasonably foreseeable conditions in Powertech's required NPDES permits. *Id.* at 138, ¶ 10.293. Although the NPDES permits issued by SDDENR will set the limits on the amounts of pollutants entering site drainages and will define the required mitigation measures and BMPs to be implemented

under the NPDES permits, the FSEIS adequately describes widely accepted mitigation measures for protection of surface waters. *Id.* at 138-139, ¶ 10.294.

xi. Historic and Cultural Resources Mitigation Measures

The Tribe continues to allege that the FSEIS "conceded that consultation was not complete upon the conclusion of the NEPA process." Tribe Proposed Findings at 68. However, the conclusion of the NEPA process did not occur until the Staff issued the ROD, which is the only decision document under CEQ regulations. Powertech Proposed Findings at 55, ¶ 10.57.

xii. Air Quality Mitigation Measures

The Tribe alleges that the FSEIS "simply requires plans to be submitted in the future to address … air impacts." Tribe Proposed Findings at 71. However, air quality mitigation measures are described and evaluated in FSEIS Section 4.7.1.1.1 (at pp. 4-129 through 4-130) and Section C2.1 (at pp. C-2, C-8). Powertech Ex. APP-046 at 12, ¶ A.22 (Fritz), *citing* NRC Staff Exs. NRC-008-A-2 at 129-130 and NRC-008-B-2 at 180, 186. These include commitments Powertech has made including using Tier 1 or higher drill rig engines and Tier 3 or higher construction equipment engines, implementing a car pooling policy and providing water suppression for unpaved roads. In fact, the Tribe acknowledged that "[m]itigation measures involving air impacts were analyzed for effectiveness." Tribe Statement of Undisputed Material Facts, April 11, 2014, at 4, ¶ 20 (emphasis added).

xiii. BLM Mitigation and Reclamation Guidelines

The Tribe alleges that BLM mitigation and reclamation guidelines were "incorporated into the FSEIS without analysis." Tribe Proposed Findings at 72. However, the FSEIS provides examples of BLM reclamation guidelines that were evaluated in the FSEIS, including:

> On BLM land, BLM reclamation guidelines will be required to provide for stable soils and achieve vegetation cover; however, the exact species is not necessarily required, similar to the predisturbance cover (BLM, 2012a). BLM could require the applicant to reseed areas where initial seeding was not successful. Reclamation and reseeding, as soon as practicable following project completion, in accordance with a reclamation plan will ensure that vegetative communities are restored as quickly as possible. To stabilize soils and support the ecosystem, the applicant commits to reestablishing, as soon as conditions allow, vegetation in disturbed areas with the BLM-, NRCS-, and SDDENR-approved native seed mixture and rate provided in Table 4.6-2 …

NRC Staff Ex. NRC-008-A-2 at 83-84. Another example is:

> Decommissioning and reclamation activities, as described in SEIS Section 4.2 for land use, will primarily be conducted in the previously disturbed areas of the site in accordance with the NRC-approved decommissioning plan and BLM-approved reclamation plan (BLM, 2012a).

Id. at 102.

xiv. Noise Mitigation Measures

The Tribe alleges that the FSEIS includes "[v]aguely referenced and unspecified sound abatement controls." Tribe Proposed Findings at 72. However, Mitigation measures to minimize potential noise impacts are adequately described in FSEIS Section 4.8.1 and include: (1) avoiding construction activities during the night; (2) using sound abatement controls on operating equipment and facilities; (3) using personal hearing protection for workers in any high noise areas; (4) adhering to USFWS and SDGFP seasonal noise, vehicular traffic, and human proximity guidelines for raptors; (5) and following a USFWS-approved raptor monitoring and mitigation plan. NRC Staff Ex. NRC-008-A-2 at 147-149. Regarding the use of sound abatement controls on operating equipment and facilities, the FSEIS provides a reference to Powertech's Environmental Report (Powertech, 2009a) for this mitigation measure.

xv. Mitigation Measures for Alternative Actions

The Tribe alleges that the FSEIS does not analyze mitigation measures "within and across alternatives." Tribe Proposed Findings at 68. However, mitigation measures that might be

applied to alternative actions are considered in Chapter 2 of the FSEIS. NRC Staff Proposed Findings at 53, ¶¶ 5.142-5.145.

Related to this allegation, the Tribe alleges that mitigation measures for evaporation ponds are deferred to later analysis by EPA. Tribe Proposed Findings at 72. This allegation fails to acknowledge that evaporation ponds are not proposed to be used by Powertech to dispose wastewater; the section of the FSEIS cited by the Tribe as support for this allegation is Section 4.14.1.4, which evaluates the potential impacts of alternative wastewater disposal options including evaporation ponds and surface discharge. NRC Staff Ex. NRC-008-A-2 at 246-248. The FSEIS explains that Powertech would have to amend its license to use evaporation ponds, requiring additional environmental and safety review by NRC Staff. *Id*. at 246. Even though evaporation ponds were only evaluated as an alternative wastewater disposal method, mitigation measures are described in FSEIS Section 4.14.1.4.1 such as providing wildlife exclusion fencing, wetting unpaved roads to minimize fugitive dust during construction, designing and constructing ponds with leak detection systems following NRC guidance, and utilizing the same mitigation measures described in FSEIS Section 4.6 for ecological resources. *Id*. at 247-248.

g. CONTENTION 9

i. EPA Permitting Requirements

The Tribe continues to allege that the FSEIS failed to analyze the potential impacts of Class III and Class V injection wells. Tribe Proposed Findings at 76. However, this allegation fails to acknowledge that the injection wells permitted under EPA's Class III UIC permit are the same injection wells proposed for uranium recovery and aquifer restoration in Powertech's NRC license application; the FSEIS evaluates the potential impacts of the construction, operation and

decommissioning of these injection wells throughout the FSEIS. Powertech Proposed Findings at 134-135, ¶¶ 10.283-10.285. Similarly, the injection wells permitted under EPA's Class V UIC permit are the same deep disposal wells proposed for treated wastewater disposal in Powertech's NRC license application; the FSEIS also evaluates the potential impacts of the construction, operation and decommissioning of these injection wells throughout the FSEIS. *Id.* at 135-136, ¶¶ 10.286-10.289. Although 40 CFR § 124.9(b)(6) specifically precludes the preparation of an EIS in conjunction with a UIC permit, EPA was fully engaged in the license application process and NRC Staff's NEPA analysis. *Id.* at 134, ¶ 10.282.

Regarding the EPA Class V UIC permit, the Tribe alleges that the FSEIS improperly defers to the EPA's evaluation of the suitability of the receiving formations for the Class V deep disposal wells. Tribe Proposed Findings at 76-77. However, the FSEIS documents evidence that the Class V injection zones are hydrologically and hydraulically isolated within the project area. Powertech Proposed Findings at 136, ¶ 10.289. The NRC Staff assessed the impacts of Class V wells on its own, taking into account EPA regulations. NRC Staff Proposed Findings at 54-55, ¶ 5.148.

The Tribe also continues to allege that "radioactive waste" will be disposed in Class V injection wells. Tribe Proposed Findings at 79. However, as stated previously, radioactive waste will not be disposed in the Class V deep disposal wells, since Powertech has committed, and will be required by its NRC license, to treating wastewater to meet the 10 CFR Part 20, Appendix B, Table 2, Column 2 limits for release of radionuclides to the environment. Powertech Proposed Findings at 136, ¶ 10.290.

The Tribe also alleges that the FSEIS defers to future EPA analysis related to 40 CFR Part 61, Subpart W permitting requirements. Tribe Proposed Findings at 77. However, the FSEIS

acknowledges the requirements of 40 CFR Part 61, Subpart W associated with the use of ponds as part of the wastewater disposal systems and acknowledges that Powertech may need EPA approval of its impoundments before beginning operations. Powertech Proposed Findings 136-137, ¶ 10.291. Furthermore, LC 12.1 prohibits Powertech from commencing operations until all necessary permits, licenses and approvals are obtained from the appropriate regulatory authorities. *Id.*

ii. South Dakota Permitting Requirements

The Tribe alleges that the FSEIS improperly defers to the South Dakota NPDES permitting process "without additional analysis." Tribe Proposed Findings at 78. However, the FSEIS evaluated regulations governing stormwater discharge and NPDES permit requirements and concluded that the potential environmental impacts from stormwater runoff will be small based on the reasonably foreseeable conditions in Powertech's required NPDES permits. Powertech Proposed Findings at 138, ¶ 10.293. Although the NPDES permits issued by SDDENR will set the limits on the amounts of pollutants entering site drainages and will define the required mitigation measures and BMPs to be implemented under the NPDES permits, the FSEIS adequately describes widely accepted mitigation measures for protection of surface waters. *Id.* at 138-139, ¶ 10.294.

IV. CONCLUSION

For the reasons set forth above, Powertech respectfully requests that the Licensing Board find that CI and the Tribe's admitted contentions and the argument, testimony, and exhibits offered in support of such contentions should not result in the modification or revocation of Powertech's NRC License No. SUA-1600 for the Dewey-Burdock ISR Project.

Respectfully submitted,

/Signed (electronically) by/ Christopher S. Pugsley

_____

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Dated: January 29, 2015

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket No.: 40-9075-MLA
POWERTECH (USA), INC.	)	Date: January 29, 2015
(Dewey-Burdock In Situ Uranium Recovery Facility)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing "**POWERTECH (USA), INC.'S REPLY TO PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW**" in the above captioned proceeding have been served via the Electronic Information Exchange (EIE) this 29th day of January 2015, which to the best of my knowledge resulted in transmittal of the foregoing to those on the EIE Service List for the above captioned proceeding.

Respectfully Submitted,

/Executed (electronically) by and in accord with 10 C.F.R. § 2.304(d)/
Christopher S. Pugsley, Esq.

Dated: January 29, 2015

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