

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of

POWERTECH (USA), INC.,  
(Dewey-Burdock In Situ Uranium  
Recovery Facility)

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Docket No. 40-0975-MLA  
ASLBP No. 10-898-02-MLA-BD01

January 9, 2015

**CONSOLIDATED INTERVENORS' PROPOSED FINDINGS OF FACT AND  
CONCLUSIONS OF LAW AND RESPONSE TO POST-HEARING ORDER**

Pursuant to the Board's Order, Consolidated Intervenors respectfully submit these proposed findings of fact and conclusions of law and response to the post-hearing order.

**INTRODUCTION**

In its December 10, 2014 Order, the Board reiterated its instruction to the parties in its Post-Hearing Order of September 8, 2014 to address a series of legal questions regarding each admitted contention. Since the Board's questions provide a legal framework for each of the admitted contentions, the Consolidated Intervenors will answer each question in turn, and then propose findings of fact and conclusions of law for that contention.

**CONTENTION 1A: FAILURE TO MEET NEPA REQUIREMENTS REGARDING  
PROTECTION OF HISTORICAL AND CULTURAL RESOURCES.**

The Consolidated Intervenors adopt the evidence, authority, and argument contained in and submitted with the the Consolidated Intervenors Opening Statement, the OST Opening Statement, and the testimony referred to herein, in support of this

Contention on behalf of the Lakota members of Consolidated Intervenors who, along with their relatives, are deeply concerned about the failure of the NRC Staff in the FSEIS and the Applicant to satisfy National Environmental Protection Act (NEPA) requirements of protection of historical and cultural resources in and adjacent to the proposed ISL project of Applicant.

The Consolidated Intervenors also adopts the Oglala Sioux Tribe's Answers to the Board's questions presented for Contention 1A & 1B.

This includes the failure to facilitate a scientifically based cultural resources surveys and analysis involving knowledgeable persons within the seven Bands of the Lakota of the potentially impacted area and the improper separation of compliance with the Section 106 requirements of the National Historic Preservation Act (NHPA) from the deficient NEPA analysis otherwise conducted. See, Declaration of Wilmer Mesteth, former OST Tribal Historic Preservation Officer (THPO) [Exhibit OST-15, Exhibit CI-6], the Declaration of current OST THPO Michael Catches Enemy [Exhibit OST-14], the described documents referenced in the FEIS and in Appendix A to the FSEIS [Exhibit NRC-008-B], recent letters to the NRC Staff from Oglala Sioux President Brian Brewer and Standing Rock Sioux Tribe THPO [Exhibit NRC-0015], as well as omissions in the FSEIS. See, also, Opening Testimony of Dr. Louis Redmond. Exhibit CI-1.

Dr. Redmond testified that there was a failure of the protocols for the Augustana Study due to a failure of sub-surface testing, as follows:

DR. REDMOND: Yes, one of the problems that I had had with the way the inventory was conducted was not with any of the qualifications of any of the people that Dr. Hannus had or the way that Dr. Hannus did

anything or his qualifications, was that **I had done several surveys in an area about 20 miles south of the Dewey-Burdock site. And it was in an area that looked very similar. It was as desiccated as the Dewey-Burdock area was, the same thing. And had I simply done a Level 3 survey by looking at the surface, I would have missed a lot of archeology. But instead, I did subsurface testing and what I found was in a 300-acre parcel, I found 22 intact hearths on 22 sites. That is significant.**

And part of what I said in my letter was that in surveys that I had done in South Dakota up to 2005, it had been my experience that had I found sites similar to what Dr. Hannus had found, **had I not done subsurface testing on materials that were found there and described them as he had found them, my reports would have been turned back to me,** both as a federal employee for the National Forest when I worked as an archeologist for them or as a private contractor when I ran my own company doing private contracts. **My reports would have been turned back to me for not doing subsurface investigations when I found material such as he found.** And that was my contention in the letter that I put forth earlier.

CHAIRMAN FROEHLICH: Dr. Redmond, could I interrupt you and just ask when you speak to subsurface tests, is that more than shovel tests or soil cores?

DR. REDMOND: Yes. **What I was told to do was to put into -- put down 50 by 50 centimeter or 1 by 1 meter test pits, in 10 centimeter levels, down to sterile levels from surface down to a sterile level to make sure that I was not missing anything. Totally immaterial of what I found on the surface.** And that was what I was told to do by the South Dakota Archeological Research Center every time that I did some type of a survey in South Dakota.

CHAIRMAN FROEHLICH: To what extent were subsurface tests conducted after you had received the Augustana College study and the other items that you listed in your last answer, Ms. Yilma?

MS. YILMA: The Augustana College did have some subsurface testing in the original results. And then as I mentioned, after we did our review and requested for additional information they did go back out and do some more testing.

CHAIRMAN FROEHLICH: And I guess, Dr. Luhman, can you tell me what the additional testing was, especially as it might relate to subsurface testing?

DR. LUHMAN: Well, if I am correct, the request regarding the additional subsurface testing would have been at those sites where there was the potential for impact as a result of the proposed project activities. From an archeological standpoint, if an identified site is not going to be impacted, in the interest of preservation and protection, further studies are not warranted .

However, if it is believed that an area is, in fact, going to be impacted by the proposed project, there would need to be additional investigation subsurface, for example, to determine whether or not those properties possess the aspects that one would see in a site that would be determined eligible for the National Register of Historic Places. HT at 785-788.

Dr. Hannus testified that subsurface testing was not required because there had been a drought recently in the area:

DR. HANNUS: ...Now as far as subsurface testing goes, within a Level 3 process, you're doing subsurface testing depending on **a number of factors, but largely how clearly you can see the landscape surface. During the process of our Class 3 work at the Dewey-Burdock project, the conditions had been under a fairly lengthy drought circumstance.** So you had a surface visibility that was really quite conducive to seeing the sites without having to go across the landscape doing intermediate shovel tests. HT at 760-761.

Dr. Hannus testifies above that there are a number of factors concerning subsurface testing. Despite noting excellent surface visibility due to recent drought conditions, Dr. Hannus failed to mention any other of the relevant factors and he failed to refute Dr. Redmond's basic criticisms and concerns that subsurface testing should have been done.

Dr. Luhman testified that a Level 3 survey would not, in and of itself, identify all TCPs and that the involvement of traditional native people holding traditional knowledge is essential to identifying the TCPs:

DR. LUHMAN: ...A traditional Level 3 survey may, in fact, encounter some resources that would be associated with Native American Groups or which they would identify. **But they wouldn't necessarily identify all of the resources primarily because some of the knowledge is not available to those conducting a Level 3 survey. That would be provided by the Native American groups themselves.** HT at 762-763.

Dr. Sebastian testified that areas of natural springs are often associated with TCPs:

DR. SEBASTIAN: ....Archaeologists can identify archeological sites that are likely to yield information about the past and some of those would also be traditional cultural places that would be important. But there are lots of other kinds of traditional cultural places, Mountain Top Springs, lots of things that have that importance and that would be eligible to the National Register that archaeologists don't have the skills or the knowledge to identify. HT at 763.

The testimony at the hearing referred to herein demonstrates inadequacy of the cultural resource surveys and analyses conducted at Applicant's proposed mine/plant sites as of the date of the issuance of the FSEIS. Former OST THPO Mesteth testified that:

MR. MESTETH: ...**We have sacred places here in this country and we are the only ones that can determine those things. And sometimes we are reluctant to share this information with archaeologists because the nature of the information, sacred places.** Your understanding of a sacred place is different from mine. And I want those things clearly understood here today in these proceedings.

**We are the ones, and the only ones, that are qualified.** When we're talking about tribes in and around the Black Hills, the Lakota Nation, the Kiowa Nation, the Crow Nation, Arapaho, Northern Arapaho, Northern

Cheyenne Nations, Hidatsa, Mandan and Arikara, the Ponca and Pawnee. These tribes are historical tribes. When we're looking at features and artifacts and you're talking about history of this Black Hills, then we are the experts. I want that clearly understood.

**And as far as this Level 3 survey, the way I understand it, these have to be included in that and it should be included. And it should be stated to that effect. And include the Native American tribes that are in question here. That's my understanding of that. And the cultural TCP surveys, cultural TCP surveys, that's where we are the ones that determine what is clearly Lakota, a stone feature, a plinth [SIC - 'flint'] artifact, arrowpoint.** Those things, because we still practice our culture and we can trace it back. And what kind of stones are used on this land?. What kind of medicines that we utilize? We still use -- I'm a medicine man. I use in my practice with these medicines on this country and I go into the Black Hills and I harvest these medicines yet today.

The knowledge of our people, you know, their existence here, you know, in the Black Hills area, some experts in the archeologist's field say that we're newcomers here. But no, in my ohunka, it states in there that **we came forth upon creation here, not where Adam and Eve came in the Garden of Eden, wherever that is, you know. But here in (native language spoken) we call it, that's where our tradition states that we came forth upon this island here, the sacred Black Hills and we crossed over this land towards the east and then made our journey back here. That's our story and it's just as valid as this Holy Bible,** you know. That's my understanding. HT at 765-67.

This demonstrates that the Lakota people regard this area where Applicant seeks to mine as being as sacred as some people view the City of Jerusalem. Dr. Redmond testified as to the nature and extent of TCPs that can be found when sites are identified:

DR. REDMOND: Can I clear up something on the TCP? It's an analogy.

CHAIRMAN FROEHLICH: Okay, sure.

DR. REDMOND: When I was doing TCPs for the Forest Service, I was working with some elders and one of them I had taken up to a site and his comment was very simple. He said, "Okay, fine. **You've got a site. Where is the rest of it?" And his meaning was you've got where the people lived. Now where did they do their living? Where did they get**

**-- where did the women collect their food? Where did the men collect their materials that they lived with? Where did they process their food? Where did they do their ceremonies? Where did they do these things? Those are the TCPs.**

JUDGE COLE: Where did they bury them?

DR. REDMOND: Where did they bury them?

CHAIRMAN FROEHLICH: Dr. Redmond, you have conducted these TCP studies for other agencies?

DR. REDMOND: Yes.

CHAIRMAN FROEHLICH: You have.

DR. REDMOND: And that is a vast area around a simple site.

CHAIRMAN FROEHLICH: And your cost to prepare such a study, would that be closer to the SRI proposal or to the --

DR. REDMOND: Closer to the tribes'.

CHAIRMAN FROEHLICH: To the tribes'.

DR. REDMOND: Yes. And that's the problem. It's an order of magnitude over looking a simple site. And that's the problem. It balloons because you're not simply looking at a spot. You're looking at a living. You're looking at a living environment. Like my brother Wilmer said, "This is a living environment. It's across the hills." HT at 809-810.

OST THPO Catches Enemy testified that in his opinion if the project were allowed to proceed even under the Programmatic Agreement it would cause irreparable harm to the Tribe's cultural resources and that the Programmatic Agreement is inadequate to protect cultural resources:

**MR. CATCHESENEMY: As soon as -- the project, if allowed to proceed, will have irreparable harm to the cultural resources there**

**no matter what the avoidance, minimizing or mitigation acts that are proposed. It will still have irreparable harm to those cultural resources no matter what. So a Programmatic Agreement and the stipulations that are provided in there does not safeguard/protect cultural resources, in my opinion. HT at 862.**

Further, OST THPO Catches Enemy testified that the NRC Staff's 'One Size Fits All' approach that is applied to the interested tribes, including the Tribe, is not appropriate:

MR. CATCHESENEMY: A lot of what we're discussing right now between archaeology, the discipline of archaeology, the standards that are set for quite some time now and then the culmination of how TCPs came to be, there's a lot of things that occurred. Dr. Sebastian brought up Bulletin 38 in 1990. She brought up NAGPRA, which was also passed by Congress in 1990. And then two years after that that's when the amendments to the National Historic Preservation Act came to be to allow THPOs to be created. So there's a lot of changes that have occurred since that to come up to where we're at now. And as we're seeing now, there's not a lot of standards set or, as Mr. Kevin Hsueh has said, guidance for how these TCPs are created. **A lot of guidance nationally is kind of a one-size-fits-all. And for tribes, I know we will always assert that there's not such a thing. That's why I bring up the fact that if consultation was going to be reasonable they would have been consulted with individuals. So guidance such as this, we won't be able to agree to a one-size-fits-all as tribes.** HT at 862-863.

The testimony from former OST THPO Mr. Mesteth (HT at 764, 765-67 quoted below) supports the Consolidated Intervenors contentions that there has been a failure of both the NHPA and NEPA requirements for the NRC Staff to work to ascertain the existence and locations of TCPs in the project area and describe accurately the impacts thereon in the FSEIs.

The NRC Staff's 'One Size Fits All' approach is well characterized by Ms. Yilma in the below exchange concerning whether the list of interested tribes was prioritized. NEPA requires that analytic thought be used to evaluate the impacts on TCPs - and prioritizing the interested tribes according to those with the most interest in the project area would have been evidence of such analysis being applied. In fact, Mr. Fosha, the South Dakota Historical Society witness brought by Powertech testified that he thought the list would be prioritized but according to Ms. Yilma, the list was merely alphabetized and, further, no attempt was made to prioritize the tribes having an interest in the project area. The exchange below occurs at HT at 769-70:

CHAIRMAN FROEHLICH: Was that list in order of most connected with the area to least or possibly traversed the area at some in the past thousand years? What was the nature of that list?

MR. FOSHA: I believe it's based upon maps that were generated by the U.S. Government at a certain point in time when they started establishing ancestral lands for each tribe.

MS. YILMA: The list, Your Honor, didn't have any priorities. If I recollect, I can reference the SEIS and confirm. It was just alphabetically

CHAIRMAN FROEHLICH: Alphabetically.

MS. YILMA: So it was not areas of importance. But like Mr. Fosha has stated, the list was developed based on the maps that was generated by the State Historic Preservation Officer.

CHAIRMAN FROEHLICH: Back to your chronology, but ask after having received the list of potentially interested parties, any attempt was made to prioritize from most impacted to least impacted on that list?

MS. YILMA: It is my understanding that if a tribe has historical ties to that area, they are entitled to be a consulting party. And so therefore, we did not prioritize who has the most concern versus not because they all should have a similar type of concern. HT at 769-70.

As to the ethnographic, traditional knowledge based TCP surveys that could be provided by the Tribe, OST THPO Catches Enemy testified that about the challenges in keeping up with the NRC Staff's process without adequate resources or budget to do so:

MR. CATCHESENEMY: ...So here we are being asked to come and produce evidence outside of what the archeological report already identified. But at the same time, we're having to bring tribes as different takes on it within set deadlines, set cost parameters. That's a pretty harsh timeline to follow to bring tribes back together to ask them to set all these methodologies within a very short timeline.

These methodologies may have a little bit of differences or intricacies when we get out into the field. **We would rely, ourselves as Ogalas, on a lot of our elders, our traditional medicine people, spiritual leaders, historians, but all of them would be available to come up.** And maybe another tribe historically tied with us may have a different take on it. So we'd have to try to work out all those intricacies of how we're going to conduct our methodology because this isn't something that is TCP surveys on the most part are fairly new or at least being willing to be looked at. I know part of the evidence doesn't really include National Park Service guidance, but that's where it's in the literature about Bulletin 38, the identification of traditional cultural properties. I call the state of the TCPs, **that can go with any ethno group. It's not specific to Lakotas. It could be towards Asian-Americans, Hispanic-Americans. It's open when you consider it a TCP. But I think the big difference is the culture and how it's conducted. That's the biggest difference.** HT at 801-802.

OST THPO Catches Enemy testified as to the limited resources of the Tribe for conducting cultural resources reviews when requested by agencies like the NRC Staff in connection with federal actions:

MR. CATCHESENEMY: And he could speak more to his own résumé. but he was initially -- we have a three-member advisory council for our office and Mr. Mesteth was one of three founding members of our office and took that role. Initially it was supposed to be a temporary

appointment and just until we got more funding. **The fact remains we didn't have any subsequent funding that came to the office of our National Park Service annual funding, so Mr. Mesteth was acting in a part-time capacity. And so the changeover came with some additional funding that we're just receiving.** And I do more of the administrative responsibilities day-to-day in the office now --

CHAIRMAN FROEHLICH: Okay.

MR. CATCHESENEMY: -- as a full-time employee. HT at 813-14.

Despite struggling to keep up with the NRC Staff's process, OST THPO Catches Enemy testified that:

MR. CATCHESENEMY: I think when you're talking about the simultaneous things occurring at the same time when this Programmatic Agreement was being initiated, a lot of the tribes were still trying to revamp the scope of work. **That seemed like the PA was coming irregardless if we were happy about the proposal that we had submitted in the years before.** So it was kind of hard to be trying to address something that the federal agency, the NRC was just going force through anyway. **They were going to just promote this PA irregardless of our participation in identification of historic properties.**

CHAIRMAN FROEHLICH: But as I understand it, the staff circulated the Programmatic Agreement and sought comments or input; consultation, if you would, I believe you used in your answer, from all the various tribes. And then Ms. Yilma just testified that those concerns that were received were addressed.

MR. CATCHESENEMY: I would say that there were probably -- it's still at the NRC's discretion to take what they felt was necessary to incorporate into that PA, but it still wasn't everything that we had provided. HT at 825-826.

Ms. Yilma testified that the Programmatic Agreement was coming regardless of the outcome of the Section 106 consultations with the Tribe:

MS. YILMA: The Programmatic Agreement discussion actually occurred prior to that, because we knew that there was going to be phase identification occurring. **So we knew all along that there will be Programmatic Agreement development. So by March 2013 we knew there would be a Programmatic Agreement developed, but we hadn't started working on it.** HT at 823.

Ms. Yilma further testified for the NRC Staff that the reason that NRC 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:

MS. YILMA: That is correct and I just want to again clarify that this is the Sioux Tribes that provided the statement of work. Remember, we had more than the Sioux Tribes that we were consulting with. And in the proposal, the proposal that came back, if I remember correctly, 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. **So looking through those statements of work, our schedule, because by this time we had already been consulting with the tribes for close to two years and we haven't agreed on an approach to do the TCP survey to gather the information we needed for us to comply with the cultural resources section of the NEPA and NHPA.**

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. And for that reason we -- and significantly varied from what Powertech provided. **For that reason, we felt it was prudent for us to find another way of conducting the tribal survey that we needed in order to make impact assessment.** HT at 804-806.

Ms. Yilma also testified that no ethnographic studies were conducted by NRC Staff but that they did discuss the existence of ethnographic studies, and that instead

actually doing one, the NRC Staff coordinated a \$10,000 stipend with an invitation for each tribe to send up to three (3) representatives out to the project area and walk around looking for their TCPs:

CHAIRMAN FROEHLICH: Okay. I'll go back to Ms. Yilma. Did the staff investigate or review ethnographic reports or suggest at any point in this process visits with tribal elders to try to collect the type of data necessary to respond to the cultural and historic resources?

MS. YILMA: We did not conduct an ethnographic study, but we did have a discussion about them during our face-to-face interactions with the tribes. And the ultimate decision was instead of an ethnographic study a field survey was necessary, so we focused our attention on the field survey approach.

CHAIRMAN FROEHLICH: Was there any thought given to utilizing the tribal elders in a field survey approach?

MS. YILMA: Yes. So after we decided the statement of work wasn't going to work, we did seek out for alternative approach. And one of the approach was the open-side approach that we ended up deciding on, and that open-side approach, the idea was that each tribal representative would select an elder or anyone that's knowledgeable of the tribe's culture to come out and identify sites within the Dewey-Burdock projects that are important to that tribe.

CHAIRMAN FROEHLICH: And of the tribes that took you up on that offer --

MS. YILMA: Yes.

CHAIRMAN FROEHLICH: -- how many people did they bring? I mean, how much of an undertaking

MS. YILMA: There were three representatives. They were allowed to have three representatives from each site. Some had three.

Others had a couple. And for some of them they did have tribal elders out with the tribal monitors doing a site survey and provided input on what was found and what was the interpretation of what was found.

CHAIRMAN FROEHLICH: Just trying to decide what's reasonable. They were allowed three? Why were they --

MS. YILMA: I should clarify. For purposes of reimbursements, because Powertech was covering the expenses, the expense allotment was for three representatives. But of course tribal entities could have brought more than three. But if they had brought more than three, the per diem and such were not going to be covered. HT at 846-48.

**CONTENTION 1B: FAILURE TO INVOLVE OR CONSULT ALL INTERESTED TRIBES AS REQUIRED BY FEDERAL LAW.**

Although the Consolidated Intervenorors are a separate party from the OST, since members of Consolidated Intervenorors are enrolled members of the Intervener OST, the Consolidated Intervenorors hereby adopt the evidence, authority, and arguments presented in the OST

Statement regarding this Contention. Former OST THPO Mesteth testified that:

MR. MESTETH: We are the ones that had rejection and we're the ones that are the experts, not the archaeologists. They make assumptions and hypotheses about our cultural ways and it's not accurate. Some of the information is not accurate. And that's why we object in certain situations. HT at 764.

The foregoing testimony from Mr. Mesteth supports the Consolidated Intervenorors contentions that there has been a failure of both the NHPA and NEPA requirements for the NRC Staff to work to ascertain the existence and locations of TCPs in the project area and describe accurately the impacts thereon in the FSEIs. Such testimony further supports the contentions that there has been a failure of consultation because the OST's

THPO at a relevant time during these licensing proceedings describes the treatment of the OST as being ‘REJECTION.’ HT at 764.

Mr. Mesteth stated his personal, professional and tribal (spiritual) credentials and he addressed the Board and the courtroom in Lakota first as is traditional. There is no doubt that Mr. Mesteth chose carefully the words he used to describe the treatment of the Tribe and his word was ‘REJECTION.’ Since the representative of the Tribe most knowledgeable about the issue has testified that the Tribe was rejected, then it must be accepted by the Board that there has been a failure of the consultation process.

It seems that the NRC Staff tried to meet with the OST staff when they were in the area anyways in 2009 but since the OST staff were unavailable at that time, the NRC Staff concluded that was sufficient even though no meeting had actually taken place. See Yilma HT at 771.

MS. YILMA: ...Your Honor, when we went out, we had a site visit in December 2009 and when we went out there, recognizing that the Ogala Sioux Tribe is the closest proximity-wise, we did try to meet with the Ogala Sioux Tribe at which time we weren't able to because they didn't have the availabilities while we were out there to meet with them. HT at 771

Ms. Yilma further testified that there was “an initial face-to-face meeting in 2011” with the OST. HT at 776.

MS. YILMA: Okay, so we contacted them initially with letters and followed up with phone calls and contacted them again with letters and followed up with the phone calls until we had our initial face-to-face meeting in 2011. In 2011, when we had our initial face-to-face meeting, there were a number of tribes including the Ogala Sioux present there and during that effort we were told that in order for us to -- in order for the tribes to identify properties, they would need to conduct a tribal field survey which we refer to as TCP surveys. HT at 776-77.

The FSEIS states that the 2011 meeting was not devoted solely to Powertech and the project area but was about TCPs generally occurring in the project areas of nearby uranium mines Crow Butte (Crawford, NE) and Powertech. FSEIS at 1.7.3.5 page 1-24.

The NRC Staff fails to make any distinctions in the nature and extent of consultations and involvement among and between tribes based on the connections of that tribe to the project area. As a result, the NRC Staff treats the comments of a tribe that may have only a scant history or connection with the project area as being equivalent to a tribe, like the OST, which bases its entire creation story on the area surrounding and including the project area.

The NRC Staff does not distinguish between lower level staff contacts and 'Government-to-Government' contacts in the same way as the Oglala Sioux Tribe. Ms. Yilma testified that:

MS. YILMA: Your Honor, the way we look at it is we are -- we consider all contacts we have with the tribes, government to government, in a sense that we are speaking with elected representative or representatives of each respective tribe, so therefore by that virtue we consider it a government-to-government consultation. HT at 777.

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Additionally, I'm going to fast forward to almost the future and say that we did try to attempt the government to government as defined by the tribes, I believe it's March or May of 2013 where we invited over 30 tribal leaders to meet with us so we could discuss all sorts of matters under the NHPA at which point there was only one representative that showed up stating that they were representing the tribal elders, but the others that showed up said they were just representing the tribes, but not the elders. HT at 778-779.

OST THPO Catches Enemy testified that the Tribe holds a different view of a distinction between lower level staff contacts concerning technical matters on the one hand, and contacts between the elected officials of the two governments, on the other:

MR. CATCHESENEMY: ...The distinction between NHPA, Section 106 Consultation, which normally involves staff people and attorneys of federal agencies, in this case, the NRC staff and the Tribal Historic Preservation officers. Typically, you're not going to find elected tribal leadership at these Section 106 consultation meetings because typically we're talking about strictly archeological and cultural resource-related items.

When it gets elevated to a government-to-government status, that is when you have folks that are both elected officials on the federal government side and the tribal government side sitting at the table. So I would disagree with the point being made that these were considered government-to-government consultations because I do not represent as an elected official. I am not a government-elected person. I am an employee of the tribe to do a job related to historic preservation and cultural resource issues.

But when our councilmen and council women, our executive officers such as our tribal chairman, tribal president are at the table, we then view that as a government to government only if the federal government is sending their decision makers to the table to discuss certain matters. So I would at this point disagree with the government to government versus Section 106 consultation. HT at 780-781.

In addition, OST THPO Catches Enemy testified that social media and teleconferences were not, in the views of the Tribe, a substitute for in person face-to-face to consultations:

MR. CATCHESENEMY: Throughout the whole process I can say that the tribes, especially the Oglala Sioux Tribe, have always advocated for the face-to-face. A lot of things can happen or not happen behind a teleconference call. There's not the same interaction that you and I are having right now as if we were on the phone with each other, so we would always be advocating for the face-to-face.

CHAIRMAN FROEHLICH: You're referring to I guess a session where there was a video conference among staff and various tribes, is that correct?

MS. YILMA: It's actually a teleconference.

CHAIRMAN FROEHLICH: Teleconference.

MS. YILMA: Yes.

CHAIRMAN FROEHLICH: Excuse me.

MS. YILMA: Due to the limitation of our budgets we couldn't really travel to do the face-to-face interactions for every single meeting we had. We did have three face-to-face interactions with the tribes to come up with methodologies and survey approaches and consider inputs from the tribes in our cultural resources, but we started developing the Programmatic Agreement. We did use alternative means to come to consensus of what needs to be included in the Programmatic Agreement. And we used a teleconference for that where we had a Webinar set and displayed the Programmatic Agreement on a computer. And we also had a line set up where we can discuss each step of the Programmatic Agreement that we had displayed on the Webinar and made appropriate changes that we were hearing from the tribes, the SHPO, the state historic preservation officer, and also the ACHP, Advisory Council on Historic Preservation. They were all on the teleconferences when we were developing the Programmatic Agreement.

CHAIRMAN FROEHLICH: I guess a simple question would be does Webinar and teleconference constitute consultation under 106 in your experience....

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DR. LUHMAN: I believe so. I mean, it is an interaction among the parties discussing the issues at hand. The Webinars, I facilitated the Webinars for the development of the Programmatic Agreement. We went through every aspect of the document including all the comments that have been received. The Programmatic Agreement itself was distributed as a Word document so that everybody could insert their comments and track changes. So it was possible to go through and address everyone's comments. Ms. Yilma is correct, the advisory council was on the calls.

The BLM was on the calls. The South Dakota SHPO was on the calls. The tribes that chose to participate were on the calls. Powertech was on the calls. They were very, very active and vibrant conversations relating to the issues that were at

CHAIRMAN FROEHLICH: I would ask the same of Dr. Hannus.

DR. HANNUS: We were not involved in that set of interviews, so we were not part of the Programmatic Agreement.

CHAIRMAN FROEHLICH: And the definition that you would use for "consultation," does that include Webinars or teleconferences or whatever, or is

DR. HANNUS: Are you asking me?

CHAIRMAN FROEHLICH: Yes.

DR. HANNUS: Well, I mean in the current parlance of what seems to be happening in the world of technology, I guess that that is a very common practice. I guess whether everyone that was involved would fully agree and embrace that practice is a different question, but it is certainly a common

CHAIRMAN FROEHLICH: Dr. Sebastian, in 25 your experience?

DR. SEBASTIAN: In my experience "consultation" is defined as seeking, discussing and considering the views of others and, where possible, seeking agreement with them. And that's the definition that we're giving for what "consultation" is. And I also would add, if I may, that in a lot of cases these kinds of electronic media are the only way to deal with them. If you think about folks working in Pennsylvania who all their tribes are in Oklahoma and so there's really no way for them to be able to have very many face-to-face meetings -- so they routinely do all of their consultation in electronic media or the exchange of drafts and comments. HT at 826-830.

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Dr. Redmond testified as to the importance to native people of having face-to-face in person consultations and not relying only on social media and/or

teleconferences and how it can be viewed as disrespectful to avoid face-to-face in person consultations:

DR. REDMOND: But at least let's do it with respect. And today's world everything seems to be through media. It's not face-to-face, eyeball-to-eyeball. And in our culture it's a handshake and face-to-face. I look in your eye and see if you're telling me the truth. Because if I can't see your face, I don't know what you're telling me.

OST THPO Catches Enemy testified about the nature and extent of the type of consultation that might be considered 'meaningful':

MR. CATCHESENEMY: If true consultation was to occur and the tribes asserted this, **the NRC would have had to make separate visits to all 17 or more tribes individually to truly uphold that standard.** But the tribes were reasonable in coming to one table one time with NRC. But if the tribes so choose to do so, they could have did so individually.

And imagine what the cost would have been associated for NRC to conduct consultation with each tribe individually. So to me, I want to go back to that before we start moving forward and talking about how many would be reasonable on a survey. Initially the consultation -- I think tribes have been taking the higher road all along.

**And while it doesn't seem like maybe the NRC staff is meeting us in a good ethical way and they're going to bypass a few things, it causes this to occur.** We probably wouldn't even have to be here right now if it wasn't for maybe some of the things that happened or didn't happen and if there was more reasonable actions taken. HT at 854-855.

### **Contention 1A & 1B: Proposed Findings of Fact and Conclusions of Law.**

Consolidated Intervenors also adopt the Answers, Proposed Findings of Fact and Proposed Conclusions of Law of the Oglala Sioux Tribe for Contention 1A & 1B.

## **CONTENTION 2: FAILURE TO INCLUDE NECESSARY INFORMATION FOR ADEQUATE DETERMINATION OF BASELINE GROUND WATER QUALITY**

**(1) Have the federal courts addressed the 10 C.F.R. Part 40, Appendix A, Criterion 7 “baseline groundwater quality” and Criterion 5 “Commission-approved background” water quality distinction and ruled whether this staggered water quality review satisfies NEPA?**

The Consolidated Intervenors believe that any dichotomy between the language in Criterion 7 & Criterion 5B(5)(a) is a false distinction. NEPA is unambiguous in requiring decisions based on accurate baseline data. To the extent Criterion 5 may be read to dilute this requirement or forestalls baseline data collection until some future date, then it violates NEPA.

NEPA regulations demonstrate that a meaningful analysis requires adequately characterizing baseline data, including groundwater quality, both accurately and quantitatively. Demonstrable baseline conditions, including accurate assessment of water quality, are vital to informing the agency and the public about the environmental impacts of the project and are a prerequisite to making an informed decision. *See* 40 C.F.R. § 1500.1(b) (“NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.”).

Federal courts have identified this requirement and held that lack of baseline data renders an agency decision arbitrary and capricious. In *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, the Court of Appeals for the 9<sup>th</sup> Circuit rejected an Environmental Impact Statement for failing to collect baseline data, ruling that “without this [baseline] data, an agency cannot carefully consider information about significant environmental

impacts.” 668 F.3d 1067, 1083-85 (9th Cir. 2011). *Land Council v. McNair* 537 F.3d 981, 987 (9<sup>th</sup> Cir. 2008). *See also, N.C. Wildlife Fed. v. N.C. Dep’t of Transp.*, 677 F.3d 596, 603 (4th Cir. 2012) (finding NEPA decision must be based on accurate baseline data); *Friends of Back Bay v. U.S. Army Corps of Engineers*, 681 F.3d 581, 588 (4th Cir. 2012) (holding that “A material misapprehension of the baseline conditions existing in advance of an agency action can lay the groundwork for an arbitrary and capricious decision.”).

The *Northern Plains* court specifically discussed agency promises of establishing baseline data in the future:

[E]ven if the mitigation measures may guarantee that the data will be collected some time in the future, the data is not available during the EIS process and is not available to the public for comment. Significantly, in such a situation, the EIS process cannot serve its larger informational role, and the public is deprived of their opportunity to play a role in the decision-making process.

*Id* at 1084-1085. *See also, Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989); *LaFlamme v. F.E.R.C.*, 852 F.2d 389, 400 (9<sup>th</sup> Cir. 1988) (“[T]he very purpose of NEPA’s requirement that an EIS be prepared for all actions that may significantly affect the environment is to obviate the need for speculation by insuring that available data is gathered and analyzed prior to the implementation of the proposed action.”) (internal citation and quotation marks omitted). The danger in an approach that proposes the collection of so-called “baseline” data at some future date is that, “once a project begins, the ‘pre-project environment’ becomes a thing of the past” and correspondingly, meaningful evaluation of the project’s effect becomes “simply impossible.” *LaFlamme*,

852 F.2d at 400.

**(2) Further, in response to a question from Judge Barnett, counsel for the Licensee and Staff stated that satisfying all the requirements of NUREG-1569 (e.g., staggered water quality review) will automatically satisfy all the relevant requirements of NEPA and 10 C.F.R. Part 40. Please provide legal support for this assertion, especially if the Commission or a federal court has so held.**

The legal standards applicable to NEPA baseline data described above, also applies to the NRC Staff's assertion that compliance with NUREG 1569 satisfies the relevant requirements of NEPA. The Consolidated Intervenors maintain that Staff's statement is overbroad. Again, the appearance of distinction is an entirely semantic one. To the extent that compliance with NUREG 1569, in each particular case, addresses the detailed requirements spelled out in NEPA, then NEPA is satisfied. In contrast, if NUREG 1569 is being used to supplant and diminish the NEPA requirements, then NEPA is not satisfied and the NRC risks making an arbitrary and capricious decision.

This is particularly true, as detailed above, if the NUREG 1569 procedures, namely the staggered water quality review, are being used to shield important environmental considerations from the public review and comment process that is germane to NEPA. *See also, Morongo Band of Mission Indians v. Federal Aviation Administration*, 161 F.3d 569, 575 (9th Cir. 1998) ("NEPA was created to ensure that agencies will base decisions on detailed information regarding significant environmental impacts and that information will be available to a wide variety of concerned public and private actors."). *Metcalf v. Daley*, 214 F.3d 1135 (9th Cir. 2000) (vacating NEPA document issued *after* the agency's underlying decision for which the NEPA document

was prepared had been made); *Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 97 (1983) (explaining that NEPA “ensures that the agency will inform the public that it has indeed considered environmental concerns in its decision making process.”)

### **Contention 2: Proposed Findings of Fact**

The Consolidated Intervenors contend that the evidence shows the FSEIS failed to include information necessary for a valid statistical model for a proper and adequate determination of baseline water quality in all horizons in and around the ore bodies in the aquifers proposed to be mined. See, Report of geochemist, Dr. Richard Arbitz, p. 1-2 (hereinafter, “Arbitz: \_\_”) (INT-002); Opening Testimony of Dr. Robert Moran, p. 2,<sup>1</sup> 14, 16-17, 21-22 (hereinafter, “OT Moran: \_\_”) (OST-001); Rebuttal Testimony of Dr. Moran, p. 1\_\_ (hereinafter, “RT Moran: \_\_”) (OST-018). The FSEIS failed to properly determine baseline ground water quality with consideration to the impact of prior open-pit and underground uranium mines, as well as the thousands of improperly plugged boreholes from prior uranium exploration. OT Moran:16-17 (OST-001); Opening Testimony of Susan Henderson, p. 4-7 (hereinafter, “OT Henderson: \_\_”) (INT-007).

The FSEIS further fails to develop the detailed information necessary to develop a reliable and scientifically defensible baseline analysis. According to Dr. Moran, such information should have included: detailed hydrological testing, including long-term aquifer testing, coupled with simultaneous water quality sampling; detailed chemical compositions and volumes of all solid and liquid wastes and operating fluids, such as

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<sup>1</sup> Citing, Arbitz (INT-2).

pregnant lixiviant solutions; identification of chemical constituents that will be used for aquifer restoration and clean-up standards/criteria for each constituent; a list of chemicals constituents that are likely to require an ACL based on similar projects; actual waste disposal method to be employed; a detailed analysis and data relating to the specific Underground Injection Control Well studies required by the federal Environmental Protection Agency (EPA) for approval of an Underground Injection Control (UIC) well permit; and additional structural geologic information, including faults, breccia pipe information, and human-induced connectivity. OT Moran:17 (OST-001).

As Dr. Moran, with significant experience in baseline studies [see, Curriculum Vitae of Dr. Moran, p. 3, 10, 11, 21, attached to Opening Testimony] testified in these proceedings:

The delayed production of this critical baseline information until after licensing is not scientifically defensible as it prevents establishment of a baseline on which to identify, disclose, and analyze the environmental impacts, alternatives, and mitigation measures involved with the Dewey-Burdock project proposal. A scientifically defensible monitoring and mitigation of an operating project is not possible based on the baseline data and analysis I have reviewed.

OT Moran:17 (OST-001); See, also, RT Moran:1-5 (OST-018).

Dr. Moran concluded that the FSEIS also failed in its baseline study to factor in the presence of breccia pipes and other solution or collapse features in the proposed project area. OT Moran:21-22 (OST-001).

### **Contention 2: Proposed Conclusions of Law**

Based on the factual findings discussed above, the Consolidated Intervenors propose that the Board conclude that the FSEIS fails to satisfy the requirements imposed

by NEPA. The Staff has not characterized baseline water quality data in a statistically meaningful, scientifically defensible manner. The lack of detailed baseline data deprives the agency and the public of the detailed environmental information NEPA requires in order to make a reasoned decision.

Consolidated Intervenors also adopt the Answers, Proposed Findings of Fact and Proposed Conclusions of Law of the Oglala Sioux Tribe for Contention 2.

**CONTENTION 3: FAILURE TO INCLUDE AN ADEQUATE  
HYDROGEOLOGICAL ANALYSIS TO ASSESS POTENTIAL IMPACTS TO  
GROUNDWATER**

**(1) To what extent do the various studies in the record either support or undermine the proposition that the Fuson Shale will adequately contain fluid migration?**

In the absence of any statistically meaningful review of the Applicant's data by NRC Staff, Dr. LaGarry's review and subsequent declaration [OST-029] belies any claim that the Fusion Shale layer is capable of confining fluid migration. The presence of uncased boreholes, faults, sinkholes and artesian flow that Dr. LaGarry predicted in the project area are all confirmed by the new data.

**(2) What is the appropriate legal standard to be applied in assessing the evidence regarding the suitability of the Fuson Shale to contain fluid migration?**

NEPA regulations require agencies to "insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements."

40 CFR § 1502.24. In doing so, “[T]hey shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement.” *Id.* “If an agency requires an applicant to submit environmental information for possible use by the agency in preparing an environmental impact statement,” then “the agency shall independently evaluate the information submitted and shall be responsible for its accuracy.” *Id.* § 506.5(a). The analysis of environmental impacts must be “of high quality.” 40 C.F.R. § 1500.1(b) (“Accurate scientific analysis [is] essential”).

Federal courts have further refined the dictates of this language in NEPA regarding the appropriate standards to apply in assessing evidence such as before the Board. For example, in *Ocean Mammal Inst. v. Cohen*, the court ruled that, “an agency is required to engage in reasonable research *to supply missing information*” in preparing an EIS to fulfill its “affirmative duty under NEPA and its implementing regulations to undertake research in order to prepare a comprehensive EIS federal government officials can use to make a reasoned decision.” *Ocean Mammal Inst. v. Cohen*, No. 98-CV-160, 1998 WL 2017631, at \*5 (D. Haw. Mar. 9, 1998) ; *See also, Idaho Pub. Util. Comm’n v. ICC*, 35 F. 3d 585, 596 (D.C. Cir. 1994); *Or. Env’tl Council v. Kunzman*, 817 F.2d 484, 495 (9th Cir. 1987) (NEPA “imposes a duty on federal agencies to gather information and do independent research when missing information is important, significant, or essential to a reasoned choice among alternatives.”) (citations omitted); *Greenpeace Found. v. Mineta*, 122 F. Supp. 2d 1123, 1135 n.16 (D. Haw. 2000)

### **Contention 3: Proposed Findings of Fact**

Consolidated Intervenors contend that NRC Staff's FSEIS included as the basis for its analysis, the data and models provided by Applicant in ,and subsequent to, submission of its Application. Such data as to the geohydrology of the area was selective and limited, the models overly simplistic and misleading.

As noted by Dr. Hannan LaGarry, Consolidated Intervenor's geological and mapping expert, the written testimony of Applicant's experts, Hal DeMuth (APP-013) and Errol Lawrence (APP-037) assert that the law does not require the Applicant to have well field specific data prior to licensing, but that the acquisition of such data is a phased process, once operation begins. DeMuth concedes the absence of pump testing in every proposed well-field. DeMuth (APP-013).

From Dr. LaGarry's review of their testimony, it appears that DeMuth and Lawrence also concede that there will be excursions, which Applicant will try to correct as they mine and fix them once they become apparent. In Dr. LaGarry's opinion, "it would seem prudent that a license application presented for NRC review and evaluation would contain well field specific data in order to anticipate the location and nature of expected problems and to be able to develop detailed plans to rectify the problem." OT LaGarry:7 (INT-013); See, also, Opening Testimony of Dr. Robert Moran (OST-001) and Moran's Rebuttal Testimony (OST-018).

However, extensive data which would have been available to NRC Staff if provided by Applicant or independently obtained by Staff, and which would have

provided an extensively more detailed and accurate hydrological picture, was never reviewed by NRC Staff, prior to its analysis in and issuance of the FSEIS and a materials license.

Intervenor's respectfully urge this Board to seriously consider the important questions raised by Dr. LaGarry about the related scientific and other deficiencies which wrongfully led to the findings and conclusions in the FSEIS. For example, Dr. LaGarry pointed out the unquestioning acceptance by NRC Staff of Applicant's assertion that the Dewey-Burdock area is sufficiently hydro-geologically identical to other ISL mines as to permit an evaluation concluding "standard" plans would work in the proposed mine. Rebuttal Testimony of Hannon LaGarry, p. 1 (hereinafter, "RT LaGarry: \_\_") (INT-012). No evidence of any FEIS or even citation to another source materials application to the NRC has been presented, which shows the existence and successful (non-excursion) operation of an ISL operation shown to be hydro-geologically similar to this project site and involving simultaneous mining operations of two hydrologically (or even minimally) connected aquifers. Exemplifying this point, see Applicant's Hearing evidence: App-33 (Moore Ranch-Fig. 2.3-2, Sec.2.3.3.2); App-34 (Nichols Ranch-Tables 2.3-1 and 2.3-2); App-35 (Lost Creek-Fig. 2.3-1); App-36 (Strata Energy-Sec.2.3.3.3). There is no evidence of an independent evaluation by the NRC Staff of whether scientifically sound and sufficient data as to the geohydrology of the project area was presented to it by Applicant for meaningful review.

As Dr. LaGarry opined: "such a 'one size fits all' legal and regulatory framework is flawed and prejudices the process in favor of mining." RT LaGarry:3 (INT-20).

Dr. LaGarry further raised, and Consolidated Intervenors respectfully requests this Board to consider, is the NRC Staff's acceptance of submitted models, conclusions, and opinions of insiders who stand to benefit from future contracts related to this project should the issuance of the NRC license be upheld by this board. RT LaGarry:2 (INT-20)]citing CVs of experts (DaMuth:APP-014, Lawrence:APP-038)]. Such clear conflicts should be troubling to this Board where public health and safety is at risk and objectivity must be required for issuance of a material source license for a uranium mine.

A further example of material deficiency of the FSEIS includes reference in Technical Report (TR) (APP-015A) which describes "periodic releases of water from storage ponds." *Ibid*, p. 2 of 71. The TA failed to provide information as to how much contaminated water Applicant plans to release during any discharge, how often such releases are thought to be necessary, and a discussion and analysis of environmental impacts from the contaminants in the water released. As Dr. LaGarry testified as to these failures: "Again, it seems that promises of fixing any problems not known from the limited testing conducted by the Applicant are used as a substitute for site-specific plans to prevent the need for releases." RT LaGarry:2 (INT-20). As Dr. LaGarry continued: "If releases are necessary, detailed site specific plans to mitigate introduction of the numerous toxic and carcinogenic chemicals and minerals in this water should have been presented and evaluated by the NRC staff to ascertain its real effectiveness in protection water resources."

As the record shows, Revised Technical Report (APP-015B) Applicant made many of the same admissions and concessions as the Staff did as to potential mining

solution contamination pathways in the FSEIS, including how mineralization at the site is contaminating local water, and that therefore contaminant pathways are already present (2.9.4.3). See, RT LaGarry:2 (INT-20). The radiological survey (APP-015C) reports statistically anomalous high radiation levels left over from past mining areas to the southeast of the proposed Burdock mining area, the direction of the flow of the aquifers to be mined from that mine site. However, the survey concludes such levels are irrelevant without explaining how they got there or why they don't matter. Dr. LaGarry asks questions exposing the increasingly fatal flaws in the FSEIS:

What if they are the product of contamination by artesian flow? Wouldn't such circumstances constitute a future problem and lead to more contamination? Powertech's expert testimony does not address this. Furthermore, Powertech's experts seem to be unaware that their proposed land application areas are on river terraces that will transmit the applied waste directly into local watersheds.

RT LaGarry:2 (INT-20).

**The FEIS failed to consider the existence of and potential for discontinuities, fractures, and channeled deposits**

Citing numerous references in his Opening Testimony, Consolidated Intervenors's expert, Dr. Hannon LaGarry, a stratigraphic mapper, expressed concerns regarding the Dewey-Burdock Project are the lack of confinement resulting from secondary porosity in the form of faults, joints, existing test holes old bore holes, the problem of artesian flow, and the horizontal flow of water within the uranium-bearing strata." Opening Testimony of Dr. Hannon LaGarry, p. 3 (OT LaGarry: \_\_), Exhibit INT-13 (Ex-INT-13).

As to the key issue warranting a voiding of the issued materials license and the deficiency of the FEIS, is the importance of confining layers in preventing

contamination of water resources by the proposed ISL mine from being able to containing mining fluids and testified to by Dr. LaGarry:

In order for ISL mining to be considered safe, the mined uranium-bearing strata must be isolated from rocks above and below by confining layers. Confining layers must be continuous, unfractured, and unperforated in order for containment to exist. There are three principal pathways through which contaminated water could migrate away from the uranium-bearing strata through adjacent confining layers (described in detail below): 1) secondary porosity in the form of joints and faults, 2) thinning or pinching out of confining layers, and 3) perforations made by improperly cased or capped wells.  
OT LaGarry:3 (INT-013).

As Consolidated Intervenor's contend, the FEIS and pre-Hearing issuance of a materials license by NRC Staff were premised upon there being a complete absence of any such conditions in the proposed aquifers where Applicant wants to mine, which would indicate an inability to contain mine solutions under current technology and standards. The premise is baseless since it is based upon statistically insufficient information which is contrary to historical studies and the detailed drilling logs and related data for thousands of boreholes within the proposed mining area, acquired by Applicant after the FSEIS analysis and immediately prior to the Hearing in this matter.

One problem, as Dr. LaGarry pointed out, was the failure in the FSEIS to include a comprehensive review of the geologic literature.<sup>2</sup> Dr. LaGarry cautioned against the approval of "the use of outdated scientific literature, or in this case, a general lack of review of recent study,...as an opportunity to operate in a knowledge vacuum." OT

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<sup>2</sup> For e.g., the much shorter Opening Testimony of Dr. LaGarry included numerous references to geologic literature not referenced in the FSEIS. OT LaGarry: 8-10 (INT - 13).

LaGarry:7 (INT-13). The expert pointed out that:

[M]uch of the Great Plains region was studied prior to the 1980's and the general acceptance of Plate Tectonics Theory, and therefore generally misrepresents the geologic setting of the region. This was true of the geologic literature and data used to justify the proposed mining by Applicant near Edgemont, South Dakota. It is incumbent upon potential ISL operators, as it is with any natural resource extractors, to seek out the most recent research and expert opinions on the geological settings in which they propose to operate.

*Id.*

### **The FSEIS Ignored Evidence of Faults and Joints.**

Prior to receiving and quickly perusing the highly material borehole logs for the thousands of boreholes within the area, Dr. LaGarry testified as to the geology of the region which the FSEIS, based upon insufficient data and misleading models from Applicant, claimed somehow existed everywhere but where Applicant wanted to mine.

Dr. LaGarry noted and referenced secondary porosity, in the form of intersecting faults and joints, as being “common in all of the rocks north, east, and south of the Black Hills Dome and along the Pine Ridge Escarpment (see Swinehart & others 1985). These faults and joints are generally oriented NW- SE and SW-NE, and are a result of the ongoing uplift of the Black Hills of southwestern South Dakota.” OT LaGarry:3 (INT-13).

The fracture-causing uplift of the Black Hills is on-going. While there are geologists who consider the Black Hills uplift to have ended by the late Cretaceous Period (~65 Ma), “the Black Hills were tectonically active in the late Eocene (Evans & Terry 1994), and continued to fault, fracture, and fold the rocks of northwestern Nebraska and southwestern South Dakota into the middle Miocene (Fielding & others 2007).

Based on numerous small earthquakes along the Sandoz Ranch-White Clay Fault, the area is still tectonically active (McMillan & others 2006).” OT LaGarry:3-4 (INT-13). While observing that these earthquakes are relatively mild, and don’t significantly damage surface infrastructure, “even small earthquakes represent shifting and flexing of the earth’s crust, and are continuously creating, closing, and redistributing the secondary porosity of the region’s rocks and changing the flow pathways of the region’s groundwater.” OT LaGarry:4 (INT-013).

What this means is that “joints incapable of transmitting water one day may be able to transmit water at a later date.” OT LaGarry:4 (INT-013). Contrary to the geological premise in the FSEIS, “these faults and fractures transect all major bedrock units of the region. These faults connect the uranium-bearing strata to adjacent aquifers as well as modern river alluvium.” OT LaGarry:4 (INT-013).

Evidence from recent studies of the interaction of local these faults with surface waters in the region “show that creeks that provide municipal water supplies can be entirely consumed and redirected by the region’s secondary porosity.” Using Chadron Creek in nearby northwestern Nebraska, the stream that supplies water to the city of Chadron, Nebraska, went dry for the first time in the city’s history. As cited by Dr. LaGarry in his Opening Testimony, a subsequent study of the creek’s water flow rates suggested that normal amounts of water are flowing from springs, but the water is disappearing into deeper alluvium or into fractures in the rock (Balmat & others 2008, Butterfield & others 2008). Dr. LaGarry further noted that following these observations, a Chadron State College graduate student studied the lineaments of northwestern

Nebraska and southwestern South Dakota using data collected by high-flying aircraft, satellites, and the space shuttle, and showed that these represent widespread faults (Balmat & Leite 2008). Many of the faults in northwestern Nebraska and southwestern “South Dakota persist for tens of miles (Diffendal 1994, Fielding & others 2007). Also, many of the ancient river deposits of the Tertiary strata, along with the alluvium deposited by modern rivers such as the Cheyenne River, the White River, and Hat Creek, follow fault zones because fractured rock erodes more easily.” OT LaGarry:4 (INT-013).

As Dr. LaGarry pointed out, Powertech’s Application asserts that although fault zones are known both north and south of the project area, there are no known faults within the project area and that there is little or no secondary porosity. However, according to the final environmental impact statement (Office of Federal and State Materials and Environmental Management Programs 2014), the Dewey Fault is located approximately 1.6 km north of the proposed Dewey-Burdock permit area. The scientific literature shows that faults and joints are well-known in rocks surrounding the Black Hills, and are known to interconnect major aquifers and the land surface (Swinehart & others 1985, Peters & others 1988, Fielding & others 2007). OT LaGarry:4 (INT-13).

More specifically, historical studies of the area, after extensive pump tests in the Burdock area in 1979, Boggs concluded that “**aquifer test results indicate...Fuson member...is a leaky aquitard** separating the Fall River and Lakota aquifers” which Boggs “believed to be the **result of**: (1) general leakage through the primary pore space and **naturally occurring joints & fractures** of...Fuson shale;...” (Emphasis added). Boggs & Jenkins, 1979 “Analysis of Aquifer Tests Conducted at the Proposed Burdock

Uranium Mine, Burdock, SD,” See, also, *Ibid*, p. 1, 5 (leakage “may be the result of some as-yet-unidentified structural or old unplugged exploration holes”), 16. (Emphasis added).

As in earlier opinions, Dr. LaGarry predicted that faults and joints would be capable of transmitting uranium-contaminated waters from depth onto the land surface. By way of example, in 2012 he and his colleagues reported preliminary research showing uranium-contaminated artesian springs along the Sandoz Ranch-White Clay Fault in Fall River and Shannon counties (Bhattacharyya & others 2012), supported these earlier assertions. OT LaGarry:4-5 (INT-013).

Prior to Applicant’s disclosure of the recently obtained detailed data of the D-B area from drilling logs and related data of the 1970s and 1980s, prior studies cited by Dr. LaGarry showed, contrary to the FSEIS and the Application, and concluded “the absence of joints and faults in the vicinity of the proposed mine is likely a false perception, because joints and faults are ubiquitous in this region. Despite being obvious when viewed from Earth’s orbit, however, these joints and faults are difficult to observe when covered by Holocene surficial deposits.” OT LaGarry:5 (INT-013).

The Board is encouraged to review all the photographs of the photos in the geology section of the Technical Report. As Dr. LaGarry testified and as is observable, they show the unmapped joints and faults as he has previously opined as an expert in ISL proceedings in the area. RT LaGarry:3 (INT-20)

In pre-Hearing testimony and prior to forced and post-Hearing disclosure by Applicant voluminous drilling data, Dr. LaGarry asked in his Rebuttal Testimony with

expected foresight, yet remained seriously unanswered by Applicant or NRC Staff:

If faults and joints are so pervasive and ubiquitous in this region, why is Dewey-Burdock viewed as an exception? Is it because they're there but not being recognized? Is it because if recognized it would add to the problems of containment of this mining operation, indicate that regional water sources are threatened by it, and that issuing a license to Powertech was a mistake to be corrected? Is it because Powertech's recognition of such features would be fatal to their proposed mining operation?

RT LaGarry:2 (INT-20).

As shown below, the evidence shows, the post-FEIS purchases by Applicant of the vast majority of the thousands of thirty-five year old drilling logs of the area, all these questions should be answered in the affirmative.

### **Recently Disclosed Drilling Logs.**

On July 16, 2014, Richard Clement, Jr., the President and CEO of Powertech announced in a press release that it had entered into a Transfer, Bill of Sale and Assignment Agreement whereby it agreed to purchase "certain data concerning Dewey-Burdock uranium. Said the press release in pertinent part: "The data being acquired consists of historical drill hole logs and maps prepared by the Tennessee Valley Authority from the 1970's and 1980's when the Dewey Burdock uranium deposit was originally discovered as well as digitized data generated from this work." OST-019.

During the August 5, 2014 telephone pre-Hearing, Judge Frochlich noted that the TVA data "was not relied upon by Powertech in its environmental report, in its filing leading up to the grant of this license by staff,...has not been reviewed by the staff or made part of their decision making process in granting the license." Transcript of 8/5/14

Hearing, p. 658. NRC Staff acknowledged that “if the staff determines it’s new and significant information that fall into question, the findings in the EIS and under 10 CFR §5192, the staff will have an imminent obligation to supplement the EIS.” *Ibid*, p. 662-663.

In its Order dated August 6, 2014, the Board found that “[t]his data is relevant and would appear to provide support for or opposition to, the application or proposed action.” *Ibid*, Order, p. 6.

As Consolidated Intervenors contend, a central issue for this Board, as well as other federal and state agencies, is the ability of the Applicant to contain mine fluids within the geo-hydrological and other site characteristics, in addition to its promises to comply with license conditions and applicable laws and regulations.

Upon a hasty initial and then 3 day review and with the assistance of 3 student assistants, Dr. LaGarry and his team determined that the 28 bankers’ boxes, 5 file cabinets, and 31 sets of mini logs contained at least 7515 borehole logs, including 7454 borehole logs known to exist prior to acquisition by Applicant, of which 3910 such logs were owned prior to the latest disclosure. In the short time permitted by all circumstances, Dr. LaGarry and his student team were able to examine only 56% of the 7515 borehole logs, 30% of other documents, leaving at least 6 bankers’ boxes and 5 file cabinets of records unexamined. Supplemental Testimony of Dr. Hannon LaGarry, p. 2 (herein after, “ST LaGarry: \_\_” (OST-29).

What was found by Intervenor’s expert, exemplified the continuous concerns raised by Consolidated Intervenors about the FSEIS as to the existence of:

140 open, uncased  
16 previously cased, redrilled open holes  
4 records of **artesian water**  
13 records of holes plugged with wooden fenceposts  
6 records of holes plugged with broken steel  
12 records of **faults** with or beside drilling holes  
1 drawing of 2 **faults and a sink hole** within a drilled transect;  
7 notations ‘do not record this value on drill hole maps’;  
2 notations “do not return this to landowner”;  
**63 redacted borehole logs.** (Emphasis added)  
ST LaGarry:2 (OST-29).

It is noted that during their testimony before this Board in August, 2014, Applicant repeatedly asserted that faults and sinkholes were not present in the license area and that the license was somehow unique in this regard. ST LaGarry:2 (OST-29).

Additionally, Dr. LaGarry observed that the “spot check” by the NRC Staff of 34 data points “does not provide a statistically reliable testimony or basis for any conclusions regarding confinement or hydrology.” ST LaGarry:5 (OST-29). Dr. LaGarry, whose PhD involved use of multivariate statistics, concluded that since a statistically valid and meaningful sample requires analysis of at least 10% of randomly selected sample of at least 176 borehole logs. Including the previously withheld data regarding over 4,000 boreholes, the approximate 10% sample would be about 575+ borehole logs to be analyzed prior to the conclusions reached in the FSEIS, magnifying the inadequate analysis by NRC Staff in creating that environmental assessment. ST LaGarry:5 (OST-29). As Dr. LaGarry testified: “In my experience and training, the NRC Staff’s methodology is fundamentally flawed and testimony based on the NRC Staff’s review cannot be relied upon for any legitimate purpose.” *Ibid.*

Consolidated Intervenors respectfully contend that the evidence from the post-

FEIS analysis, post-license issuance, and post-Hearing release of these records previously unavailable to Intervenors or the NRC Staff, clearly show the existence of numerous faults and a sinkhole, completely undermining the basis for the conclusions reached in the FEIS that Applicant has shown it can contain mining solutions and safely operate the proposed mine without contaminating water supplies at and outside the mining area.

### **Thinning of Confinement Layers.**

In his Opening Testimony, Dr. LaGarry observed:

The thickness of a geological stratum depends of several factors, including how it was deposited onto the ancient landscape, the lateral limits of the depositing environment, and whether or not it was partly eroded by subsequent geological activity. Such an assessment is difficult in the subsurface, and requires extensive drilling or seismic refraction techniques to determine. Despite these difficulties, Powertech conceded its initial application that the upper confining layers thin and that breaches exist. Based on this admission, confinement does not exist at the site.

OT LaGarry:5 (INT-13).

While data from extensive drilling existed, it was not obtained by Applicant nor sought by NRC Staff until after the preparation of the FSEIS.

### **Perforations by new and existing wells.**

As the evidence shows, the third pathway for mine fluids to breach containment is through existing wells. Dr. LaGarry in his Opening Testimony noted that Powertech's application repeatedly mentioned "thousands of exploratory wells," along with wells that supply drinking water (the uranium-bearing strata are a local drinking water supply) and water for livestock. In addition, many of these wells are abandoned and, in Dr. LaGarry's opinion, most likely improperly plugged.

Once mining begins, and minerals are being extracted, flow pathways within the uranium-bearing rocks will change, potentially creating circumstances in which any one of these wells could allow lixiviant to breach confinement. Once into adjacent water-bearing strata or the land surface, contaminants can enter rivers and flow downstream with each successive rain event, or flow down gradient into other water supplies.

OT LaGarry:5 (INT-013).

According to the final environmental impact statement (Office of Federal and State Materials and Environmental Management Programs 2014), there are some 4,000 exploration drill holes representing historic exploration activities. Also, Applicant drilled approximately 115 exploration holes, including 20 monitoring wells. And, according to the environmental impact statement, Applicant cannot confirm that all historic borings were properly plugged and abandoned. However, as reviewed by Drs. LaGarry and Moran, an infrared map of a portion of the Burdock area shows an alkali pond area that Powertech concedes was formed as a result of unplugged borings. OT LaGarry:5 (INT-13); \_\_\_ Moran:\_\_\_ (OST-001).

According historical studies of the area under the auspices of the Tennessee Valley Authority, after extensive pump tests in the Burdock area in 1979, Boggs concluded that “aquifer test results indicate...Fuson member...is a leaky aquitard separating the Fall River and Lakota aquifers” which Boggs “believed to be the result of: “...(2) direct connection...via **numerous old unplugged...boreholes.**” (Emphasis added). Boggs & Jenkins, 1979 “Analysis of Aquifer Tests Conducted at the Proposed Burdock Uranium Mine, Burdock, SD,” ABSTRACT, p. 31 See, also, *Ibid*, p. 1, 5 (leakage “may be the result of...old unplugged exploration holes”), 16.

For the Dewey area, Boggs concluded from the TVA pump tests: “There is evidence that hydraulic communication between the Fall River and Lakota aquifers occurred during the Dewey test.” Boggs, J.Mark, 1983 “Hydrogeologic Investigations at Proposed Uranium Mine Near Dewey, SD,” CONCLUSIONS, p. 21.

The FSEIS also confirms that aquifer pumping tests and a numerical groundwater model developed by the applicant using site-specific geologic and hydrologic information show a hydrogeological connection between the Lakota and Fall River Formations through the intervening Fuson Shale in the Burdock area resulting from improperly installed wells or improperly abandoned exploration holes completed in the Fall River and Lakota Formations. Based on this assessment of the impact of boreholes at the site, there is no confinement and transmission of lixiviant into the environment surrounding the site is extremely likely. OT LaGarry:5-6 (INT-013).

#### **The problem of artesian flow**

Dr. LaGarry testified that artesian flow occurs when there is a hydrologic connection, through faults or highly permeable strata, between groundwater sources high on the landscape and the land surface lower down. “The weight of water in overlying strata exerts pressure downward into water within the uranium-bearing strata, which can then be released as artesian water flow (like a fountain) where the topographically lower uranium-bearing strata is exposed at the surface, or where it is punctured by drilling.” OT LaGarry:6 (INT-13).

According to Dr. LaGarry, artesian flow was observed or predicted by Applicant in its Dewey-Burdock Project proposal, and was observed directly at the Black Hills

Army Depot less than 10 miles to the south (U.S. Army Corps of Engineers 1992). Artesian flow is most likely where the upper confining layer is perforated by secondary porosity, poorly constructed or improperly sealed exploration wells, or thinning or absence of upper confining layers. Artesian flow could therefore transmit lixiviant, the most toxic mineral-laden of waters, onto the land surface and into Cheyenne River alluvium and discharge large amounts of contaminants into aquifers or faults in a very short time. “In order for artesian flow to occur at the Black Hills Army Depot, the water must originate topographically higher in the Black Hills and pass through the Dewey-Burdock area. Were this to happen with oxidant-charged lixiviant, contaminated groundwater would rust any metal-contained ordnance and release its contents into the environment.” OT LaGarry:6 (INT-13).

**The problem of horizontal flow.**

As Dr. LaGarry testified, “confining layers adjacent to uranium-bearing strata limit the unwanted spread of contaminants from an ISL site.” OT LaGarry:6 (INT-13). For the INT’s expert, horizontal flows within the uranium-bearing strata are also of concern. “Such flow can rapidly redirect lixiviant or mine waste away from the mine site and into unexpected breaches in the confining layers.” *Ibid.*

In its Application to the NRC, Powertech reports horizontal flows within the uranium-bearing strata (the Inyan Kara Group) of up to 35.5 meters/day (Chilson Member) based on local conditions, and of up to 6,000 ft/day elsewhere in the Black Hills region. Dr. LaGarry calculated that “even if secondary porosity, artesian flow, or lack of confinement did not contaminate nearby water supplies, down gradient flow along

the Cascade and Chilson anticlines (Rothrock 1931a, 1931b, 1948) would transmit contaminants to the major, mapped faults north of the Pine Ridge in Nebraska in less than 5 years (using the smaller value).” OT LaGarry:6-7 (INT-13).

Dr. LaGarry concluded, even prior to the acquisition and release of the numerous likely un- or improperly plugged borehole logs and data, that:

[I]t is my expert opinion that ISL mining in the Edgemont, South Dakota cannot be adequately contained. Published reports of artesian flow, the acknowledged and prevalent potential lack of confinement due to secondary porosity and drilling, along with potentially high horizontal flow in the uranium-bearing strata indicate that during the course of its operation the Dewey-Burdock ISL Project will most likely contaminate the region with unconfined lixiviant. This contamination will pollute and render unusable groundwater and surface water southwards into Nebraska and surface waters within the Cheyenne River drainage eastwards into greater South Dakota. It’s very likely that the oxidants used to free the uranium will also cause the destruction of underground storage containers and release their contents into the area’s ground and surface waters. OT LaGarry:7 (INT-13). See, OT Moran:18-22 (OST-1).

### **Problem with Applicant’s Models**

Critical to the deficiencies of the analysis conducted by the NRC Staff are its reliance upon materially flawed use of the models prepared by the Applicant pertaining to the geohydrology of the Dewey-Burdock areas. See, also, ISL animation (APP-20). The limited and statistically meaningless drilling data provided by Applicant, together with its models provided to the NRC Staff, provided the basis for the conclusion of the Staff that the two aquifers to be simultaneously mined were isolated or sufficiently isolated so as to be able to contain mining fluids and thereby prevent contamination of water resources.

Consolidated Intervenors respectfully contend that the simple models in this case

showing the Fuson as a confining layer were too simplistic and improperly based upon statistically deficient evaluation of borehole data and that Applicant failed to provide and NRC Staff failed to seek, obtain and utilize existing evidence of fractures, faults, channels in its FSEIS analysis.

As noted by Boggs, referring to the Dewey area: “Hydrologic conditions in...site region are complex due to hydrologic boundaries (e.g., aquifer outcrop zone & Dewey Fault) and heterogeneity of the aquifer system. Under such conditions **“simple analytical methods cannot be applied with an acceptable level of confidence”** Boggs, J.Mark, 1983 “Hydrogeologic Investigations at Proposed Uranium Mine Near Dewey, SD,” RECOMMENDATIONS, p. 22.

#### **Applicant and Staff Rebuttal to Dr. LaGarry’s Findings**

By way of example, CIs note that in its December 4, 2014, Response to the OST motion to admit the new testimony of Dr. LaGarry, the Applicant included a rebuttal Affidavit, in Question and Answer format, from its Chief Geologist, Frank Lichnovsky and Hal DeMuth, senior engineer/hydrologist and principal of Petrotek Engineering Corporation. APP-074(P) When asked, at Question 15, to comment on Dr. LaGarry’s findings that indicated several boreholes were plugged with “fence posts” and “broken steel,” Mr. Lichnovsky responds:

With respect to the allegation that holes were plugged with ‘wooden fence posts,’ this likely refers to the fact that a fence post may have been placed in the top of the hole after plugging to mark the hole. APP-074(P) at 10. As for the “broken steel” he continues:

With respect to Dr. LaGarry’s allegation about holes being plugged with ‘broken steel,’ there are times that the drill pipe becomes stuck in the hole

while drilling. If the drill pipe cannot be retrieved, it is standard practice to plug the hole with cement and leave the drill pipe in place.

Id.

In the Staff's Response to the same OST motion, filed on December 9, 2014, the Staff included a rebuttal Affidavit, also in Question and Answer format, from James Prikryl, Senior Research Scientist at the Southwest Research Institute and Thomas Lancaster, hydrologist with NRC's Office of Materials Safety and Safeguards. NRC-175. When asked, also at Question 15, for their comments on Dr. LaGarry's findings, Messrs. Prikryl and Lancaster had this to say:

With regard to the assertion that boreholes were plugged with wood, wooden fence posts may have been placed in the top of the hole after plugging to mark the borehole.

NRC-175 at 7. And for the broken steel:

With regard to the assertion that boreholes were plugged with ferrous metals such as steel, when drill pipe becomes stuck during drilling and cannot be retrieved, it is standard drilling practice to plug the hole with cement and leave the pipe in place.

Id.

The Consolidated Intervenors believe this near identical response accurately characterizes Staff's interpretation of the "independent evaluation" by the agency that NEPA requires. 40 CFR § 506.5(a). *See also, Greater Yellowstone Coal. v. Kempthorne*, 577 F. Supp. 2d 183, 201 (D.D.C. 2008) (agency must cogently explain basis for terminology such as "small" impact); *Sierra Club. v. Mainella*, 459 F. Supp. 2d 76, 100-01 (D.D.C. 2006) (same); *Motor Vehicle Manufacturers Ass'n v. State Farm Mutual*

*Automobile Ins. Co.*, 463 U.S. 29, 43 (1983). (agency decision arbitrary and capricious where it “runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise”).

### **Contention 3: Proposed Conclusions of Law**

Based on the foregoing factual discussion, the Consolidated Intervenors propose that the Board conclude that the FSEIS fails to satisfy the NEPA requirements for independent evaluation and accuracy in its environmental analysis.

Consolidated Intervenors also adopt the Answers, Proposed Findings of Fact and Proposed Conclusions of Law of the Oglala Sioux Tribe for Contention 3.

### **CONTENTION 4: FAILURE TO ADEQUATELY ANALYZE GROUND WATER QUANTITY IMPACTS**

**(1) To what extent, if any, can the NRC rely upon analyses conducted by EPA or the State of South Dakota to fulfill its NEPA responsibilities?**

**(2) Are the permitting processes of other agencies adequate to assess ground water quantity impacts?**

The Consolidated Intervenors submit that the NRC’s own regulations address this two-part question and require the agency to conduct its own analyses. 10 C.F.R. § 51.90 requires that a final EIS (or SEIS) be prepared “in accordance with” 10 C.F.R. § 51.71 (“DEIS requirements”). 10 C.F.R. 51.71(d), in turn, requires:

Consideration will be given to compliance with environmental quality standards and requirements that have been imposed by Federal, State, regional, and local agencies having responsibility for environmental protection, including applicable zoning and land-use regulations and water pollution limitations or requirements issued or imposed under the Federal Water Pollution Control Act. **The environmental impact of the proposed**

**action will be considered in the analysis with respect to matters covered by environmental quality standards and requirements irrespective of whether a certification or license from the appropriate authority has been obtained.**

(emphasis added). As such, the NRC bears the burden for its own environmental determinations. The “consideration” required by NRC regulations places an affirmative duty on the agency. In contrast, the regulations do not allow for “reliance” as that would relieve the agency of its duty. The same can be said for any deference to state or local authority, which would certainly shift the NRC’s responsibilities under federal law into other jurisdictions.

Federal courts have agreed. *See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989) (Explaining that NEPA requires federal agencies to examine the environmental consequences of their actions before taking those actions, in order to ensure “that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast.”); *Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 97 (1983) (explaining that NEPA “ensures that the agency will inform the public that it has indeed considered environmental concerns in its decision making process.”); *Morongo Band of Mission Indians v. Federal Aviation Administration*, 161 F.3d 569, 575 (9th Cir. 1998) (“NEPA was created to ensure that agencies will base decisions on detailed information regarding significant environmental impacts and that information will be available to a wide variety of concerned public and private actors.”).

Under NEPA, the EIS is the central clearinghouse for the “detailed information regarding significant environmental impacts.” *Id.* As the acting agency, the NRC is responsible for “high quality” analysis of environmental impacts that NEPA requires. 40 CFR § 1500.1(b).

#### **Contention 4: Proposed Findings of Fact**

As described in the testimony of Dr. Moran, the failure of the FSEIS to adequately or properly analyze ground water quantity impacts for the Dewey-Burdock area aquifers proposed to be mined, involves failures in determining water consumption and water balance. OT Moran:20-21 (OST-001); RT Moran:1-8 (OST-018). This failure stems from two false premises or assumptions: that only minimal amounts of water will actually be “used” and that sufficient data has been obtained as to realities of recharge and water balance. RT Moran:7 (OST-018).

The FSEIS is further deficient by the failure of NRC Staff to insist upon the Applicant investing sufficient resources to conduct the necessary studies and thereby obtain the detailed information required to be gathered for Staff to be able to conduct a responsible analysis of the potential impacts on water quantity in the aquifer(s) to be mined or potentially affected. RT Moran:7-8 (OST-018).

As Keene noted in his study of the area, “The determination of a recharge rate is extremely important in a study of ground-water conditions of a watershed...” Keene, Jack R. 1973, *Ground-water Resources of the Western Half of Fall River County, S.D.*; S.D.

Department of Natural Resource Development, Geological Survey, Report of Investigations, p. 35. As Keene further elaborated that, while the “usual” methods for obtaining such information:

[A]re costly, time consuming and involved extensive pumping tests, infiltration tests, and a relatively large amount of instrumentation...only by the determination of a recharge rate for a particular aquifer can realistic withdrawal rates be applied to preclude ‘mining’ of our groundwater resources...Determination of a recharge rate for the Fall River Formations would be extremely difficult...because of the contribution of water from the Minnelusa Formation along the faults in the area.

OT Moran:20-21 (OST-018)(quoting and citing Keene, *Id* at 35-36).

**A. Water Consumption.**

Applicant, through the testimony of DeMuth, as adopted in the FSEIS, dismisses the massive consumption of water due to elevated levels from baseline remaining after post-reclamation procedures, and instead, that only the quantity of aquifer water physically removed by the mining/processing processes, was important for the agency to determine. Demuth answer to Question 27. As Dr. Moran opined: “[D]efining the hydro-geological setting is critical to analyzing potential ground water quantity impacts.”

RT Moran:7 (OST-18).

Dr. Moran further testified and Consolidated Intervenors contend the evidence shows, Applicant’s proposed ISL mines and processing plants “will use and contaminate tremendous quantities of ground water, thereby preventing/ restricting the use of these waters by others.” OT Moran:26 (OST-001); RT Moran:7 (OST-018).

Dr. Moran notes that the FSEIS states that Applicant’s consumptive use will be relatively small, with the disposal of some 2% of the water disposed of as liquid waste

(underground disposal permitted). “However, this estimate clearly neglects the fact that much of the water from either aquifer will have been contaminated...this water is no longer available for present or future uses within the exempted aquifer zone. Clearly the SEIS under-estimates the volumes of water that are...contaminated.” OT Moran:27 (OST-001).

Dr. Moran noted that reliable estimates of water use or consumption by Applicant’s proposed mines are further made unclear, due in part, to the use of differing water use volumes in different sections of the FSEIS, depending on the type of disposal systems used. OT Moran:26-27 (OST-001).

**B. Water Balance.**

As Dr. Moran testified and Consolidated Intervenors contend, the FSEIS “relied on an inadequate and unreliable analysis of water use, and failed to provide a water balance.” OT Moran:27 (OST-001).

A detailed water balance should include “measured data for all water inputs and outputs related to all mine operations and all sources of water that might influence these operations. Essentially, any detailed ground water textbooks describes the workings of such water balances.” OT Moran:27 (OST-001) [citing, Freeze & Cherry (1979 and ICCMM (2012) and Golder Assoc. (2011) which “represent two industry studies that describe how water balances should be applied at mine operations”].

Dr. Moran testified that the water balance in the FSEIS “did not follow these accepted methodologies.” OT Moran:27 (OST-001). “In my opinion, a reliable water balance was not prepared and moreover, could not be prepared until the detailed testing

described in my testimony has been completed.” OT Moran:28 (OST-001). By way of example, Dr. Moran testified that what the authors claim is a water balance on page 2-36 of the FSEIS, “clearly is not.” OT Moran:27 (OST-001). Dr. Moran noted it is also labeled as “Typical Project-Wide Flow Rates” which “is not a water balance for the D-B site or D-B operations.” *Id.*

It lack basic components of a water balance, including detailed, measured data for volumes of water entering the system and losses (e.g. volumes of ground water available in the various aquifers, evaporation from land-application facilities, under-going UIC injection, etc and *fails to calculate an actual balance.*” (Italics in original).  
OT Moran:27-28 (OST-1).

The record shows the FSEIS was further deficient in its failure to consider the presence and impact of faults in its determination of the recharge rates of the Inyan Kara’s Fall River and Lakota formations. “Keene also concluded the recharge of the Inyan Kara by the Minnelusa formation occurred in part through ‘fault zones’.” OT Moran:20 (OST-001).

#### **Contention 4: Proposed Conclusions of Law**

Based on the factual considerations discussed above, Consolidated Intervenors propose that the Board conclude that the FSEIS fails to satisfy the requirement to “base decisions on detailed information regarding significant environmental impacts” that NEPA was created to ensure. *Morongo Band of Mission Indians v. Federal Aviation Administration*, 161 F.3d 569, 575 (9th Cir. 1998. *See, Or. Env’tl Council v. Kunzman*, 817 F.2d 484, 495 (9th Cir. 1987) (NEPA “imposes a duty on federal agencies to gather

information and do independent research when missing information is important, significant, or essential to a reasoned choice among alternatives.”) (citations omitted); *See also, Greenpeace Found. v. Mineta*, 122 F. Supp. 2d 1123, 1135 n.16 (D. Haw. 2000); *Idaho Pub. Util. Comm’n v. ICC*, 35 F.3d 585, 596 (D.C. Cir. 1994).

NEPA mandates that where there is data “essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.” 40 CFR § 1502.22(a). The FSEIS fails to include the data essential to reasonably analyze and evaluate the impacts of the ground water quantities proposed to be used by the Applicant.

Consolidated Intervenors also adopt the Answers, Proposed Findings of Fact and Proposed Conclusions of Law of the Oglala Sioux Tribe for Contention 4.

#### **CONTENTION 6: FAILURE TO ADEQUATELY DESCRIBE OR ANALYZE PROPOSED MITIGATION MEASURES**

##### **(1) Does NEPA require an analysis of mitigation measures?**

The Consolidated Intervenors point out that NEPA requires an agency to analyze the environmental impact of a project on, *inter alia*, “air and water and other natural systems, including ecosystems,” 40 C.F.R. § 1508.8(b), including by disclosing “any adverse environmental effects which cannot be avoided should the proposal be implemented.” *Id.* at § 1502.16; *See also* 10 C.F.R. Pt. 51, Subpt. A, App. A, § 6. The impacts on these resources must be disclosed irrespective of immediate human

consumption of the affected groundwater. Where, as in the case of ISL mining, adverse environmental effects cannot be avoided, NEPA requires a thorough discussion of mitigation measures. NEPA documents must: (1) “include appropriate mitigation measures not already included in the proposed action or alternatives,” and (2) “include discussion of . . . Means to mitigate adverse environmental impacts (if not already covered under 1502.14(f)).” 40 C.F.R. § 1502.14(f); 40 C.F.R. § 1502.16(h). *See also, Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989) (“omission of a reasonably complete discussion of possible mitigation measures would undermine the ‘action-forcing’ function of NEPA”).

**(2) Does NEPA require a showing of the effectiveness of proposed mitigation measures?**

The Consolidated Intervenors direct the Board to the recent case of *Southfork Band Council v. Interior*, before the 9<sup>th</sup> Circuit Court of Appeals, where the court held that, “An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be *effective*” (emphasis added). *Southfork Band Council v. Interior*, 588 F.3d 718, 727 (9<sup>th</sup> Cir. 2009)

**(3) How detailed an analysis of proposed mitigation measures is required?**

Again, NEPA itself provides this answer. NEPA documents must be based on data of “high quality,” 40 C.F.R. § 1500.1(b), collected with methods that reflect “[a]ccurate scientific analysis,” *id.*, and “scientific integrity.” *Id.* at § 1502.24. An agency may not rely on “conclusory or unsupported suppositions,” regarding mitigation. *McDonnell Douglas Corp. v. U.S. Dep’t of the Air Force*, 375 F.3d 1182, 1186-87 (D.C. Cir. 2004);

*see also, Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989) .

**(4) Are draft mitigation plans needed or to-be-drafted mitigation plans acceptable in the FSEIS?**

An EIS that relies on mitigations plans to be drafted at some point in the future dilutes the NEPA requirements to the point of meaninglessness. As the court in *Northern Plains*, ruled:

NEPA requires that the agency provide the data on which it bases its environmental analysis. *See Lands Council*, 537 F.3d at 994 (holding that an agency must support its conclusions with studies that the agency deems reliable). **Such analyses must occur before the proposed action is approved, not afterward.** *See LaFlamme v. F.E.R.C.*, 852 F.2d 389, 400 (9<sup>th</sup> Cir. 1988) (“[T]he very purpose of NEPA’s requirement that an EIS be prepared for all actions that may significantly affect the environment is to obviate the need for speculation by insuring that available data is gathered and analyzed prior to the implementation of the proposed action.”) (internal citation and quotation marks omitted).

(emphasis added). *Northern Plains*, 668 F.3d at 1083-1084. *See also, Southfork Band Council v. Interior*, 588 F.3d 718, 727 (9<sup>th</sup> Cir. 2009); *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989). *McDonnell Douglas Corp. v. U.S. Dep’t of the Air Force*, 375 F.3d 1182, 1186-87 (D.C. Cir. 2004).

**Contention 6: Proposed Findings of Fact**

The section of the FSEIS considering mitigation measures consists, almost entirely, of plans to be developed at some time in the future after the public comment and review process contemplated by NEPA has closed. NRC-008-B, FSEIS at 6-1 through 6-19.

Wildlife biologist Peggy Detmers, testified that the FSEIS failed to adequately address the existence of whooping cranes during migration and other endangered animals

within the described area of the Applicant's proposed mine and satellite processing plant. Opening Testimony of Detmers )(INT-010).

### **Contention 6: Proposed Conclusions of Law**

Based on the factual concession in the FSEIS, and the unequivocal dictates of the federal law regarding NEPA requiring the "essential component of a reasonably complete discussion is an assessment of whether the proposed mitigation measures can be effective," the Consolidated Intervenors propose that the Board concludes that the FSEIS violates NEPA by failing to base its conclusions on the "high quality" data reflective of "accurate scientific analysis" and "scientific integrity" that the law requires. 40 CFR § 1500 et.seq., *Southfork Band Council*, 588 F.3d at 727. Where there is no proposed mitigation measure, there can be no assessment of whether the measures can be effective.

Consolidated Intervenors also adopt the Answers, Proposed Findings of Fact and Proposed Conclusions of Law of the Oglala Sioux Tribe for Contention 6.

### **CONTENTION 9: FAILURE TO CONSIDER CONNECTED ACTIONS**

**(1) To what extent, if any, can the NRC rely upon analyses conducted by EPA or the State of South Dakota to fulfill its NEPA responsibilities?**

**(2) Are the permitting processes of other agencies adequate to assess baseline, potential impacts, or proposed mitigation issues required to be addressed in a FSEIS?**

**(3) Does NEPA require that the agency independently (a) identify and understand what the monitoring and mitigation measures will be, (b) assess and confirm that the mitigations will actually be implemented, and/or (c) assess and confirm that they**

will be effective?

**(4) In *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352–53 (1989) the Court recognized that some of the environmental effects discussed in the FEIS “cannot be mitigated unless nonfederal government agencies take appropriate action,” but stated that “it would be incongruous to conclude that the [U.S.] Forest Service has no power to act until the local agencies have reached a final conclusion on what mitigating measures they consider necessary.” How does this decision and principle apply to this case?**

The first three questions presented are essentially the same questions as presented for Contentions 4 and 6. As such, the Consolidated Intervenors submit the same authority as referenced in its answers to those questions.

As for the interplay of *Robertson v. Methow Valley Citizens Council*:

*Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989), the Consolidated Intervenors adopt the OST Answer.

### **Contention 9: Findings of Fact and Conclusions of Law**

Consolidated Intervenors adopt the Proposed Findings of Fact and Proposed Conclusions of Law of the Oglala Sioux Tribe for Contention 9.

## CONCLUSION

Based on the foregoing, Consolidated Intervenors request that the Board rule that the FSEIS fails to meet the requirements under NEPA and the NHPA and thereby REVOKE the issuance of the source materials license to Powertech.

Dated this 9th day of January, 2015.

Respectfully submitted,

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POWERTECH (USA) INC., )  
)  
(Dewey-Burdock In Situ Uranium Recovery )  
Facility) )

Docket No. 40-9075-MLA

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing “CONSOLIDATED INTERVENORS’ PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW AND RESPONSE TO POST-HEARING ORDER” in the captioned proceeding were served via email per the Board’s order in this matter, on the 9<sup>th</sup> day of January, 2015, which to the best of my knowledge resulted in transmittal of same to those on the EIE Service List for the captioned proceeding.



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