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June 18, 2012

Matt Hicks
Senior Hydrologist
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South Dakota Department of Environment & Natural Resources
523 East Capitol Avenue
Joe Foss Building
Pierre, SD 57501-3182

Re: Response to May 25, 2012 Preliminary Technical Comments
Dewey-Burdock Project Groundwater Discharge Plan Application

Dear Mr. Hicks:

On behalf of Powertech (USA) Inc., this letter is provided in response to the May 25, 2012 preliminary technical comments for the above referenced application for a Groundwater Discharge Plan (GDP). For convenience, the comments are provided below along with the responses. Application replacement pages are enclosed along with an index of changes (two hard copies and one electronic copy on CD).

Please note that responses will be provided at a later date for two of the technical comments and a related typographical issue. Revised alluvial cross sections are being prepared in response to technical comment 1 and typographical issue 2, and conceptual design drawings for the catchment areas are being prepared in response to comment 16. As discussed during our June 14 conference call, these will be provided in approximately 2 weeks.

Technical Comment 1: On Figure 3.6-4, the lithology and water levels depicted on the cross sections do not appear to correspond to the lithology and water levels described on the alluvial drill hole logs in Appendix 3.6-A or the features on the map on Figure 3.6-4. Please correct these discrepancies and submit larger depictions of the two cross sections to include geology/hydrology data from the alluvial drill hole logs. If additional drill hole logs were used to construct these cross sections, please identify them on the cross sections and map, and include the logs with the application.

Response: The response to this comment will be provided by approximately July 2. Powertech (USA) will present a revised cross section plate to replace Figure 3.6-4.

Technical Comment 2: Sections 3.7.2.3.1 and 3.7.2.3.2 state that the existing domestic wells (13, 40 and 4002) will be removed from domestic use and replaced as needed. Please elaborate as to the proposed locations (approximate in relation to the land application areas and POP zones) and construction of any replacement domestic wells.

Response: As described in the GDP application, Powertech (USA) will remove all domestic wells within the project area from private use prior to ISR operations. This includes wells 13, 40 and 4002. Powertech (USA) will work with each well owner to determine a) whether water

supply replacement is necessary, and b) the appropriate replacement water supply alternative, if needed. The two water supply replacement alternatives include drilling a new domestic well or extending a water supply pipeline to the residence. In the first option, Powertech (USA) would drill a new well near the residence. All replacement wells will be constructed in accordance with South Dakota well construction standards in ARSD 74:02:04. This will ensure that the wells will not create a pathway for vertical migration of potential contaminants. Further, all replacement wells will target formations outside of the ore zone of the nearest well fields, which will occur in the Fall River Formation and/or Chilson Member of the Lakota Formation. In the case of wells 13, 40 and 4002, replacement wells, if required, will be further restricted to locations outside of the POP zones and formations outside of the alluvium in order to eliminate potential impacts from the proposed land application systems.

The second water supply replacement alternative is to extend a pipeline from one of the proposed Dewey-Burdock Project Madison aquifer supply wells to the residence. The Madison wells are currently being permitted through the Water Rights Program with the option to provide domestic and stock water to locations inside and near the project area. Replacement pages for Sections 3.7.2.3.1 and 3.7.2.3.2 have been included to describe domestic well replacement procedures.

Technical Comment 3: As replacement domestic wells for existing wells 13, 40 and 4002 could be drilled, please include a discussion on protective, mitigation and corrective action plans in regards to area drinking water wells in Section 6 and in the contingency plan discussion under Section 8.1.

Response: Powertech (USA) will protect domestic wells in and near the project area throughout all phases of the Dewey-Burdock Project. As previously described, Powertech (USA) will remove all domestic wells within the project area from private use prior to ISR operations. Domestic well replacement procedures are described in the previous response and will include drilling a new domestic well or extending a Madison water supply pipeline to the residence. Replacement wells will be protected from potential impacts by locating wells outside of the POP zones, constructing them in accordance with ARSD 74:02:04, and completing them in formations outside of the ore zone targeted in the nearest well fields. This will ensure that there is no plausible pathway for contamination of domestic wells from the proposed land application systems. This will be verified through operational monitoring as described below.

Domestic wells within 1.2 miles (2 km) of the project area will be monitored prior to and during ISR operations, including operation of the proposed land application systems. In accordance with NRC license conditions, samples will be collected quarterly for four quarters prior to operations and annually during operations. Samples will be analyzed for the constituents in Table 6.1-3. To demonstrate protection of drinking water wells during operation of the proposed land application systems, Powertech (USA) will provide the sample results to DENR. The GDP application has been updated to reflect this commitment.

Technical Comment 4: Section 5.3 includes a very brief discussion of leak detection systems for facility ponds. Please expand on this discussion by verifying which of the ponds that are

located either wholly or partially within the proposed POP zones will have leak detection systems, and actions to be taken to differentiate land application water from potential pond seepage/leakage.

Response: Additional text has been added to Section 5.3 to include more detail about the leak detection systems and clarify which ponds will be located either wholly or partially within the proposed POP zones. The radium settling ponds, spare ponds, and central plant ponds will include dual geosynthetic liners with leak detection systems. The storage ponds and outlet ponds will store treated water and will therefore contain a single geosynthetic liner without a leak detection system. All ponds and leak detection systems will be routinely inspected and monitored to protect against potential leakage.

Technical Comment 5: Section 5.8 and Table 5.8-1 present the "estimated end-of-production water quality in the ISR well fields..." Please clarify if this is the water quality at the start of the final restoration phase of the well field/mine, or if this is the treated effluent water quality being sent to the irrigation systems. Is the water quality at this stage of the operation anticipated to represent the worst water quality encountered during operation?

Response: The values shown in Table 5.8-1 represent the estimated ore zone groundwater quality at the completion of uranium recovery. This represents the untreated water quality extracted from the ore zone at the end of uranium recovery and at the beginning of aquifer restoration. This table estimates the worst-case water quality encountered in the ISR well fields, and it was used to estimate the range of concentrations of the treated effluent proposed for land application. However, Table 5.8-1 does not consider treatment or blending and therefore is not directly representative of the effluent proposed for land application. Text has been added to Section 5.8 to clarify the purpose of Table 5.8-1.

Technical Comment 6: Table 5.8-2 presents the estimated quality of the water being land applied. As water quality may change throughout the life of the mine with initially most of the water being production phase bleed water, changing to a mixture of production bleed and restoration water, to finally all restoration water; for what stage is this table representative, and does this represent the estimated worst water quality being land applied? If not, provide an estimated worst-case scenario land application water quality.

Response: The column in Table 5.8-2 called "Estimate Land Application Water Quality" shows the estimated range of water quality proposed for land application. The upper values shown in this table represent the estimated worst-case water quality to be land applied. The typical land application water quality will be better than the upper values, since multiple well fields will typically be in various stages of production and aquifer restoration at one time, with water quality gradually degrading toward the worst case during production and gradually improving to approximately baseline water quality during restoration. In addition, Madison water may be used at any time to improve the land application water quality. Section 5.8 has been revised to include this information.

Technical Comment 7: Wells 15 and 43 are both located within land application areas, however, depending on the condition of these wells, they could potentially act as conduits for land application waste water to enter ground water. Please submit well completion logs for well 15 and 43 and a discussion of the condition of the wells, and measures to protect these wells from potential damage. The application states that well 43 is to be converted to a monitoring well. Is well 15 going to remain a stock well, or will it be converted to a monitoring well or abandoned?

Response: Well completion reports are not available for wells 15 and 43. Based on TVA records, both wells were constructed prior to 1977. Due to the uncertainty in the well construction methods and existing condition of these wells, the GDP application has been revised to show that Powertech (USA) commits to plugging and abandoning wells 15 and 43 prior to operation of the Burdock land application system. The wells will be plugged in accordance with ARSD 74:02:04:67 with bentonite or cement grout. Sections 3.5, 3.7.2.3.2 and 8.1.1 have been updated to reflect this commitment.

Technical Comment 8: Please submit the well logs and construction information for the existing wells listed in Tables 6.1-1 and 6.1-2.

Response: Appendices 3.7-A, Well Inventory Summary Tables, and 3.7-B, Well Inventory, have been added to the GDP application in response to this comment. Appendix 3.7-A contains a list of all wells within 1.2 miles (2 km) of the project area, including location, completion interval, well depth, and use. Appendix 3.7-B contains available well completion reports and construction information.

Technical Comment 9: Section 6.2.1 states samples collected from the sampling locations in Table 6.2-1 will be analyzed for constituents listed in Table 4.1-2. However, Section 6.2.1 also states samples collected from the sampling locations in Table 6.2-1 will be analyzed for parameters presented in Table 6.2-2. Please clarify which parameter list, or both, will be used for analyses on samples collected from locations listed in Table 6.2-1.

Response: Both parameter lists will be used for the operational stream sampling locations listed in Table 6.2-1. Prior to ISR operations, Powertech (USA) will sample stream sampling sites listed in Table 6.2-1 monthly for 12 consecutive months. These pre-operational samples will be analyzed for the list of parameters in Table 4.1-2. This extensive parameter list will comprehensively characterize pre-operational (ambient) water quality, including temporal variations. The list was developed in accordance with NRC regulatory guidance and in consultation with NRC and the DENR Minerals & Mining Program. During ISR operations, including operation of the proposed land application systems, Powertech (USA) will collect quarterly operational samples, which will be analyzed for the abbreviated parameter list in Table 6.2-2. This sample list was prepared in accordance with NRC regulatory guidance and is designed to detect potential impacts from the Dewey-Burdock Project. As described on page 146 of the GDP application, additional field parameters will be analyzed during operational sample

collection, including pH, conductivity and temperature. No changes were made to the GDP application in response to this comment.

Technical Comment 10: Please submit a map showing the location of the sampling locations listed in Table 6.2-1.

Response: Figure 6.2-1, Operational Surface Water Sampling Locations, has been added to the GDP application. The new figure shows the locations of the operational stream and impoundment sampling sites.

Technical Comment 11: Section 8.3 includes an introduction to a discussion on trigger levels for metals and metalloids and the potential for buildup of metals and metalloids over time in the land application areas. However, the discussion of these trigger levels includes only the metalloids arsenic and selenium. What are the soil trigger levels for metals and other metalloids?

Response: As described in Section 8.3, Powertech (USA) anticipates that concentrations of metals and metalloids will be low in the land application water. Nevertheless, Powertech (USA) recognizes the potential for buildup over time and proposes to sample an extensive list of metals and other trace elements as described in Section 6.4 and Table 6.4-1. Trigger values are proposed for arsenic and selenium, since these are the two parameters for which DENR expressed concern in the August 2010 review of the Dewey-Burdock Project groundwater discharge permit draft monitoring plan proposal. Section 8.3 has been updated to reflect a commitment to analyze the results of monitoring for all parameters in Table 6.4-1 and propose additional trigger values if increasing trends are observed. This will be provided in the written report submitted to DENR following each land application cycle described in Section 11.

Technical Comment 12: Appendix 3.6-A does not appear to include all of the logs from alluvial wells discussed in the application and associated figures. Please provide the logs for all alluvial wells discussed in the application.

Response: Well logs and well completion reports are provided in Appendix 3.7-B, which is described in the response to Technical Comment 8. Well completion reports are available for all existing alluvial wells. No changes were made to the application in response to this comment.

Technical Comment 13: Appendix 4.2-A, the Table of Contents for this appendix list several data qualifiers, however the data tables do not indicate in which data set these qualifiers were encountered. Please update the application accordingly.

Response: The data qualifiers are used throughout Appendix 4.2-A in the individual well summary tables. For example, in the well 676 summary table, "b" was reported with the May 2010 laboratory conductivity result, "d" was reported with the June 2010 TDS result, "h" was reported with the March 2010 alkalinity result, and "j" was reported with the January 2010 dissolved lead-210 result. The remaining data qualifier, "l", was reported on various summary tables, e.g., the October 2008 total arsenic result. The Table of Contents in Appendix 4.2-A has

been updated to reflect that the data qualifiers are used throughout the individual well summary tables.

Technical Comment 14: Appendix 5.7-A has values that are unreadable on several tables, please resubmit these tables so that all of the values can be clearly read.

Response: Attached are replacement pages for the Dewey and Burdock monthly runoff water balance tables, which previously contained several shaded values that were difficult to read. When regenerating the monthly water balance tables, several minor discrepancies were located and corrected. These include the following:

- Corrected land application area from 314.5 to 315 acres
- Corrected monthly average PET value for February from 1.28 to 1.23 inches (where applicable)
- Corrected monthly average PET value for November from 2.02 to 2.03 inches (where applicable)
- Corrected monthly seepage estimates to account for the number of days in each month (where applicable)
- Correct shading to correspond to the maximum estimated catchment area water depth for each modeled time period

Technical Comment 15: Please submit a map showing the proposed ISR well fields in relation to the land application areas, bermed catchment areas and proposed POP zones.

Response: The proposed POP zones, catchment areas, and potential well field areas have been added to Figure 2.3-2, Proposed Land Application Systems. The revised figure shows limited overlap between the potential well field areas and the proposed land application systems. These are described below for the proposed Dewey and Burdock land application systems. The GDP application has been updated to include this information.

In the Dewey area, the only land application areas that will potentially overlap with well fields are designated for standby operation. These standby areas generally will not be used at the same time as the underlying well fields, but there is potential for simultaneous operation of the standby land application systems and overlapping well fields. Potential impacts will be mitigated as described below.

In the Burdock area, there will be very limited potential overlap between the proposed land application systems and potential well field areas. In this case overlap will likely be limited to perimeter monitor wells, which are shown as rings 400 feet from the ore bodies on Figure 2.3-2.

Although overlap between active land application areas and potential well field areas will be limited, there may be times that production, injection and monitor wells are operated within active land application areas. Powertech (USA) will design and construct the well fields and land application systems to avoid any potential conflicts and minimize potential risks. The irrigation nozzles will be suspended above the well head covers, and wells and fences will be positioned to

avoid the center pivot wheel pathways. Injection, production and monitor wells will have sealed well heads to prevent entry of the land application water. The well heads also will have sufficient aboveground casing to ensure that surface water cannot enter the wells. Injection and production pipelines will be buried and will not conflict with land application systems. Perimeter monitor wells will have pressure transducers that will allow remote monitoring of water levels. If necessary, discharge piping and pressure transducer cable will be installed from the monitor wells to remote sampling locations outside of the land application area. This would allow Powertech personnel to measure water levels and sample monitor wells without traveling through active land application areas.

Technical Comment 16: Several sections and figures in the application discuss collection areas, berms and catchment areas; however, the application is not very clear about these areas. Please elaborate and include discussions on the locations of collection areas, catchment areas, land application berms and catchment area berms; construction of the berms around both the catchment areas and land application areas (include a typical cross section construction design that traverses the land application berms, land application area, catchment area, catchment area berms and collection area); and how water is to be conveyed to the collection and catchment areas. Please also include a discussion of berm elevation and design freeboard.

Additionally, as the SPAW model is a one-dimensional model that does not include flow routing or channel descriptors, please include a discussion and map indicating where in the collection or catchment areas, standing water likely is to occur, how much standing water may be anticipated during normal operations and during heavy precipitation events, the impacts this standing water would have on groundwater, and what threshold levels of runoff and/or standing water would trigger land application rates to be adjusted to mitigate and eliminate ponding or standing water.

Response: The response to this technical comment will be provided by approximately July 2.

Technical Comment 17: An additional compliance point monitoring well will be required to be drilled along the proposed POP zone in the NW1/4 of the NW1/4 of Section 3, Township 7S, and Range 1E, between the land application area and the residence located in Section 3.

Response: An additional compliance well has been added as requested. In addition, a corresponding interior well has been added. Table 6.1-1 and Figure 6.1-2 have been updated to reflect these changes.

Typographical Issue 1: On Table 3.2-2, the sum of the "Acreage" column does not match the value listed for totals. Please correct this table as necessary or provide an explanation for the discrepancies.

Response: The sum of values did not match the listed total due to rounding. This has been addressed by modifying Tables 3.2-1 and 3.2-2 to show acreage to two significant digits.

Typographical Issue 2: On Figure 3.6-4, the cross sections show a feature with grey shading, but do not identify it. Please identify or otherwise label this feature. Please also identify the light green circles that are shown on the map, in the legend.

Response: As indicated in the response to technical comment 1, a revised alluvial cross section plate will be provided by approximately July 2. The revise plate will include a legend for all features depicted on the cross section location map.

Typographical Issue 3: Sections 3.7.2.3.2 and 7.0, Table 3.7-4 and Figure 3.7-10 all discuss a domestic well (well 43) within the proposed POP zone and land application area, but there are discrepancies between these sections, table and figure as to the existence and/or status of this well. Please correct the application as needed.

Response: The text, figures and tables have been updated to make it clear that well 43, which is a former domestic well associated with an uninhabitable residence, will be plugged and abandoned prior to operation of the Burdock land application system.

Typographical Issue 4: Section 5.6 discusses data in Tables 5.1-1 and 5.1-2. Table 5.1-2 could not be located in the application materials, please update the application accordingly.

Response: The reference to Table 5.1-2 has been corrected to reference Table 5.2-1.

Typographical Issue 5: Section 5.7.2.2 discusses locations shown on Figure 3.2-4. Figure 3.2-4 could not be located in the application materials, please update the application accordingly.

Response: The reference to Figure 3.2-4 has been corrected to reference Figure 3.2-1.

Typographical Issue 6: On Plates 3.6-5 through 3.6-9, please indicate the location on the corresponding reference maps, the logs that were used to generate the cross sections. Please also identify the boundaries of the land application and catchment areas on the cross sections.

Response: The locations of the logs that were used to generate the cross sections have been added to the index maps on Plates 3.6-5 through 3.6-9. The cross sections have also been revised to show the catchment area boundaries on the index maps and cross sections.

Thank you for the prompt technical review. Please direct any questions regarding these comment responses to Richard Blubaugh at (303) 790-7528 or Jack Fritz at (307) 672-0761.

Sincerely,

Jack A. Fritz

Jack Fritz, P.E.
WWC Project Manager

cc: Richard Blubaugh
Mark Hollenbeck
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Encl: Change Index
Replacement Pages
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