

# STATE OF COLORADO

## DIVISION OF RECLAMATION, MINING AND SAFETY

Department of Natural Resources

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September 25, 2009

Mr. Richard Blubaugh  
Powertech (USA) Inc.  
5575 DTC Parkway, Suite 140  
Greenwood Village, CO 80111

Bill Ritter, Jr.  
Governor

Harris D. Sherman  
Executive Director

Ronald W. Cattany  
Division Director  
Natural Resource Trustee

**RE: Centennial Project, Receipt of Notice of Intent Modification MD-03, File No. P-2008-043**

Dear Mr. Blubaugh:

On September 3, 2009, the Colorado Division of Reclamation, Mining, and Safety (DRMS) received Powertech's proposed modification MD-03 to Notice of Intent to Conduct Prospecting P-2008-043. DRMS initial review indicates that it is incomplete. Please address the following items at your earliest convenience bearing in mind that if you have not addressed these items within sixty days of the date of this letter the DRMS may terminate consideration of the proposed modification (Rule 5.1.3 of the Mineral Rules and Regulations of the Mined Land Reclamation Board).

1. MD-03 proposes temporary storage of ground water pumped to the surface in Baker tanks and states that the tanks will be decontaminated before and after use. Piping from the pumping/injection well to the tanks is to be installed on the ground. Does BakerCorp provide any certification or other assurance that the tanks and water contacting appurtenances, as delivered and set up are suitable for potable water storage? If so, provide documentation and describe the nature of the certification or assurance. If not, provide a plan for testing the tanks and appurtenances to demonstrate that they will not be a source of contamination. Similar demonstration or certification of cleanliness must be provided for appurtenances, if any, that are provided by sources other than BakerCorp, e.g., manifolds, valves, transfer pump. DRMS will further require that the piping to be installed be new and be National Sanitation Foundation or otherwise certified for potable water.
2. Provide details on the specific type(s) of Baker tank(s) to be deployed. If uncovered tanks will be used, describe how contaminant concentration increase through evaporation and dust fall will be mitigated prior to injection and how access by birds and small terrestrial wildlife will be prevented.
3. MD-03 states that the pump test water will "most likely" be injected into the same well from which it is extracted. DRMS will require that all injection wells be specified in MD-03; there will be no latitude to use wells for injection that have not been specifically approved by DRMS for that purpose. At this time, the only potential injection well identified in MD-03 is well IN08-33-PW1.
4. DRMS requires the submittal of mechanical integrity test results, electrical resistivity logs, and well completion reports for all injection wells. MD-03 states that these documents can be made available prior to commencement of injection, which is unacceptable. DRMS must accept the adequacy of information contained in these documents in writing prior to initiation of the pump test proposed in MD-03.

5. Provide details on the fence to be installed around the pump test facilities. These details are needed both to evaluate the effectiveness of the fence to prevent wildlife and livestock access and to estimate the cost of removal of the fence to be included in the amount of reclamation bond to be required.
6. The Section 33 Pumping Test Plan included with MD-03 states on page 5 that the monitoring wells will be located spatially in order to define the regional potentiometric gradients in the Laramie Formation, A<sub>2</sub> Sand, and B Sand. Initial measurements for this purpose must be collected and the data provided to the DRMS prior to commencement of the proposed pumping test. These initial measurements, which may be single hand tagged measurements, if not already done should be taken as soon as possible, and are in addition to the baseline ground water level data to be collected over a 72- to 96-hour period prior to initiation of pump testing as described on page 6 of the Pumping Test Plan.
7. The Section 33 Pumping Test Plan included with MD-03 describes on page 5 well drilling and completion for the wells to be used in the proposed pumping test. DRMS requires submittal of completion and development reports for all wells. Critical to DRMS review are the geophysical logs and drilling/mud logs and Powertech's interpretation of their relation to the stratigraphy.
8. The Section 33 Pumping Test Plan states on page 5 that the locations of the pumping well and monitoring wells installed for and used in previous pumping tests conducted by Powertech "are shown on Figure 4." These wells are not shown on the Figure 4 provided to the DRMS. Since these wells are going to be monitored in the pumping test proposed in MD-02, a map showing their location must be provided. The information listed in item no. 7 above must also be provided for these wells.
9. Has core hole IN-14-33 been drilled? If so, provide a detailed description of the core including the results of any geotechnical testing conducted, and provide the plugging and abandonment report for the hole. If not, depending on the degree of confidence that can be assigned to the aquifer/aquitard relationship interpretations from data taken from the other holes drilled in section 33, DRMS may require that hole IN-14-33 be cored, evaluated, and plugged prior to approval of MD-03.
10. The Section 33 Pumping Test Plan states on page 7 that the Aquifer Test software distributed by Waterloo Hydrogeologic will be used to analyze pump test data; provide the version number for the software that will be used.
11. Discussion on page 8 of the Section 33 Pumping Test Plan under the heading "Produced Water Disposal" raises the following issues:
  - a. The Pumping Test Plan states that Powertech will demonstrate through Mechanical Integrity Testing that there is no potential for injectate to flow from the well into the Laramie Formation where the well passes through that formation. MD-03 lacks discussion of how it will be assured and demonstrated that injectate will not flow into strata above or below the injection well screened strata after it is discharged to that strata, via either natural or manmade (e.g. other wells) pathways.
  - b. The Pumping Test Plan states that the injection well is not expected to be operated under pressure, but allows that the injection might be pressurized as needed. If the injection is pressurized, the potential for

injectate to flow into other water bearing strata above or below the screened interval is increased. If the injection proceeds under atmospheric pressure only, it is unlikely that flow paths other than those occurring under natural conditions in the A<sub>2</sub> Sand will develop, but the development of such new paths even under atmospheric pressure alone cannot be ruled-out.

In order to address issues 11.a and b, Powertech may choose to commit to storing the pump test water in Baker Tanks until the pump test data are analyzed and a demonstration can be made that the A<sub>2</sub> Sand is sufficiently contained to allow pressurized injection without migration of injectate into overlying or underlying strata. However, it is possible hydraulic connection between the A<sub>2</sub> Sand and other strata via open or ineffectively plugged wells will not be detected during the pump test. This is particularly true if injectate were to flow along a leaky well and into a lenticular water bearing strata in the Laramie Formation in which none of the pump test monitoring wells have been screened. See item no. 12 below for further discussion of this issue. Another option would be for Powertech to combine existing available information with a commitment to inject at or slightly above ambient A<sub>2</sub> Sand pressure to demonstrate that injectate will not migrate into overlying or underlying strata, at least not any more than A<sub>2</sub> water would migrate under natural conditions. Alternatively, DRMS will review any other proposals Powertech may proffer to address these issues.

12. It is necessary to determine if there are any wells or bore holes within the potential zone of flow for the injectate and the status condition of those wells or bore holes. Powertech must provide a report that includes the following:

- a. A technical analysis delineating the potential zone of flow for injectate.
- b. A map illustrating all wells and bore holes within the potential zone of flow, a discussion of the sources of information for the wells and bore holes, and a description of the efforts put forth to assure that all wells and bore holes within the zone have been identified.
- c. A description of the status condition of each well and bore hole including the sources of information for and investigations conducted to determine the status condition.
- d. For any wells or bore holes that are identified as being potential flow pathways for injectate or that cannot be ruled out as potential flow pathways, provide a plan to prevent injectate from travelling along these pathways and entering strata other than the A<sub>2</sub> Sand.

13. Item 11 above discusses the DRMS's current position that injectate be contained within the A<sub>2</sub> Sand or be managed such that migration into overlying and underlying strata be no greater than would occur under natural conditions. DRMS will consider modifying this position if Powertech can demonstrate that water quality impacts to the other A Sands and the WE Sand can be minimized even with the introduction of injectate into those strata. Such a demonstration would be largely dependent on water quality in these other sands compared to the water quality in the A<sub>2</sub> Sand.

14. Powertech stated in since withdrawn modification MD-02 to prospecting notice P-2008-043 that it has done preliminary hydrogeologic modeling and water production calculations for the strata to be investigated

by the proposed pump test. DMRS has further discussed with Powertech that data collected during development of recently drilled wells in section 33 has allowed for refinement of the modeling and calculations. This information will be useful in determination of whether or not pump test water can be injected into the A<sub>2</sub> Sand with assurance that impacts to other water bearing strata are sufficiently minimized, and must be provided.

15. If and when MD-03 is approved, DRMS must be provided five working days prior notice of commencement of the initial step-rate test so that inspections can be scheduled.

16. Once Powertech responds to item no. 5 above, DRMS will have sufficient information to estimate surface reclamation costs for the MD-03 proposal and establish the amount of required bond. Well plugging and abandonment costs have already been bonded by Powertech as required under prospecting notice P-2008-043 and modification MD-01 to that prospecting notice. What remains to be determined for reclamation bond purposes is the amount to be required if DRMS were to forfeit the bond while the pump test water is still stored in tanks. Powertech must provide rental cost information for the tanks, preferably in the form of bid documents or equivalent produced by BakerCorp. If the transfer pump and other injection appurtenances are to be rented, provide cost documentation for these items as well. In order for DRMS to estimate costs for tanked water disposal, the following issues must first be addressed:

- a. If the determination on feasibility of injection cannot be made prior to commencement of the proposed pump test, as discussed in item 11 above, DRMS might bond for treatment and surface discharge of the tanked water. This would necessarily include significant tank rental costs for idle time while a water treatment plan is developed, equipment is deployed and permits are obtained. Costs for treatment sludge disposal would also have to be included.
- c. If Powertech provides an acceptable demonstration that injection at ambient pressure will minimize adverse water quality impacts, as discussed in item 11 above, DRMS can require sufficient bond for this type of injection. For this bonding option, Powertech must provide a technical evaluation of how long it would take to complete injection under ambient pressure.
- d. If additional Baker Tanks are to be brought onto the site as discussed on page 7 of the Section 33 Pumping Test Plan, then additional bond for tank rental and tank water disposal would have to be posted and accepted by DRMS prior to deployment of the additional tanks. Alternatively, Powertech could bond for more tanks than are anticipated to be necessary as a contingency to avoid project delays related to bond posting and DRMS evaluation.
- e. In accordance with Rule 4.1.2(7) DRMS will require that the amount of bond required for tanked water disposal be posted in an easily valued and convertible instrument, such as cash for deposit in the State Treasury or a bank certificate of deposit.
- f. In addition, DRMS will consider any bonding proposals Powertech may have that are not discussed above.

DRMS has determined that the issues listed above must be fully addressed to assure that environmental impacts from the proposed injection of temporarily stored/tanked water will be minimized. If Powertech believes that any of the information to be provided in response to this letter is confidential as provided for in the Colorado Mined Land Reclamation Act, that information must be provided on sheets separate from public information and clearly marked as confidential. DRMS is deferring the cost estimating to determine the amount of required bond for the proposed modification until the issues in this review letter have been resolved. You may not commence operations proposed in MD-03 until these issues have been resolved and bond has been submitted and you have been notified in writing that the bond has been accepted by the DRMS.

If you have any questions, please contact me at 303-866-3567.

Sincerely,

A handwritten signature in blue ink, appearing to read "Allen C. Sorenson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Allen C. Sorenson  
Reclamation Specialist

cc: Michael Beshore, Powertech, via email