

## WESTERN MINING ACTION PROJECT

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RE: Proposed Underground Injection Control Program (UIC) Permit (Permit Number: CO51237-08412).

Dear Ms. Shea,

Thank you for the opportunity to comment on your agency's proposal to issue an Underground Injection Control Program (UIC) Permit (Permit Number: CO51237-08412)<sup>1</sup> for Powertech (USA) Incorporated's proposed aquifer pump test in the Fox Hills Aquifer in Weld County, Colorado. As discussed herein, the draft permit cannot be issued as proposed. At a minimum, substantial additional information is required to demonstrate the ability of the permit applicant to protect underground sources of drinking water. This information includes additional baseline data on the water quality of both the injectate and the receiving water. In addition, the permit applicant should be required to demonstrate that the substantial historic exploration drilling in the area of the proposed permit will not result in contamination of adjacent aquifers, including underground sources of drinking water. Lastly, the EPA's permit processing exercise should be better coordinated with the required state permitting process for the proposed underground injection activities.

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<sup>1</sup> We note that various permit numbers are used in various documents, making it unclear to the public as to which permit is under review. The Public Notice and Statement of Basis and Purpose show permit No. CO51237-08412, whereas the Draft Permit cites permit No. CO51237-08408. Still further, the text of the Draft Permit states that "[t]he EPA permit number the UIC Program Director ... has assigned to this permit is CO51237-08404." Draft Permit at 2. Lastly, the bottom margin of each page of the Draft Permit lists "Petroglyph Energy, Inc., UIC Class V Permit No. CO51221-00000." Thus, in various places, the EPA has listed no less than 4 different permit numbers in the materials. At a minimum, this is confusing to the public, and at worst, renders the public notice insufficient, and requires re-notice of the permit application to the public.

Regarding the Draft UIC Permit and the Statement of Basis for the permit, we make the following comments.

The statement of Basis and Purpose states that the permit will contain “no requirements for reinjectate sampling and analysis.” Statement of Basis and Purpose at p. 6. However, the same document states that the applicant “will sample the stored groundwater and have it analyzed before reinjection occurs.” *Id.* at 5. The draft permit should be revised to specifically require a full suite of water quality sampling prior to any injection into the aquifer. Such a sampling is necessary to ensure that the injectate does not present a threat to underground sources of drinking water or to the existing quality in the aquifer, as required by 40 CFR § 144.82(a). This sampling should include protection against such things as bacterial growth in the storage containers, as well as to assess the potential impacts to the aquifer and the existing uses of the affected ground water.

The need for sampling prior to injection raises additional issues related to the draft permit – namely the lack of a requisite analysis of the existing water quality in the aquifer. In fact, there appears to be a critical lack of information related to the existing water quality in the affected aquifer, including the water quality of the proposed injectate. Powertech states in its cover letter attached to the permit that “The water quality analysis displayed in attachment D was obtained from an existing well...located about 500 feet south of the pump test/proposed injection well, and completed in the same formation and interval.” Cover letter at p. 3. The EPA must justify any decision to not require a more comprehensive characterization of not only the water proposed to be injected, but also the area of the aquifer proposed for injection. It appears that, as currently proposed, the agency is proposing to rely on a single sample from a single existing well located some 500 feet from the injection area to characterize the entire area of the aquifer from which the proposed injectate will be drawn and the area of the aquifer potentially impacted by the proposed reinjection activities. Review of the materials and discussion with agency personnel indicate that the withdrawn water proposed for injection will be drawn from the middle of a uranium ore-body – yet there does not appear to be any data demonstrating the quality of the water in the well from which the water will be drawn. Further, there is no data demonstrating that the water to be drawn and reinjected will not encounter oxidizing conditions as the pumping and reinjection occurs (for instance, flow from reduction zones into more oxidizing zones that could lead to iron hydroxide precipitation and well fouling). Should this occur, it could result in mobilization of additional contaminants in the aquifer, posing additional threats to underground sources of drinking water. In short, this existing data set is woefully inadequate. Should the data demonstrate that the quality of water proposed to be injected contains high levels of toxic or noxious chemicals, a Class I UIC permit may be appropriate to ensure protection of underground sources of drinking water. However, without this data, the EPA cannot make a reasoned analysis of the impacts of the proposed injection in order to fulfill its duty to protect underground sources of drinking water.

Notably, the additional information required of Powertech includes not only data on water quality of the aquifer and of the injectate, but also the geologic characteristics of the injection zone and the so-called confining strata. The EPA is authorized to require this information pursuant to 40 CFR § 144.27. Indeed, although drafted prior the finalization of the complete Class V regulatory program, the EPA’s Statement of Basis and Purpose for the

agency's Underground Injection Control Regulations issued by the EPA's Office of Drinking Water (May, 1980; National UIC Program Docket Control Number D 01079) demonstrates the potential problems where injectate containing contaminants will be injected above or below an underground source of drinking water and the geologic information is lacking. This document states, at pages 13-14:

[I]f the confining stratum which separates the injection zone from an overlying or underlying underground source of drinking water is either fractured or permeable, the fluids can migrate out of the receiving formation and into the protected region.

For obvious reasons, there are no well construction standards which can address this problem of migration of fluids through this pathway. Consequently, the regulations propose two provisions to assure that fluids do not travel this pathway into underground drinking water. First, the regulations require that, prior to the issuance of a permit, the geologic characteristics of the injection zone and confining strata be reviewed. Data already available from the states can assist Directors in making these reviews. A permit should only be issued upon the Director's finding that the underground formations are sufficiently sound to contain fluids in the injection zone.

Second, the regulations require that well injection pressure be controlled to prevent opening fractures in the confining strata or otherwise causing the rise of fluids into an overlying protected zone.

In this case, the EPA should require additional information regarding the geologic setting of the proposed injection activities. Based on this information, the EPA should consider and adopt restrictions on injection pressures in order to ensure protection of underground sources of drinking water.

Further demonstrating the lack of sufficient data is the statement on page 8 of the Statement of Basis and Purpose that the nearby domestic well "is completed deeper than the injection zone, and is probably in the B Sand of the Lower Fox Hills Formation...." This statement shows a lack of sufficient data to ensure protection of underground sources of drinking water. The conclusion is also supported by the statement on page 2 of the cover letter, where the applicant states, with regard to the nearby domestic well, "[t]he depth of the screened interval of the proposed injection well will be approximately 500 to 550 feet below the ground surface .... This well is much deeper than the zone of injection (620 feet), and is likely screened in the B-Sand of the Lower Fox Hills." However, the Well Construction and Test Report, State of Colorado, Office of the State Engineer, for this well indicates a Perforated Casing from 440 to 460 feet and from 520 to 560 feet (attached as exhibit 1). This demonstrates a lack of sufficient data and analysis to issue the permit at this time.

Overall, significant additional data is necessary for the EPA to fulfill its obligations under the federal Administrative Procedure Act (APA), which requires that the agency consider all information and make its decision based on a rational assessment of all relevant facts and circumstances. Absent full characterization of the injectate and the receiving aquifer and the

impacts on underground sources of drinking water, the EPA cannot effectively discharge this duty.

The Draft Permit states at page 7 that “[c]ompliance with this permit does not ... authorize ... any infringement of state or local law or regulations.” Further, Powertech (USA) Inc.’s April 30, 2009 Request for Permit letter states that the Colorado Division of Reclamation Mining and Safety (DRMS) is the state agency “overseeing the project.” However, there is no record of Powertech having any active application for any permit covering the activities proposed in the Class V Draft Permit. Indeed, Powertech has recently withdrawn an application that would have covered some of the relevant activities.

EPA should require Powertech to explain the relationship between the currently applied-for EPA permit and Colorado DRMS permit requirements for this same activity. As stated above, the Applicant does not at this time have any permit application in place before the DRMS, where the Applicant will be required to present substantial technical and baseline characterization evidence in order to obtain state authorization to conduct the proposed pump test. For instance, a letter dated March 31, 2009 from Mr. Allen C. Sorenson, Reclamation Specialist, DRMS to Mr. Richard Blubaugh, Powertech (USA) Uranium Inc., demonstrates the broad extent of the information that will be required as part of the state review. (attached as exhibit 2). This includes critical pieces of information related to the protection of the hydrologic balance and protection of water quality and quantity. Given the significant information that will be required in the state permit process, and the scant information currently available to EPA in the context of this UIC Class V permit (discussed herein) regarding the hydrologic balance and impacts on groundwater quality and quantity, the EPA should delay its permitting exercise to better coordinate with the DRMS in order to ensure that the EPA has sufficient evidence to draw rational conclusions with respect to the applicant’s ability to comply with the SDWA and EPA regulations. Failure of the applicant to provide sufficient information to allow the EPA to draw such rational conclusions would violate the APA.

The DRMS also expresses its requirement that the Applicant provide the location information for all wells within two miles of the proposed operation, including not just Powertech wells but also any other wells historically drilled in the area. These old wells may indeed present significant problems with respect to protecting underground sources of drinking water. The EPA’s 1980 Statement of Basis and Purpose (National UIC Program Docket Control Number D 01079) provides a clear description of the problem, at pages 14-15:

One of the common ways by which fluids can enter an underground source of drinking water is by migration through improperly abandoned and improperly completed wells. This would occur if fluids moving laterally within an injection zone encountered an improperly abandoned or completed well, and, following the path of least resistance, flowed upward within the well until entering an overlying underground source of drinking water or overflowing onto the land surface. Because of the large number of wells drilled in the past, and because well operation and abandonment have not always benefitted from close regulatory scrutiny, contamination by this route can present a significant risk to public health.

...

[In the case of a potential problem], however, the well operator would be expected to correct it. Correcting the problem could mean that the well operator would have to plug a faulty well at his/her expense.

In this case, the extent of the prior drilling in the area is highly significant. As demonstrated by the attached map prepared by Powertech and altered only with respect to identifying local roadways, and entitled "Topo and Drill Hole Location Map, Indian Springs and Centennial Uranium Projects", there are literally thousands of historic wells in the areas proposed by Powertech for in situ leach uranium mining, and many wells in the area proposed for injection under the Draft Permit. (Map attached as exhibit 3). In order to discharge its duties under the Safe Drinking Water Act and the APA, the EPA should require the applicant to provide information demonstrating that these wells have been properly abandoned in a manner that will not allow for communication between the injection area and the overlying underground source of drinking water.

The concerns with the previous abandonment of these wells are well documented. Indeed, documents suggest that many of these wells were not properly abandoned and could provide a conduit between the aquifers. For instance, a May 19, 2003 letter from Mark E. Hoffman, Project Manager for Exxon Mobil to Tony Waldron, DRMS, regarding reclamation activities at the Indian Springs Prospecting project (attached as exhibit 4 (with attachments)) states:

Prospecting was conducted as described in three Notices of Intent to Conduct Prospecting Operations submitted to the Colorado Department of Natural Resources, Mined Land Reclamation Board, dated August 23, 1977, November 10, 1978, and October 27, 1980 (Attachment A). A total of 492 uranium exploration boreholes were drilled during this period.

...

Mr. J.J. Faulhaber, of Alternative Energy, in an interoffice memo, dated May 28, 1985 (Attachment D) summarized borehole abandonment procedures and standards for the Project. Boreholes were abandoned with drilling mud consisting of varying viscosities from the bottom of the hole to ten feet below the ground surface. Cement plugs were installed from ten feet to the surface or two feet below the surface depending upon local cultivation practices.

The borehole abandonment standards varied over the course of the Project, but the most stringent standards applied to the 1980 drilling program....

The boreholes were drilled into the stratigraphic horizon that contains the Laramie-Fox Hills aquifer, a regional hydrogeologic unit that spans the base of the Laramie Formation and the top of the Fox Hills Formation. In a letter to Mr. Kenneth Holmes (Mobil), dated February 23, 1982 (Attachment E), Ms. Walker [Colorado Division of Mining] expressed concerns over the use of drilling mud in an interval of an aquifer, and the potential for contaminants in the Upper Laramie Formation to enter the Laramie-Fox Hills aquifer.

The interoffice memo referred to in this excerpt (exhibit 4, attachment D) also refers to well abandonment procedures that were done in the 1970s, before Colorado legislation passed in the early 1980s (House Bill 1195) that required more substantial protections in drill hole abandonment procedures to protect groundwater. These documents refer to use of such materials “beet pulp” in the abandonment procedure in wells.

Other historic documents demonstrate that other companies drilled substantially more numbers of wells in the area in the 1970s and 1980s, including Rocky Mountain Energy, who reported to the State of Colorado in 1982 that it drilled some 2,142 holes in the area, including in the section proposed for the injection permit (attached as exhibit 5). There is little data on the abandonment procedures used in these wells, but one might assume they consisted of similar techniques that were standard at the time that gave rise to the State of Colorado’s concerns with respect to aquifer communication and contamination with the Mobil project wells. In any case, the EPA should require the applicant to provide all information regarding these wells, any abandonment information, and require repair and proper closure prior to any injection authorization.

In addition, the applicant’s own documents demonstrate that there have been problems encountered with abandonment procedures at historic drill holes. In an August 2007 Powertech (USA) Inc. “Activity Update” (attached as exhibit 6), the company recounts its experiences in discovering and attempting to repair broken well casings that appear to have been improperly abandoned in the first instance. As stated by the applicant:

Some wells were broken off at ground surface during the intervening 20 plus years. We have attempted to locate wells with GPS system and hand digging. Some wells we could not locate this way and we used a backhoe to find the buried well. We gently raked 4 inches at a time searching for the casing. We did not break any wells with our backhoe. The photos found on some websites are actually jagged broken casings that were buried for 20 plus years.

Further, Powertech is on record in a letter dated October 16, 2007 from Mr. Richard Blubaugh, Powertech (USA) Inc. to Mr. Jim Woodward, [www.powertechexposed.com](http://www.powertechexposed.com) (except attached as exhibit 7) overtly recognizing the problems associated with historic well abandonment procedures in defending assertions that it or its contractors were responsible for leaving open well casings:

While these open well casings are on property owned by Powertech, these are not wells that were drilled by Powertech or its contractors. In fact, the wells left unprotected were drilled by previous exploratory efforts in the 1980s, and were uncovered by Powertech’s geotechnical teams while in the process of locating each bore site.

In response to these local community concerns with respect to the potential failures of historic well abandonment, the applicant affirmatively committed to “ensuring that **all wells on its properties** meet state and local safety requirements and standards.” We urge EPA to hold Powertech to its promised commitments to the local community and require the applicant to

submit this additional information of proper well abandonment as part of the permit review process, and before the grant of any such permit.

Overall, the SWDA and associated regulations provide that “no injection shall be authorized by permit or rule if it results in the movement of fluid containing any contaminant into Underground Sources of Drinking Water” 40 C.F.R. § 144.1(g). In order to ensure compliance with the SDWA and EPA regulations, the applicant must present significantly more detailed evidence with respect to the existence and potential cross-aquifer communication that may result from these historic wells, and require proper abandonment be completed prior to issuing a permit for injection. In fact, the applicant is on record as committing to However, as it currently stands, the record is insufficient to demonstrate that the applicant can achieve the protection of all USDW. As such, the strictures of the APA preclude the issuance of a permit in this case until the applicant can provide sufficient evidence demonstrating the ability to comply with applicable law.

Lastly, any permit issued should require complete reporting of water quality data encountered before, during, and after the pumping and injecting. While any approved pump test is ongoing, should any communication between aquifers be encountered, and the permit should include a provision for re-assessment of the viability of injection pursuant to the permit, as this new information would be critical to protecting underground sources of drinking water. Should such cross-communication be discovered, the existing permit should be suspended or voided pending additional review by the EPA.

Given the complexity of these issues, we continue to express a high level of concern with the proposed reinjection activities, and based on the current record urge the EPA to deny the proposed permit. At minimum, given the extensive amount of data and information that the EPA requires (as identified herein) in order to process the proposed permit for injection, we hereby request that the agency provide an additional public comment period to facilitate review of any amended Draft Permit or Statement of Basis and Purpose that may be forthcoming in the future. We understand that such additional review is not uncommon, and given the controversy surrounding the impacts associated with Powertech’s proposed activities, is entirely appropriate. In addition, we are currently conducting ongoing research into such things as historic drilling records in the area, and reserve the right to supplement these comments should additional relevant information become available. Lastly, we hereby incorporate herein by reference all of the public comments submitted in this comment period, to the extent these comments address issues or detail facts or evidence not included herein.

We look forward to reviewing the EPA’s responses to these comments, and please do not hesitate to contact me directly with any questions regarding these comments.

Sincerely,

/s/ Jeffrey C. Parsons

Jeffrey C. Parsons

Senior Attorney  
Western Mining Action Project  
On behalf of  
Coloradoans Against Resource Destruction  
Information Network for Responsible Mining