

**Public Comments Regarding the  
EPA Region 8 Proposed Dewey-  
Burdock In-Situ Uranium Recovery  
Project Permitting Actions**  
*Comments from Private Individuals*

Dear Ms Valois,

I am writing you to oppose the in-situ recovery (ISR) of uranium using deep injection wells within the Inyan Kara group of aquifers (souther Black Hills region of Custer and Fall River counties).

First and foremost, the Black Hills are sacred to the Indigineous peoples in the area. It would be morally repugnant to desecrate sacred land in such a way.

There is also a great concern for the safety of the water supply if this project were to take place. A contamination by uranium would be permanent, rendering the local aquifer useless. The social and environmental impact of contamination would be profound.

The people, animals, and environment of the Black Hills deserve better. Please deny the permit for ISR activities in the area.

Thank you.

Best,

[REDACTED]  
concerned citizen

RECEIVED MAY 15 2017

5-10-17

DEAR VALDIS SHEA:

THE BLACK HILLS OF SOUTH DAKOTA ARE OWNED BY THE GREAT SIOUX NATION WHO HAVE TREATIES THAT WILL BE DISHONORED BY ALLOWING THE URANIUM MINING TO OCCUR.

OUR GREAT SIOUX NATION HAS THE FIRST AND LAST WORD REGARDING WHAT IS TO TAKE PLACE ON THEIR HOMELAND.

THESE ARE THE HIGHEST LAWS OF AMERICA, NATIVE AMERICANS ARE ABOUT PROTECTING THE LAND, WATER AND AIR FOR THE GREATER GOOD OF ALL MANKIND.

NO URANIUM MINING SHOULD EVER BE ALLOWED. WE NEED TO SUPPORT THE NATIVE AMERICANS WHO ARE THE OWNERS AND KEEPERS OF THIS SACRED LAND. GOD BLESS NATIVE AMERICA AND KEEP HER SAFE FROM RAVAGER'S.

THE RADIATION EXPLOSION IN WASHINGTON STATE TODAY, SHOULD GET THE ATTENTION OF THE OFFICIALS WHO THINK IT IS JUST FINE TO ALLOW THIS URANIUM MINING.

HUMAN LIVES <sup>ARE</sup> NOT EXPENDABLE, AND MONEY SHOULD NOT BE LOOKED AT, AS A GOAL.

IF ANOTHER COUNTRY THINKS THEY CAN COME HERE AND HAVE THEIR WAY WITH OUR LAND, THEY HAVE ANOTHER THOUGHT COMING.

THEY CAN DIG AROUND IN THEIR OWN BACK YARDS AND DISCOVER WHATEVER THEY ARE TRYING TO GET AT HERE (URANIUM).

THANK YOU FOR HEARING MY RANT, I DO LOVE MY COUNTRY, AND THE ENTIRE POPULATION, THAT IS POPULATING IN OUR COUNTRY NEEDS TO BE IN FULL SUPPORT OF NEVER ALLOWING URANIUM MINING TO TAKE PLACE HERE.

SINCERELY,



[REDACTED]

As a resident of Fall River County, South Dakota, I am opposed to the permit that would allow Azarga/Powertech to pump 8,000 gallons of water per minute through 4,000 wells to mine uranium for 10 years in the Dewey-Burdock mine.

I am also opposed to the permit that would allow the above mentioned company to pump uranium mining waste liquids underground through four disposal wells. This waste would be pumped into the Minnelusa Aquifer which is adjacent to the Madison Aquifer.

The polluting of the Inyan Kara, Minnelusa, and Madison Aquifers with uranium mining procedures and waste liquids is unacceptable to all life in the counties of Fall River and Custer and several surrounding counties. The water in the affected aquifers is used for drinking water and ranch and farming in these counties by thousands of people.

The Black Hills region is considered semi-arid and every drop of water is precious

and, at times, a rare commodity. The water in the Black Hills and everywhere should remain life-giving, not irradiated and life-taking.

The proposed money-making and life-destroying activities of the Azarga / Powertech company will imperil the lives of current and future generations of Black Hills residents. I request, nay I demand, that the permits not be approved.

Please read these quotes and ponder life with no drinkable water.

"Water is the lifeblood of our bodies, our economy, our nation and our well-being."

— Stephen Johnson

"Pure water is the world's first and foremost medicine."

— Slovakian Proverb

"Water is the most critical resource issue of our lifetime and our children's lifetime. The health of our waters is the principal measure of how we live on the land."

— Luna Leopold

June 16, 2017

Environmental Protection Agency  
1595 Wynkoop St.  
Denver, Co 80202-1129

Dear Persons,

I am a lifelong resident of Custer County S.D. I am adamantly opposed to any uranium activity in our area.

I cannot believe anyone would advocate risking our water supply for a short term gain.

Please deny this ill conceived plan that will do irreparable damage to our environment.

Sincerely,

[Redacted Signature]



RECEIVED JUN 21 2017

submitted by  
[REDACTED]  
may 11

# PETITION

## In Support of In-Situ Recovery (ISR) Extraction of Uranium By Powertech (USA) Inc. in Southwest South Dakota

**WE, THE UNDERSIGNED RANCHERS & OWNERS OF PROPERTY  
IN THE VICINITY OF THE PROPOSED DEWEY-BURDOCK PROJECT  
IN SOUTHWEST SOUTH DAKOTA ACKNOWLEDGE:**

- Certain areas of Fall River and Custer Counties in Southwest South Dakota have been endowed with the natural resource uranium which is an alternative source of energy which can help the United States and meet an increasing demand for electricity without emitting greenhouses gasses into the atmosphere; and
- ISR is the most modern and environmentally friendly method of extracting uranium; and
- ISR extraction of uranium is highly regulated by the State of South Dakota, the U.S. Nuclear Regulatory Commission and the U.S. Environmental Protection Agency; and
- ISR can be conducted in our area without harming our land, air, water or quality of life.

**THEREFORE, we support and encourage the granting of the permits and licenses required by the State of South Dakota, the U.S. Nuclear Regulatory Commission and the U.S. Environmental Protection Agency that allow ISR extraction of uranium by Powertech (USA) Inc. at its Dewey-Burdock site in Fall River and Custer Counties in southwest South Dakota.**

[illegible]

## In Support of In-Situ Recovery (ISR) Extraction of Uranium By Powertech (USA) Inc. in Southwest South Dakota

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[illegible]

**P E T I T I O N**  
**In Support of In-Situ Recovery (ISR) Extraction of Uranium**  
**By Powertech (USA) Inc. in Southwest South Dakota**

**WE, THE UNDERSIGNED RANCHERS & OWNERS OF PROPERTY**  
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Print Name	Address	City	Zip	Signature
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

## BIOGRAPHY

[REDACTED]

[REDACTED] had parallel professional careers in the Department of Veterans' Affairs and Naval Intelligence. [REDACTED] enlisted in the United States Marine Corps at age 17 and completed his eight-year obligation to the United States Marine Corps through an active Marine Reserve program. This United States Marine Corps program allowed him to complete both undergraduate and graduate school at the University of Houston, while also fulfilling his eight-year military obligation.

During the Vietnam War, [REDACTED] was recruited for a direct commission in a United States Naval Intelligence Program. The Navy was seeking individuals with skills in basic science, computer science, and "exotic" linguists. [REDACTED] education and civilian specialties were chemistry, biochemistry, and psychology. [REDACTED] also earned a second graduate degree from the Army-Baylor Program at Fort Sam Houston, San Antonio, TX, 1971-1973. Following intensive POW Debriefing training by the Navy, he volunteered for active duty to debrief returning Navy/Marine Corp POWs from Vietnam in 1973.

Concurrent with his Veterans' Administration 34-year careers in medical research and executive health care positions, [REDACTED] 28 years as a Naval Intelligence Officer in twelve Naval Intelligence active reserve units. [REDACTED] served three tours of active-duty.

[REDACTED] earned 11 Naval Intelligence Certifications. These certificates are known as Navy Officer Billet Codes (NOBC). Examples of these certifications are: Air Intelligence Officer, Naval Attaché, Photo Interpreter, Anti-submarine Warfare Officer, and Naval Investigative Service Officer. [REDACTED] volunteered for active duty during the first Gulf War (1990-1991) and commanded a US Naval Intelligence team during Desert Shield and Desert Storm. The team's mission was to identify weapons, technology, arms, and chemical substrates that had been acquired by Iraq. Also, the Team was to interdict those items still in transit to Iraq before hostilities began. The Navy team was awarded the Defense Meritorious Service medal and a Joint Meritorious Unit Award for their distinctive accomplishments before and during hostilities. [REDACTED] was also awarded the Defense Superior Service Medal. [REDACTED] was injured while on active duty and formally retired from Naval Intelligence in November 1996.

Date of Information: January 5, 2017  
Prepared by MET

[REDACTED]  
[REDACTED]  
US NAVY [RET]

# Position Statement

## SOUTH DAKOTA

ISL Dewey-Burdock EPA Class 3  
and Class 5 UIC injection wells  
for mining and other hazardous  
waste deposition - March 2017

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## Summary:

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The Hong Kong/China based uranium mining company, Powertech/Azarga that has been pursuing ISL (in situ leach recovery) mining permits in the Dewey-Burdock, Edgemont area of the Black Hills, is currently requesting permits from the EPA for waivers from the Clean Water Act for the Inyan Kara aquifer in order to implement UIC injection wells for mining, and for hazardous waste permanent deposition from mining activity in the Minnelusa aquifer.

We are opposed to both the mining activity, which would contaminate the Inyan Kara aquifer permanently for agricultural use, for which it is currently being used, and also contaminate other aquifers in the area as well, because of the many fissures, fractures, breccia pipes and sinkholes that are naturally occurring, and the 7,650 unclosed old exploratory boreholes that allow the mixing of aquifers at the site.



We are opposed to the permanent deposition of any mining wastes, including hazardous and radioactive metals and/or metal salts thereof into any aquifers in the Black Hills which would effectively render the Black Hills a permanent hazardous waste dump-site - and with the ability of the permit holder to take in mining waste from other regional sites, and also sell that permit to other polluters.

We are opposed to injection of chemical lixiviants that would dissolve rock and free up toxic metals to pollute the groundwater aquifers in the mining process, that cannot be effectively cleaned up.

## **Background of Powertech/Azarga:**

**The Issue of the 12 Requested Hazardous Deep Injection Wells by Powertech/Azarga at Edgemont, vs the 4 That Would be Permitted**

### **COMPANY HISTORY**

**1.)** Powertech/Azarga is a Chinese based - foreign owned company that is essentially bankrupt. The partners took over a bankrupt refrigerator manufacturing company shell and then declared themselves a uranium mining company, though to date, this company has never mined anything anywhere. As a foreign owned company, they are free to mine and then bankrupt the company when mining reserves are gone, leaving the hazardous and radioactive mess for the taxpayers to clean up. This is the most common scenario with foreign owned mining companies in the U.S. Further, no aquifer has ever been restored anywhere in the world after ISL uranium mining. For this reason, ISL mining is banned in Europe, where numerous mines have completely ruined many aquifers.

**2.)** Evidence was presented to the NRC and ASLB in hearings appealing the mining permit issued by the NRC. It was disclosed in these hearings that the Tennessee Valley Assoc. thoroughly explored the area in question for more mine-able uranium deposits after the roll front of uranium was mined out in the 1950's by surface mining. TVA came to the area several times, years apart, and drilled a total of 7650 boreholes looking for more mine-able/extractable uranium, but failed to find any. TVA subsequently abandoned the site, leaving those boreholes not properly closed for the most part, that then allowed further mixing of the aquifers even more than the already naturally existing numerous fractures,

fissures, breccia pipes and sinkholes that are common in this continuing uplift region. This was when uranium yellow-cake was in high demand during the Cold War and the spot price was \$100.00 per lb. Today, the spot price for yellow-cake is currently \$18.00 per lb, with the production break even cost of \$63.00 per lb. Powertech/Azarga was ordered by NRC/ASLB to find and properly close all of those boreholes before they would be able to actively mine, as ISL mining requires aquifers to be contained properly for extraction efficiency. This is a hugely expensive process and to date, no work has been done on this. Powertech/Azarga does not have the finances to do this, and ISL uranium mining is not profitable today, and not projected to be in the future.

**3.)** In addition, ISL technology was available back in the 1950's and 60's when the exploration was done, but the amount of "recoverable" uranium at Dewey Burdock was not deemed sufficient by TVA for mining in any form, as they said that the roll front was gone. So by these former experts, upon extensive exploration, there is no recoverable uranium at that site left. Powertech/Azarga's own testing showed that the highest levels of uranium found were in the alluvial wells that are surface, and not mine-able, as they cannot be contained. With the extensive mixing of aquifers and the 7650 open boreholes that contaminate the aquifers, there is likely organified uranium and other toxic metals by bacteria that create a form of organic uranium that is not recoverable by ISL anyway. Organic uranium does not bind to the resin beads in the "glorified water softeners" of ISL recovery. So the only money to be made at this site is from taking in hazardous toxic mining wastes from other mines to dump into our aquifers and make the Black Hills a toxic waste dump.

**4.)** Powertech/Azarga is asking for 4 Class 5 UIC deep injection wells for hazardous waste deposition, into the Minnelusa aquifer, with a reserve request for 4 more of the same "in case they find the they need them". They say they need 2 of these "right away". Powertech/Azarga will operate 14 well fields total. The Minnelusa aquifer is a major drinking water aquifer in the Black Hills. To say that it is not, is not correct.

A. For comparison, Crow Butte ISL uranium mine in Crawford, Nebraska, operated 11 well fields for 20 yrs using a single UIC hazardous waste deep injection well for deposition of their toxic wastes. Dewey Burdock originally requested a total of 8 UIC hazardous waste deep injection wells, but EPA is only permitting 4, still too many for a non functional, no profit mine, two of which are requested to be drilled right away. (Really? What do they need them all for? No work has been done to find and properly close any of the old borehole sites that is required by NRC, followed by adequate pump testing to make sure that the aquifer is contained prior to actively mining. EPA is not requiring borehole closure for the injection wells. This spells certain “disaster” even more.)

- By the numbers: Smith Ranch in WY :10 well fields, one deep injection well Crow Butte, Ne : 11 well fields, one deep injection well for 20 yrs. Willow Creek, composed of two sites, Christensen Ranch and Irigary- 2 injection wells.

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**5.)** Powertech/Azarga has also applied for Class 3 injection wells for 14 well fields. This will be an additional 84 injection wells that will be receiving rock dissolving chemicals/lixivients for production. Normally a well field contains one production well for extraction surrounded by 6 injection wells. Further, the 14 production well fields are not on a uranium rich roll front, as per TVA documents. (uranium ISL mines are typically situated on a uranium rich roll front so that extraction is efficient and the mine is profitable. Remember, the roll front was found by TVA to be mined out prior by surface mining)

**6.)** The 4 hazardous waste deep injection wells in the area are destined for the Minnelusa aquifer, a drinking water aquifer in the Black Hills. Normally, UIC hazardous waste deep injection wells are drilled “below” aquifers, not “in” them. The hazardous waste injected into the aquifer will travel hundreds and even thousands of miles and contaminate other

aquifers that are connected, and ultimately the huge Ogallala Aquifer that services the entire central US. In addition, these hazardous waste wells will legally be able to take in the water of the hazardous wastes, containing radioactives, with toxic and heavy metals from other mining sites, to make our aquifers a toxic waste dump, and ruin the water we have there. These permits are also able to be sold to another company once issued, if the original company Azarga/Powertech files bankruptcy or sells the permits. These permits, once issued, can be renewed indefinitely. Since the wastewater will contain radioactives and toxic heavy metals, the ultimate destination as to which class of deposition well is required, is determined by the proximity of the drinking water aquifer near it, above or below. Powertech /Azarga has played a semantics game with the determination of the class of disposal well required, however the toxicity of the ultimate wastewater is still the same. See "From the Permit" below.

7.) The claim that Powertech/Azarga is going to treat the wastewater first to "purify" it to classify for the Class 5 deep injection regulations, does not include the inability to extract radioactive organified metals that are now found in wastewater by ISL in several studies, notably uranium. By regulation, Class 5 waste waters can only be as toxic as storm sewer waters. This wastewater is hardly that. Radioactive organified metals and metallic salts in this wastewater make this waste water unusable for even agricultural purposes, as it would be in this dry uplift area where water is "blue gold", if it were as "pure" as the company says it is. Better technology today shows us the flaws of obsolete testing and regulations today, and why we see such horrid toxicities in Nature at mining sites. The company has not shown any technology that could be effective in processing this wastewater to be safe for a Class 5 well. And the extra great expense of this processing will cost the profitability of the project dearly. They already cannot pay their mining land leases and are essentially bankrupt going in to this project. See the toxicology testimony by Linsey McLean, expert witness for Consolidated Intervenors, to the Nuclear Regulatory Commission and Atomic Safety and Licensing Board on the birth deformities found in wildlife and domestic farm animals studied in ISL mining sites contaminated by toxic waste water and radioactive metals.

<https://www.nrc.gov/docs/ML1513/ML15132A507.pdf>

(<https://www.nrc.gov/docs/ML1513/ML15132A507.pdf>)

<https://www.nrc.gov/docs/ML1513/ML15132A506.pdf>

(<https://www.nrc.gov/docs/ML1513/ML15132A506.pdf>)

The business model for this Chinese based company in Dewey-Burdock is very likely to never start uranium mining to begin with, as by their own admission, the price of uranium is far too low for profitability. They intend to use these injection wells for importing hazardous toxic mining wastes from other sites for profit, making the Black Hills an everlasting toxic waste dump. They state that they need two deep injection wells for hazardous wastes *right away*.

## What is an Injection well/UIC?

An injection well is a device that places fluid deep underground into porous rock formations, such as sandstone or limestone, or into or below the shallow soil layer. The fluid may be water, wastewater, brine (salt water), or water mixed with chemicals.

In waste water disposal, treated waste water is injected into the ground between impermeable layers of rocks to avoid polluting fresh water supplies or adversely affecting quality of receiving waters.

**\*\***In the case of this EPA permit, the injection will go directly into the Minnelusa aquifer and not in rock formations where injections typically are directed.

Injection wells are usually constructed of solid walled pipe to a deep elevation in order to prevent toxic injections from mixing with the surrounding environment.

[http://en.wikipedia.org/wiki/Injection\\_well](http://en.wikipedia.org/wiki/Injection_well) ([http://en.wikipedia.org/wiki/Injection\\_well](http://en.wikipedia.org/wiki/Injection_well))

Until the 1960s, drillers could just dump this stuff wherever they wanted. Being extremely salty and full of chemicals, this is obviously a bad idea. The 1960s saw the introduction of deep injection wells. The idea was that if you could inject fluids into rocks thousands of feet underground, the toxic waste would stay there forever. In order for this to work, the rock layers have to be porous, like a sponge, and the waste has to be injected under pressure to force its way into the rocks.

## Regulatory Requirements of Deep Injection Wells

In the United States, injection well activity is regulated by the United States Environmental Protection Agency (EPA) and state governments under the Safe Drinking Water Act ([http://en.wikipedia.org/wiki/Safe\\_Drinking\\_Water\\_Act](http://en.wikipedia.org/wiki/Safe_Drinking_Water_Act)) (SDWA). EPA has issued Underground Injection Control (UIC) regulations in order to protect drinking water sources. The EPA has defined six classes of injection wells.

**Class I** wells are used for the injection of municipal and industrial wastes beneath underground sources of drinking water.

**Class II** wells are used for the injection of fluids associated with oil and gas production, including waste from hydraulic fracturing.

**Class III** wells are used for the injection of fluids used in mineral solution mining ([en.wikipedia.org/wiki/Solution\\_mining](http://en.wikipedia.org/wiki/Solution_mining)) beneath underground sources of drinking water. (ISL Uranium mining falls in here)

**Class IV** wells, like Class I wells, are used for the injection of hazardous wastes but inject waste into or above underground sources of drinking water instead of below.

**Class V** wells are those used for all non-hazardous injections that are not covered by Classes I through IV. Examples include storm-water drainage wells and septic system leach fields ([en.wikipedia.org/wiki/Septic\\_drain\\_field](http://en.wikipedia.org/wiki/Septic_drain_field)).

**Class VI** wells are used for the injection of carbon dioxide for sequestration, or long term storage. Currently, there are no Class VI wells in operation, but 6 to 10 wells are expected to be in use by 2016.

<http://people.uwec.edu/piercech/HazwasteWebsSp04/DeepWellInjection/DeepWellInjection.htm>  
(<http://people.uwec.edu/piercech/HazwasteWebsSp04/DeepWellInjection/DeepWellInjection.htm>)

## Injection Wells Don't Just Pollute

**1.)** They are well known to cause earthquakes, as hazardous wastes are continuously being pumped into the aquifers at high pressure, and the wastes are meant to stay in the ground forever. The pressure that the wastes exert in the aquifer forces the wastes to move vertically and horizontally in all directions, mixing with the local waters there and traveling

with the flow underground. The pressure also causes more fractures and fissures in the rock layers, causing earthquakes, and further mixing of the wastes into the aquifers. Fracking is a similar principle. Oklahoma has been the site of numerous fracking areas and have increased a record number of earthquakes and contaminated drinking water wells, and the earthquakes continue even after two years of a fracking ban.

## INJECTION-INDUCED EARTHQUAKES

A July 2013 study by US Geological Survey scientist William Ellsworth links earthquakes to wastewater injection sites. In the four years from 2010-2013 the number of earthquakes of magnitude 3.0 or greater in the central and eastern United States increased dramatically.

After decades of a steady earthquake rate (average of 21 events/year), activity increased starting in 2001 and peaked at 188 earthquakes in 2011. USGS scientists have found that at some locations the increase in seismicity coincides with the injection of wastewater in deep disposal wells. Injection-induced earthquakes are thought to be caused by pressure changes due to excess fluid injected deep below the surface and are being dubbed “man-made” earthquakes.

<http://people.uwec.edu/piercech/HazwasteWebsSp04/DeepWellInjection/DeepWellInjection.htm>

(<http://people.uwec.edu/piercech/HazwasteWebsSp04/DeepWellInjection/DeepWellInjection.htm>)

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## References:

High-rate injection is associated with the increase in U.S. mid-continent seismicity  
(<https://pubs.er.usgs.gov/publication/70161978>)

Barbara A. Bekins, and Justin L. Rubinstein Abstract An unprecedented increase in earthquakes in the U.S. mid-continent began ... in 2009. Many of these earthquakes have been documented as induced by wastewater injection. We examine the relationship between wastewater injection ... and U.S. mid-continent seismicity using a newly assembled injection well database for the central and eastern United States. We find that the entire ... increase in earthquake rate is associated with fluid injection wells. High-rate injection wells (>300,000 barrels per month) are much more likely to be ...

Induced Earthquakes (<https://earthquake.usgs.gov/research/induced/myths.php>)

The primary cause of the recent increase in earthquakes in the central United States. Wastewater disposal wells typically operate for longer durations and ... injection wells induce earthquakes. Most injection wells are not associated with felt earthquakes. A combination of many factors is necessary for injection to ... induce felt earthquakes. These include: the injection rate and total volume injected; the presence of faults that are large enough to produce felt ... earthquakes; stresses that are large enough to produce earthquakes; and the presence of pathways for the fluid pressure to travel from the injection ...

Injection-induced earthquakes (<https://pubs.er.usgs.gov/publication/70048668>)

Abstract Earthquakes in unusual locations have become an important topic of discussion in both North America and Europe, owing to the concern that ... and underground mining, withdrawal of fluids and gas from the subsurface, and injection of fluids into underground formations. Injection-induced ... production of oil and gas from previously unproductive formations. Earthquakes can be induced as part of the process to stimulate the production from tight ... associated with industrial activity, with a focus on the disposal of wastewater by injection in deep wells; assess the scientific understanding of induced ...

A Century of Induced Earthquakes in Oklahoma? (<https://www.usgs.gov/news/century-induced-earthquakes-oklahoma>)

related to oil production, particularly disposal of wastewater in deep injection wells, are known to potentially cause earthquakes. Prior to the ... Release Date: October 26,



2015The rate of earthquakes has increased sharply since 2009 in the central and eastern United States, with growing ... evidence confirming that these earthquakes are primarily caused by human activity, namely the injection of wastewater in deep disposal wells. The rate of ... earthquakes has increased sharply since 2009 in the central and eastern United States, with growing evidence confirming that these earthquakes are ...

Sharp increase in central Oklahoma seismicity 2009-2014 induced by massive wastewater injection  
(<https://pubs.er.usgs.gov/publication/70137863>)

data required to unequivocally link earthquakes to injection are rarely accessible. Here we use seismicity and hydro-geological models to show that ... earthquakes to distances of 35 km, with a triggering threshold of ~0.07 MPa. Although thousands of disposal wells may operate aseismically, four of ... Sharp increase in central Oklahoma seismicity 2009-2014 induced by massive wastewater injection Science By: Kathleen, M. Keranen, Geoffrey A. Abers ... , Matthew Weingarten, Barbara A. Bekins, and Shemin Ge

**2.)** Other common problems with deep injection wells are non approved hazardous wastes being dumped in there, as there is essentially no daily oversight. Wells are not maintained well and over pressure causes pipes to crack, dispersing the toxins in higher levels than they are supposed to be. Spills are common on the surface and accidents when truck hauling the toxins slip off road in icy roads, hit deer etc. and cause an instant dirty bomb at the site, that is not able to be cleaned up as it soaks into the ground. In this case, toxic and heavy metals and radiation.

# 2008-2010

## Cases of Water Contamination Violations

CLASS-2 WELLS: 22

OTHER WELLS: 77

Cases of Unauthorized Injection = 859

Cases of Pressurized Injection = 1,199

Test Failures for Significant Leaks = 6,723

Total Wells with Violations = 60,467

<http://projects.propublica.org/graphics/underground-injection-wells> (<http://projects.propublica.org/graphics/underground-injection-wells>)

### STRUCTURAL FAILURES

A ProPublica review of well records, case histories, and government summaries of more than 220,000 well inspections from October 2007 to October 2010 found that structural failures inside injection wells are routine. From late 2007 to late 2010, one well integrity violation was issued for every six deep injection wells examined – more than 17,000 violations nationally. More than 7,000 wells showed signs that their walls were leaking. Records also showed wells are frequently operated in violation of safety regulations and under conditions that greatly increase the risk of fluid leakage and the threat of water contamination. ProPublica's analysis showed that, when an injection well fails, it is most often because of holes or cracks in the well structure itself.

## UNAUTHORIZED INJECTION

Basically illegal dumping, EPA officials describe this as the most serious of all violations. It means waste was dumped into a well without a permit or without being legally approved for a certain location. State regulators say most violations are for bad paperwork, but in some cases, oil and gas companies have dumped dangerous waste meant for Class 1 wells into Class 2 wells to avoid fees and tighter regulations.

## MECHANICAL INTEGRITY VIOLATION

Mechanical Integrity testing, or MIT, is the primary way of checking the condition of injection wells. All Class 1 and Class 2 deep injection wells are required to be tested regularly, often by pressurizing the well and waiting to see if any of the pressure escapes, indicating a crack in one of the well's layers. Regulators say most violations indicate a small problem that, caught early, prevents a larger failure in the future. But some failures noted in federal records do describe "significant" leaks and migration of waste.

## OVER PRESSURIZED INJECTION

When waste is injected at higher pressure than is allowed on an injection well permit, it can either break out of the well or fracture the rock underground, creating new pathways for that waste to migrate into, and pollute, water supplies. A violation means that the pressure caused waste to move outside of its intended zone and endanger drinking water.

## TEST FAILURES FOR SIGNIFICANT LEAKS

This means that a well failed a mechanical integrity test and "caused the movement of fluids outside of the authorized zone," because either its cement or steel structure, or the tubing that lines the inside of the well, had a crack.

# WATER CONTAMINATION

In the reports each state submits to the EPA annually, they list the number of cases where an underground source of drinking water was believed to have been polluted as a result of leaking injection wells.

[http://www.sourcewatch.org/index.php/Injection\\_well](http://www.sourcewatch.org/index.php/Injection_well)

([http://www.sourcewatch.org/index.php/Injection\\_well](http://www.sourcewatch.org/index.php/Injection_well))

Here are some of the multiple regulations for the construction and maintenance of monitoring and testing wells:

- follow waste analysis plan
- perform MITs at required intervals
- reporting and record Keeping
- record injection fluids and all monitoring results
- report on any changes at facility and noncompliances

## Closing

- flush well with non-reactive fluid
- submit plugging and abandonment report
- monitor ground water until injection zone pressure can no longer influence any USDW
- inform authorities of well location and zone of influence

## Siting

- AoR testing
- no-migration petition demonstration
- geological studies

## Construction

- well is cased and cemented
- proper tubing and packer
- UIC program director must approve plan

## Operation

- monitor injection pressure, flow rate, and volume
- alarms and devices to shut down flow if necessary
- maintain pressures that will not initiate cracking

<http://www.epa.gov/safewater/uic/classonestudy.pdf> (<http://www.epa.gov/safewater/uic/classonestudy.pdf>)

<http://www.mindfully.org/Water/2003/Deep-Injection-Wells-GAO13jul03.htm> (<http://www.mindfully.org/Water/2003/Deep-Injection-Wells-GAO13jul03.htm>)

# Problems with Recovery of Mined Minerals When Organic Compounds Contaminate an Aquifer

Summary: You cannot recover all of the uranium from the mining water. Organified uranium compound levels will build up in the wastewater.

Arabian Journal of Chemistry

Volume 4, Issue 4, October 2011 ([www.sciencedirect.com/science/journal/18785352/4/4](http://www.sciencedirect.com/science/journal/18785352/4/4)), Pages 361

-377

## PROBLEMS WITH ION EXCHANGE IN WATER PURIFICATION

Ion exchange is another method used successfully in the industry for the removal of heavy metals from effluent. An ion exchanger is a solid capable of exchanging either cations or anions from the surrounding materials. Commonly used matrices for ion exchange are synthetic organic ion exchange resins. The disadvantage of this method is that it cannot handle concentrated metal solution as the matrix gets easily fouled by organics and other solids in the wastewater. Moreover ion exchange is non-selective and is highly sensitive to the pH of the solution. (Kurniawan et al., 2006).

## ORGANIFIED URANIUM IS A REAL THING IN ISL MINES

<http://www.newswise.com/articles/slac-study-helps-explain-why-uranium-persists-in-groundwater-at-former-mining-sites> (<http://www.newswise.com/articles/slac-study-helps-explain-why-uranium-persists-in-groundwater-at-former-mining-sites>)

- SLAC Study Helps Explain Why Uranium Persists in Groundwater at Former Mining Sites
- New Details About Uranium Chemistry Show How It Binds to Organic Matter

Article ID: 668799

Released: 2-Feb-2017 2:05 PM EST

Source Newsroom: SLAC National Accelerator Laboratory

*Newswise* – Decades after a uranium mine is shuttered, the radioactive element can still persist in groundwater at the site, despite cleanup efforts.

A recent study led by scientists at the Department of Energy's SLAC National Accelerator Laboratory helps describe how the contaminant cycles through the environment at former uranium mining sites and why it can be difficult to remove. Contrary to assumptions that have been used for modeling uranium behavior, researchers found the contaminant binds to organic matter in sediments. The findings provide more accurate information for monitoring and remediation at the sites.

The results were published in the Proceedings of the National Academy of Sciences.

In 2014, researchers at SLAC's Stanford Synchrotron Radiation Lightsource (SSRL) began collaborating with the DOE Office of Legacy Management, which handles contaminated sites associated with the legacy of DOE's nuclear energy and weapons production activities. Through projects associated with the Uranium Mill Tailings Radiation Control Act, the DOE remediated 22 sites in Colorado, Wyoming and New Mexico where uranium had been extracted and processed during the 1940s to 1970s.

Uranium was removed from the sites as part of the cleanup process, and the former mines and waste piles were capped more than two decades ago. Remaining uranium deep in the subsurface under the capped waste piles was expected to leave these sites due to natural groundwater flow. However, uranium has persisted at elevated levels in nearby groundwater much longer than predicted by scientific modeling.

In an earlier study, the SLAC team discovered that uranium accumulates in the low-oxygen sediments near one of the waste sites in the upper Colorado River basin. These deposits contain high levels of organic matter—such as plant debris and bacterial communities.

During this latest study, the researchers found the dominant form of uranium in the sediments, known as tetravalent uranium, binds to organic matter and clays in the sediments. This makes it more likely to persist at the sites. The result conflicted with current models used to predict movement and longevity of uranium in sediments, which assumed that it formed an insoluble mineral called uraninite.

Different chemical forms of the element vary widely in how mobile they are—how readily they move around—in water, says Sharon Bone, lead author on the paper and a postdoctoral researcher at SSRL, a DOE Office of Science User Facility.

Since the uranium is bound to organic matter in sediments, it is immobile under certain conditions. Tetravalent uranium may become mobile when the water table drops and oxygen from the air enters spaces in the sediment that were formerly filled with water, particularly if the uranium is bound to organic matter in sediments rather than being stored in insoluble minerals.

“Either you want the uranium to be soluble and completely flushed out by the groundwater, or you just want the uranium to remain in the sediments and stay out of the groundwater,” Bone says. “But under fluctuating seasonal conditions, neither happens completely.”

This cycling in the aquifer may result in the persistent plumes of uranium contamination found in groundwater, something that wasn’t captured by earlier modeling efforts.

“For the most part, uranium contamination has only been looked at in very simple model systems in laboratories,” Bone says. “One big advancement is that we are now looking at uranium in its native environmental form in sediments. These dynamics are complicated, and this research will allow us to make field-relevant modeling predictions.”

The study combined the expertise of researchers at SLAC, Pacific Northwest National Laboratory and the Canadian Light Source. The research team used a blend of techniques to analyze samples of sediments in the experiment. They performed X-ray spectroscopy at SSRL to identify the chemical form of uranium. Capabilities at the Canadian Light Source and at the Environmental Molecular Science Laboratory (EMSL) at Pacific Northwest National Laboratory were used to map the locations of the elements in the samples at the nanometer scale. This additional information allowed the researchers to determine whether or not the uranium was bound to carbon-containing, or organic, materials. SSRL and EMSL are DOE Office of Science User Facilities.

The DOE Office of Science funded the project.

SLAC is a multi-program laboratory exploring frontier questions in photon science, astrophysics, particle physics and accelerator research. Located in Menlo Park, Calif., SLAC is operated by Stanford University for the U.S. Department of Energy's Office of Science. For more information, please visit [slac.stanford.edu](http://slac.stanford.edu) ([slac.stanford.edu](http://slac.stanford.edu)).

SLAC National Accelerator Laboratory is supported by the Office of Science of the U.S. Department of Energy. The Office of Science is the single largest supporter of basic research in the physical sciences in the United States, and is working to address some of the most pressing challenges of our time. For more information, please visit [science.energy.gov](http://science.energy.gov) ([science.energy.gov](http://science.energy.gov)).

## The Bottom Line on Leaky Injection Wells, ISR/L Recovery and the Stabilization of Plumes:

If an ISR/L recovery well is contaminated with organic carbon compounds, whether naturally occurring or from leaky underground waste disposals, then the efficiency of recovery of uranium or any other metal by the common ion exchange method will be compromised, and will be rendered unrecoverable.

Moreover, if the organic carbon compounds are stereoisomers, whether naturally occurring or synthetic industry wastes, they will only react with other stereoisomers, so no inorganic method of stabilizing a plume will be effective, as demonstrated at Smith-Highland Ranch in WY.

Contaminated old ISR/L field waters may still test high for the elemental presence of uranium, and be marketed and sold (stocks and investments) as having a high propensity for extraction, but that would not be the case. It would not be recoverable. There is no technology known today that will clean up an aquifer like that.

**[Help Us Stop This!](#)**

With the impending demise of the EPA, we need restoration of state oversight, repeal of SB158, and new

<https://knowmining.org/#portfolio>

laws in place to prevent heavy hazardous waste tankers from destroying our roads and jeopardizing our clean Black Hills environment with accidents and spills on icy roads, hitting deer etc., and causing a permanent dirty bomb forever at these sites. We need laws now that will prohibit the transportation of these radioactive toxic wastes on our roads, through our state, and bringing in other mines' toxic wastes from other states.



Respectfully submitted to the EPA by [REDACTED]

## **MESSAGE TO THE PUBLIC: PREPARE FOR THE EPA HEARINGS**

- 1.) Get there early to sign in for your time to present your concerns.
- 2.) You are most effective if you take the time to write out your understanding of the permit and your objections to it and handing it to the judges. You can save time by reading it aloud to the judges and then submitting the written paper to them for their records. You will have only a short time to speak, so make your comments relevant and pointed. **Be sure to sign your name.** If you print your comments out on your computer, be sure to sign your name and address at the bottom to make it legal.
- 3.) Use the science to make your point. Show that you understand the science by explaining why you are against any hazardous waste in our aquifers, whether the Inyan Kara or the Minnelusa, and also why you are against making the Inyan Kara any more compromised than it already is. Both of these aquifers are being used, if not for personal use, then for ag use. Many people with wells in the area, do not even know what aquifer they are in. If you know your well aquifer and it is the Inyan Kara or Minnelusa, you need to make that point.. These judges are scientists and need to hear that you understand and are opposed to this permit. Do Not just get up there and whine about how this doesn't feel good to you. That just gets blown off. Use the studies and scientific points outlined in this document to help you. More if you know more. You only need a couple points to hammer down on.
- 4.) Encourage your friends and neighbors to get involved and come with you to protect our water.

### **The Permit in Question:**

EPA seeks public comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota.

Public hearings will be held in Valentine, NE and in Rapid City, Hot Springs and Edgemont, SD.

**CONTACT:**

Lisa McClain-Vanderpool

(303) 312-6077

[mcclain-vanderpool.lisa@epa.gov](mailto:mcclain-vanderpool.lisa@epa.gov)

(Denver, Colo. – March 6, 2017) EPA has issued two draft Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota. EPA will conduct information sessions combined with public hearings on April 27th and on May 8 through May 11 at the times and locations detailed below. EPA will accept public comments on the draft permits and a proposed aquifer exemption associated with the project through May 19, 2017.

The draft permits issued today include a UIC 'Class III' Area Permit for injection wells for the in-situ recovery (ISR) of uranium in the Inyan Kara Group aquifers and a UIC 'Class V' Area Permit for deep injection wells that would be used to dispose of ISR process waste fluids into the Minnelusa Formation below the Inyan Kara after treatment. Under the terms of the draft permits, waste injected under the Class V permit must be treated prior to being injected and must meet all radioactive waste and hazardous waste standards. Monitoring of the underground sources of drinking water surrounding the Class III injection well-fields will take place before, during and after ISR operations to ensure the underground sources of drinking water are protected.

EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur.

Under its obligation to comply with the National Historic Preservation Act and under EPA's Tribal Policy on Consultation and Coordination with Indian Tribes, EPA has been consulting and coordinating with several interested Tribes to identify the potential effects of the proposed project on traditional cultural places, historic and sacred sites. EPA will continue to consult and coordinate with Tribes as necessary throughout the public comment period concerning these proposed permitting actions.

The public is encouraged to provide comment on these draft permits and the aquifer exemption by midnight mountain time, May 19, 2017. EPA's final permit decision will be based on an evaluation of comments received and a determination of whether underground sources of drinking water are protected. The draft permits can be found at the EPA Region 8 UIC Program website:

<https://www.epa.gov/uic/uic-epa-region-8> (<https://www.epa.gov/uic/uic-epa-region-8>)

<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits> ([https://www.epa.gov/sites/production/files/2017-03/documents/class v draft area permit fact sheet.pdf](https://www.epa.gov/sites/production/files/2017-03/documents/class_v_draft_area_permit_fact_sheet.pdf))

## **How to Comment:**

Written comments must be received by email, fax or mailed to:

**Valois Shea**

[shea.valois@epa.gov](mailto:shea.valois@epa.gov) ([shea.valois@epa.gov](mailto:shea.valois@epa.gov))

f ax: 303-312-6741

U.S. EPA Region 8 Mail Code: 8WP-SUI

1595 Wynkoop Street

Denver, CO 80202-1129

## Public Information Sessions and Hearing Information (The public may also provide written and/or verbal comments during the following EPA public hearings):

Thursday, April 27, 2017 from 4:00 to 8:30 p.m. (with a break from 5:00 to 6:00 p.m.)

*Niobrara Lodge*, 803 US Highway 20, Valentine, Nebraska 69201

Monday-Tuesday, May 8-9, 2017, 1:00 to 8:00 p.m. (with a break from 5:00 to 6:00 p.m.)

*The Best Western Ramkota Hotel*, 2111 N. LaCrosse Street, Rapid City, South Dakota 57701

Wednesday, May 10, 2017, from 1:00 to 8:00 pm (with a break from 5:00 to 6:00 p.m.)

*The Mueller Center*, 801 S 6th Street, Hot Springs, South Dakota 57747

Thursday, May 11, 2017, from 1:00 to 8:00 pm (with a break from 5:00 to 6:00 pm)

St. James Catholic Church, 310 3rd Avenue, Edgemont, South Dakota 57735

### From the Permit:

Powertech USA submitted an application for a UIC Program Class V Area Permit proposing to construct and operate up to eight (8) deep injection wells within the Dewey-Burdock Project Boundary to be used for the disposal of treated uranium ISR process wastewater into the Minnelusa and Deadwood Formations. At the time the Class V Area Permit Application was submitted, Powertech anticipated that the two (2) Minnelusa and the two (2) Deadwood injection wells proposed in the Class V Permit Application would provide adequate disposal capacity for the Permit SD52173-00000 6 Dewey-Burdock Class V Draft Area Permit Fact Sheet volume of uranium ISR process wastewater that is expected to be generated at the site. As further explained below in Section 2.3, Powertech did not intend to request additional injection wells to be added under the Class V Area Permit unless the first four (4) wells did not provide adequate disposal capacity. However, Powertech withdrew the permitting request for the two Deadwood injections wells in a letter dated December 9, 2016.

This Class V Area Permit authorizes up to four (4) wells for injection into the Minnelusa Formation only. Powertech originally proposed the construction of the two (2) Minnelusa Formation injection wells listed in Table 1, but may elect to construct up to two (2) additional injection wells allowed under this Class V Area Permit. If Powertech decides that more than four (4) injection wells are needed to provide enough capacity to disposed of the treated ISR waste fluids, a modification under this permit will be required per 40 CFR § 144.39 and 40 CFR § 124.5. This process will involve issuing a draft permit modification subject to public comment on the modifications only.

**Table 1.** Injection Wells Proposed under the Class V Area Permit

~ = approximately

**1. The approximate depths shown in this table** are extrapolated from the type logs described in the Class V Permit Application. Actual injection zone depths will be determined from drill hole logs during well construction.

The Class V Permit Application, including the required information and data necessary to issue a UIC permit in accordance with 40 CFR parts 124, 144, 146 and 147, was reviewed by the EPA and determined to be complete.

This Class V Area Permit is issued for a time period of ten (10) years after the Permit Effective Date and will expire after that time. The Class V Area Permit also may be terminated upon delegation of primary enforcement responsibility for the Class V UIC Program to the State of South Dakota unless the State agency chooses to adopt and enforce this Permit. If Powertech wishes to continue any activity regulated by this Permit after the expiration date of this Class V Area Permit, Powertech must submit a complete application for a new Permit at least 180 days before the Class V Area Permit expires.

## **2.1 Injection Well Classification**

The injection wells authorized under this permit are classified as Class V industrial wastewater injection wells. The proposed injection zone for injection wells DW No. 1 and DW No. 3 is the Minnelusa Formation, which overlies the Madison Formation, a USDW. Typically, Class I radioactive waste injection wells are used for process wastewater disposal at uranium ISR sites because process wastewater at these types of facilities usually meets the definition of "radioactive waste" under 40 CFR § 144.3. Class I radioactive waste disposal wells are required to inject fluids below the lowermost formation containing an underground source of drinking water within one quarter mile of the well bore per 40 CFR § 144.6(a)(3). Radioactive waste disposal above USDWs are classified as Class IV wells and are banned per 40 CFR § 144.13. Because the proposed Minnelusa injection zone for DW No. 1 and DW No. 3 is located above a USDW, these wells do not fit the regulatory definition of a Class I injection well. Therefore, in order to be able to inject in the Minnelusa, above USDWs, the permit requires Powertech to treat the injectate so that it does not fall under the definition of "radioactive waste." According to 40 CFR § 144.5(e)

## **Permit SD52173-00000 7 Dewey-Burdock Class V Draft Area Permit Fact Sheet:**

**Well Permit Number:** SD52173-08764

**Well Name:** DW No. 1

**Proposed Injection Zone:** Minnelusa Formation

**Anticipated Injection Zone Depth:** ~1,615' - ~2,205'

**Location within Project Area:** Burdock

**Well Permit Number:** SD52173-08765

**Well Name:** DW No. 3

**Proposed Injection Zone:** Minnelusa Formation

**Anticipated Injection Zone Depth:** ~1,950' - ~2,540'

**Location within Project Area:** Dewey

Class V injection wells are those not included in Class I, II, III, IV or VI. Therefore, DW No. 1 and DW No. 3 must be classified as Class V injection wells.

Because these two wells will be used as deep disposal wells, the Class V Area Permit contains the protective construction and monitoring requirements designed for Class I injection wells. However, because these wells are Class V wells, the Class V Area Permit contains permit limits requiring injectate constituent concentrations to be at or below radioactive waste standards set in 10 CFR Part 20, Appendix B, Table II, Column 2 and hazardous waste standards set in 40 CFR § 261.24 Table 1.

The proposed injection zone for injection wells DW No. 2 and DW No. 4 is the Deadwood Formation, which is

expected to lie beneath all USDWs in the area. These two wells fit the regulatory definition of Class I wells found at 40

CFR § 144.6(a). Even if Powertech treats the injectate for these two wells so that injectate constituent concentrations would be at or below radioactive waste standards set in 10 CFR Part 20, Appendix B, Table II, Column 2 and hazardous waste standards set in 40 CFR § 261.24 Table 1, these wells would still meet the definition of Class I other industrial well found at 40 CFR § 144.6(a)(2). South Dakota regulation 74:55:02:02 prohibits Class I injection wells in the State. When the EPA informed Powertech that the DW No. 2 and DW

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No. 4 wells proposed for injection into Deadwood Formation are classified as Class I wells under UIC regulation 40 CFR § 144.6(a)(2), Powertech submitted a letter to the EPA withdrawing the request for authorization for construction and operation of wells injecting into the Deadwood Formation. Because there is no longer an active application for injection into the Deadwood Formation, there is no agency action related to injection into this formation.

[https://www.epa.gov/sites/production/files/2017-03/documents/class\\_v\\_draft\\_area\\_permit\\_fact\\_sheet.pdf](https://www.epa.gov/sites/production/files/2017-03/documents/class_v_draft_area_permit_fact_sheet.pdf) ([https://www.epa.gov/sites/production/files/2017-03/documents/class\\_v\\_draft\\_area\\_permit\\_fact\\_sheet.pdf](https://www.epa.gov/sites/production/files/2017-03/documents/class_v_draft_area_permit_fact_sheet.pdf))

## CONTACT US

Tell us what you think.

**YOUR NAME \***

**YOUR EMAIL \***

**YOUR PHONE \***



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Good day to each of you.

My name is [REDACTED] and I am a former Mayor of Edgemont, South Dakota, the host community for the Dewey-Burdock Project.

With few exceptions, this community is strongly in support of Powertech's proposed in-situ uranium project.

The Dewey-Burdock site is about 13 miles northwest of our community and we expect that our schools, our infrastructure and our businesses will see the benefits of this project.

Powertech has been a good corporate citizen of Edgemont since they opened their office here 10 years ago.

They have been very open with us and explained the project in detail. We look forward to the economic activity this will bring to our small community.

Over the years, we've had an awful lot of kids from our area earn engineering and science degrees and then have to go elsewhere to find meaningful work. Others have gone to Wyoming or North Dakota to work in technical and service oriented jobs.

Personally, I look forward to having good jobs nearby so that our young people can stay here or return here to work and raise a family.

As an elected official, I took my office and responsibilities very seriously. **And I think our City Council did that when they passed a Resolution of Support for the Dewey-Burdock Project.** I have a copy of it right here.

Jim Turner was our mayor when this was signed, but Jim has since passed away. So, I will do the honors of presenting you with this copy of the Resolution of Support for the Dewey-Burdock Project, and ask that it be included in the record of this hearing.

In conclusion, I want to emphasize my personal, strong support for the Dewey-Burdock project and I hope you will finalize the subject permits quickly and without unduly burdening the company.

More than 10 years is more than enough time to get a project like this started.

Thank you.

**RESOLUTION 2013-03-05**

**Supporting Responsible Uranium Recovery in Fall River and Custer Counties, South Dakota**

WHEREAS Powertech (USA) Inc. desires to extract uranium on the Dewey-Burdock Project site in Fall River and Custer Counties utilizing the *in situ* recovery method; and

WHEREAS the Dewey-Burdock Project has been analyzed by knowledgeable independent parties and demonstrates excellent economic characteristics as well as safe and environmentally sound capacity to be mined such that it meets the requirements of South Dakota and Federal oversight agencies; and

WHEREAS the economic base of the State of South Dakota and Fall River and Custer Counties will be significantly enhanced as Powertech (USA) Inc. directly or indirectly employs over 80 workers, provides an influx of more than \$50 million in non-payroll capital expenditures, and pays mineral severance taxes estimated to be more than \$10 million to the State of South Dakota and more than \$5 million each to Fall River County and Custer County; and

WHEREAS uranium mining in Fall River and Custer Counties will be strictly regulated and overseen by the State of South Dakota, the U.S. Nuclear Regulatory Commission and the U.S. Environmental Protection Agency so as to protect the public health, worker health and the surrounding environment; and

WHEREAS it is the belief of this entity that energy production and economic development will be balanced with environmental stewardship in Fall River and Custer Counties.

**NOW THEREFORE BE IT RESOLVED** that upon demonstrating to state and federal regulators that operations at the Dewey-Burdock Project can be done in a manner that is protective of the public health and the environment, the City of Edgemont Common Council supports and encourages the granting of state and federal licenses and permits to Powertech (USA) Inc. to commence *in situ* uranium recovery activities at the Dewey-Burdock Project site in Fall River and Custer Counties, South Dakota.

Dated this 5<sup>th</sup> Day of March 2013.

Edgemont Common Council  
Edgemont, South Dakota

[REDACTED]  
Mayor

ATTEST:

1/ [REDACTED]  
\_\_\_\_\_  
[REDACTED], Finance Officer

## A BONFIRE OF LIES

Thank you. I am [REDACTED] and I live near Nemo, SD. My theme today will be lies, cowardice, laziness, hypocrisy, cynicism, Native rights, and Azarga's and the EPA's role in environmental destruction or protection. First let us say that there are good people in the EPA who want to do good things, and have done a few good things. Perhaps some are in this room. BUT my message to you, the EPA, today is—don't be lazy. Don't be a coward. Stand up against Trump's war on the environment. Be like the employees of the Badlands Park Service who posted the TRUTH about climate change on the website. When you rule on this draft permit, speak truth to power.

Today those of you from the EPA will be hearing or reading some good science, and some bad science. The good science will be from community members opposed to pollution of our precious Black Hills aquifers. The bad pseudo-science—let's call it alternative science-- will be from Azarga. EPA, believe the community members. Follow up on the sources we provide to you and decide to stand for the truth, that the in situ leaching will allow poisons into Black Hills aquifers. Learn these truths—that Black Hills aquifers are permeable—they leak into each other, so there is no way to sequester the toxic byproducts of in situ leaching. And second, learn that ISL may use horrific chemicals like sulfuric acid to do its gruesome dirty work.

Let's talk about hypocrisy and cynicism. It is breathtakingly cynical for Azarga and other mining forces to stand before us today and say that they will clean up after their mining activities. They cannot restore leached water to its prior condition, and they know it. Consider this quote from the US Geological Survey: "To date, no remediation of an ISL operation in the US has successfully returned the aquifer to baseline conditions."

And Azarga are crooks to boot! Their stock is worth pennies, and Platinum Partners, which owns 30 % of Azarga stock, is under an

indictment that basically describes Platinum Partners as a Ponzi scheme, according to the Rapid City Journal and other sources. So even IF Azarga intended to use the most advanced monitoring and cleanup methods on the Dewey-Burdock site, they wouldn't be able to afford it. The people of Custer and Fall River counties will be left with toxic water and the bill to pay for it! Pay for it with the health of their children, their stock, and their livelihoods.

How about let's talk about the opposite of cowardice—courage. Let's look at what REAL environmental protection looks like. I think it looks like the Native American folks who stood tall at Standing Rock, defending the earth and the water against scum like the Dakota Access Pipeline, and those who stood against the KXL pipeline. We here in this room need to follow the leadership of those proud Native folks and their allies to defeat Dewey Burdock.

We community members here in this room are all allies against environmental destruction. We invite you, the employees of the EPA, to stand for Mother Earth, to stand for clean water, to stand for the principles that probably caused you to seek employment there in the first place. Stand against these mining permits.

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U.S. EPA Region 8 Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Attention: Valois Shea

May 10, 2017

Dear EPA Region 8 representative,

I am writing to strongly urge you to deny the UIC Program Class V Area permits to construct and operate up to eight (8) deep injection wells within the Dewey-Burdock Project Boundary to be used for the disposal of treated uranium ISR process wastewater into the Minnelusa and Deadwood Formations.

My husband and I recently purchased property in Hot Springs & relocated here for the natural beauty, peace, clean air & water afforded to a less populated part of the country. This is intended to be our place of retirement. I am deeply concerned about the prospect of our final residence being degraded and devalued by the potential contamination of our water supply.

Our property, located at [REDACTED], has a well in the Minnelusa Aquifer. The water is great and we currently use it extensively to grow organic vegetables, feed our animals as well as many other uses as needed outdoors. Since our property is 2 acres, it is large enough to sub-divide in the future if we so choose. Any additional structure we may build on our property could be tap into our well for potential household use. That is of course unless you approve this permit.

These proposed permits for deep injection wells that would be used to dispose of ISR process waste fluids into the Minnelusa Formation is a real threat to our family, home & community. For numerous reasons including; 1) The mining industries recurrent inability to properly manage these materials safely, 2) The Black Hills geology is not static and the sheer movement of earth allows for the materials to flow into our aquifers, 3) Uranium is known to cause harm to human health & 4) The potential of increased seismic activity could result in our town losing it's greatest resource, our water.

Following are some specific scientific articles relating the evidence to these reasons I have just pointed out.

1)The Uranium mining industry does not have a very good history of being responsible for clean up nor preventing accidents. According to Lindsey Mclean, Biochemist & expert witness for NRC/ASLB in her Position statement she states, " Tennessee Valley Assoc drilled a total of 7650 boreholes looking for more mine-able/extractable uranium, but failed to find any. Powertech/Azarga was ordered by NRC/ASLB to find and properly close all of those boreholes before they would be able to actively mine, as ISL mining requires aquifers to be contained properly for extraction efficiency. This is a hugely expensive process and to date, no work has been done on this." Information obtained by; UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION ATOMIC SAFETY AND LICENSING BOARD Before Administrative Judges: William J. Froehlich, Chairman Dr. Mark O. Barnett Docket No. 40-9075-MLA ASLBP No. 10-898-02-MLA-BD01 Source link: <https://www.nrc.gov/docs/ML1512/ML15120A299.pdf>

According to a Sep 23, 2013 Rapid City Journal Article Titled 'Leaks, spills, and other problems at in situ uranium mines across the country' journalist [Daniel Simmons-Ritchie](http://rapidcityjournal.com/news/leaks-spills-and-other-problems-at-in-situ-uranium-mines/article_694a875f-aa4e-5abd-9d23-2da9536acb73.html) sites eight examples of violations for other similar mining operations. [http://rapidcityjournal.com/news/leaks-spills-and-other-problems-at-in-situ-uranium-mines/article\\_694a875f-aa4e-5abd-9d23-2da9536acb73.html](http://rapidcityjournal.com/news/leaks-spills-and-other-problems-at-in-situ-uranium-mines/article_694a875f-aa4e-5abd-9d23-2da9536acb73.html)

More recently, on April 3rd, 2017 the U.S. Nuclear Regulatory Commission cited Cameco Resources dba Power Resources, Inc. with nine apparent violations were identified and are being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. Source: NRC INSPECTION REPORT 040-08964/2016-003.



2) In addition, I have recently learned that The hydrology of the Black Hills area is very complex. According to the USGS's website "Numerous fractures, faults, and solution cavities allow flow of water in rocks that otherwise are relatively impermeable" link source: <https://sd.water.usgs.gov/projects/bhhs/Intro.html>

In addition to the very common occurrences of spills, leakage and lack of proper containment as sited previously & the geological data that shows that rock is not impermeable and water can flow into our aquifers, Scientist from Arabian Journal of Chemistry state "Problems with Recovery of Mined Minerals When Organic Compounds Contaminate an Aquifer. Summary: You cannot recover all of the uranium from the mining water. Organified uranium compound levels will build up in the wastewater." [Volume 4, Issue 4, October 2011](#), Pages 361–377.

3) With this inability to guarantee adequate protection comes real concerns to Human health. Science clearly shows the dangers of Uranium to the human body. Toxicology testimony by Linsey McLean, expert witness for NRC/ASLB on the birth deformities found in wildlife and domestic farm animals studied in ISL mining sites contaminated by toxic waste water and radioactive metals. Can be reviewed here: <https://www.nrc.gov/docs/ML1513/ML15132A507.pdf> and <https://www.nrc.gov/docs/ML1513/ML15132A506.pdf>

A study by the Department of Biological Sciences, Northern Arizona University, Flagstaff, Arizona, USA; Department of Physiology, College of Medicine, University of Arizona, Tucson, Arizona, USA Titled 'Drinking Water with Uranium below the U.S. EPA Water Standard Causes Estrogen Receptor–Dependent Responses in Female Mice'. Also provides evidence that uranium is an endocrine-disrupting chemical and populations exposed to environmental uranium should be followed for increased risk of fertility problems and reproductive cancers. Source: *JOURNAL ARTICLE Environmental Health Perspectives* Vol. 115, No. 12 (Dec., 2007), pp. 1711-1716 Published by: [The National Institute of Environmental Health Sciences](#) Stable URL: <http://www.jstor.org/stable/4540018>

Another study by the Argonne National Laboratory, EVS Human Health Fact Sheet, August 2005 points out a major health concern associated with uranium is kidney damage caused by the chemical toxicity of soluble uranium compounds. Source file can be found: [http://www.powertechexposed.com/Radium\\_Argonne%20National%20Lab.pdf](http://www.powertechexposed.com/Radium_Argonne%20National%20Lab.pdf)

As a Yoga Instructor, I spend a considerable amount of my time and money to stay healthy. Pumping our aquifer with the fluids containing uranium puts me, my family and our community at substantial health risks. Is the EPA going to pay for our long-term health care bills due to uranium exposure? Are you going to provide me, my family & community with clean drinking water the rest of my life?


4) Furthermore, our city was founded and continues to be dependent on our water supply for our economic well-being. So much so that our City Council recently approved a Resolution 2017-10: A Resolution to Reaffirm a Citywide Commitment for Clean Water and Water Resource Protection. From May 1st 2017 minutes: <https://drive.google.com/drive/folders/0B9KAiHzXN8kVVTRwMTB0VzJUQms>



One of the reasons for this is that our small City's invested approximately \$1.9 million to purchase Evans Plunge Mineral Springs, one of the Black Hills' oldest & popular tourist attractions. This resource generates an income of approximately \$800,000 per year according to our finance office at City Hall. We can simply not afford to risk one of our major resources.

According to studies published on the USGS website, "An unprecedented increase in earthquakes in the U.S. mid-continent began in 2009. Many of these earthquakes have been documented as induced by wastewater injection." from Journal article 'High-rate injection is associated with the increase in U.S. mid-continent seismicity' Science By: Matthew Weingarten, Shemin Ge, Jonathan W. Godt, Barbara A. Bekins, and Justin L. Rubinstein. Source link: <https://pubs.er.usgs.gov/publication/70161978>

Earthquakes have been know to cause springs to dry up. According to U.S. Geological Survey Fact Sheet 096-03 By Michelle Sneed, Devin L. Galloway and William L. Cunningham, "Hydrogeologic responses to earthquakes can create a variety of hazards. Water supply may be disrupted if wells go dry or become too turbid to pump, and infrastructure damage may result from ground motion." Source link: <https://pubs.usgs.gov/fs/fs-096-03/>

Let's face it, the applicant is in it to make money and does not care about the consequences to the public. It is your job to protect the public's access to clean water per the Safe Drinking Water Act. No exemptions should be made nor any permit be issued to mine Uranium nor dump toxic chemicals into our critical aquifers that are necessary to sustain life. Please use your conscious and legal obligations to the American public and deny these permits.

Thank you, 



FROM

RECEIVED MAY 05 2017

To: Valois Shea FAX(303)-312-6741,  
U.S. EPA Region 8 mail Code: SWP-SUI,  
1595 Wymkoop Street,  
Denver, CO. 80202-1129

As a resident and citizen of  
Hot Springs, South Dakota, I have  
listened, and read about the mining  
uranium using the in situ leaching  
process in the Dewey-Burdock area,  
by Azarga / Powertech, Powertech  
Azarga.

After careful consideration of both  
opinions I now think that the potential  
aquifer contamination by the in  
situ uranium mining is far, far  
too risky for the health of the  
citizens of Hot Springs, Edgemont,  
and Rapid City, and the children,  
and the pregnant women, and the  
wildlife and the environment.

Please do not allow it, stop it!

May 12, 2017

RE: EPA permitting of proposed new mines  
and mills in the Black Hills

*Ann: Valois Shea*

U.S. EPA Region 8  
Mail Code 8WP-SUI  
1595 Wynkoop St.  
Denver, CO 80202-1129

RECEIVED MAY 17 2017

TO WHOM IT MAY CONCERN:

This is in regard to information I have just received today regarding the effort to prevent EPA permitting of proposed new mines and mills in the Black Hills. This is to go on record as a **"FRIEND"** of the Black Hills Clean Water Alliance.

The news from Rapid City, SD states "The Nuclear Regulatory Commission's release of a shortlist April 4 containing Homestake Mining Co.'s **"apparent violations"** of surface and groundwater requirements in uranium mill cleanup underscored the latest efforts to prevent EPA permitting of proposed new mines and mills in the Black Hills."

This is to comment on the EPA draft permits that would allow uranium mining and waste disposal to take place in the underground water tables at the Dewey Burdock site in the southern Black Hills. The Azarga Uranium Corp., formerly Powertech Uranium Corp., headquartered in China, wants an underground injection permit for 4,000 wells in the Inyan Kara Group of aquifers, so it can conduct in situ leach mining and milling of yellow cake on the 10,000-acre site it is leasing at the Cheyenne River headwaters 50 miles west of the Pine Ridge Indian Reservation near Edgemont. Further, the company also wants EPA to grant it a deep underground disposal well permit, allowing the mine and mill to pump its wastewater through four wells into the Minnelusa Aquifer for final disposition at a depth of 2,800 feet.

If Azarga Uranium Corp. doesn't obtain the deep disposal permit, it is set to seek a permit to apply the wastewater to the land surface, according to the environmental impact statement prepared for a Nuclear Regulatory Commission license that is being contested by the Oglala Sioux Tribe, headquartered at Pine Ridge Indian Reservation.

Reading all the above makes one wonder if the EPA Federal Agency is really and truly effective, and considers the effects on all of mankind and humanity. I am one of millions of the average citizenry of our great country, and do not have a whole lot of initials after my name, but am of the opinion I don't need those to make an intelligent response to the article "regarding the fight uranium mining in Black Hills." Common sense is all that is needed to know how dangerous and hazardous such projects in the Black Hills pose to humanity.

I am of the opinion mankind and humanity no longer matter to the EPA, NRC, or any other federal agency of the government. I am of the opinion the **"almighty dollar of profits"**, no matter if the

beneficiary is of our country or from a foreign country, is all that matters. The federal government making reference to regulating anything, no matter what the subject may be, is one big false effort.

Companies no matter who they are or where they are from are granted permits, licenses, and everything they need to do their projects, but none are ever made to clean and restore the land once they have taken all that they can from the land and water.

Our land, both surface and subsurface have been exploited for so long and for so much, that it is amazing the whole earth does not cave in to become one big sinkhole, to say the least regarding climate change.

I am sure there are some workers in all the bureaucracy that really care about mankind, but the profits to be made and the end \$ figures to be made under the guise of progress and energy independence ensure that mankind and all of humanity should appreciate each and every day that they wake up and have air to breathe and water to drink (even if it is a little polluted), just be grateful for being able to rise another day.

The air quality, the water quality, climate change, the whole environment quality is of no concern to those few with the wealth to continue to expand their personal empires where only those few will benefit, and humanity is on its own (every man for himself). One day this whole country is going to be one big sinkhole thanks to all the underground pipes, fracking and drilling for "supposed energy/fuel resources, and defense purposes", all the violations of surface and groundwater requirements, there will be no future for our grandchildren who will be forced to survive with the barest minimum which may come down to "only the strong survive". Of course there are some people that say "climate change is a hoax", but that is their opinion and won't be worth much when the country and the world have to pay the price for all the exploitation that has already been done to contaminate the quality of air, water, surface and subsurface areas of our country and the world.

The sound of these comments may sound like doom and gloom but that is exactly what the end result of development, progress and energy independence is causing to happen to our country and this world. Forget the open spaces, the greenery, foliage, forests, wetlands, habitat, animal species, because some wealthy mogul has a need to increase his personal profits, and these topics and certainly the effects on mankind are the last things to be considered at all. The effects on the environment or on mankind **never** enter the equation at all. **ONLY PROFITS are to be considered!!** How much wealth does a person need to be satisfied with themselves and be happy each and every day? At the rate of exploiting our country and the world at such a fast pace, one day there won't be a need for any of the federal agencies to even exist, or if they do, for them to pretend there are regulations that prohibit or govern procedures how something should be done.

Every elected official in this country, no matter what level of government, be it federal, state, city/county or tribal should consider it a privilege to represent the people, and serve to the best of their ability for what is best for the people. Yet, any person with common sense knows the elected officials, no matter the level of government, cannot accomplish what is needed, unless they have a majority of votes to accomplish what is best for the people. Partisan and bi-partisan become so tangled and enmeshed to “win a battle and forget about winning the war”, whatever the topic is, that in the end nothing is accomplished, and the common citizenry can do nothing about our own personal situations, except continue to strive to meet each new day with hope and be thankful for each new day.

I hope this letter expressing my concerns receives fair, uniform, and equal treatment and consideration that I richly deserve. Thank you for this opportunity to submit my response to oppose the projects being proposed to occur in the Black Hills.

Sincerely,

A large black rectangular redaction box covering the signature of the sender.

, FRIEND

To the Black Hills Clean Water Alliance

Hello, my name is [REDACTED], that's [REDACTED], and I believe I speak for many that cannot be here today, they just simply could not take off work or have family obligations.

Having hearings during the week when people have to work, makes it very difficult.

I wonder if most of the frustration we hear is because people are frustrated that they have to fight for what is rightfully theirs?

Water is the most important ingredient to life.

We cannot survive without good water.

Everyone in this room knows the pitfalls and danger to our water this project possesses. The amount of water asked by this foreign company, for FREE, is ridiculous. City residents pay for thier water use, why should we give it away to a foreign company?

To give away so much water in a semi-arid region that suffers from drought more often than not, is a disaster in the making. We rely heavily on our aquifers. The Ogallala Aquifer is important to the plain states. It is a vital resource we cannot sqander. Human demands on this water that sprawls underneath parts of eight states from South Dakota to Texas. Landowners strive to conserve what's left, they face a tug-of-war between economic growth and declining natural resources. We should not give away so much to a foreign company.

They claim there is no connectivity between the aquifers, and their project is completely contained. Spelunkers thought they reached the end of the third largest cave in the world, Jewel Cave, which is north of the project. The spelunkers were thrilled when they squeezed through that tight space and found yet more huge caverns. We are not confident with Powertech Azarga's claims of knowing what lies beneath.

DR LaGARAY has done EXTENSIVE RESEARCH AND WAS SUBMITTED <sup>INS</sup> ~~at~~ the NRC hearing.

The transportation and disposal of all related waste is an issue with far-reaching compromises to the environment, and contains its own very long list of concerns. They have found radioactive fracking socks discarded in North Dakota illegally. Is there any wonder we are skeptical of another extractive business?

You have heard already, from other testimony that we can not trust this company. Powertech Azarga's lobbyist wrote legislation and got it passed, whether by ignorance or corruption, that has made this project a self-monitored operation. This was intentionally introduced to make it easier for them to Self-Monitor. This was an underhanded and arrogant thing to do to South Dakotans. How can we ever trust Powertech Azarga when they have this kind of dishonest intentions? Why, if the process is, to quote Mr Hollenbeck, "safe and benign", would we need to change the rules to make it easier for a company to destroy an area and then walk away without paying the consequences. Asking for an aquifer exemption should certainly make clear their intentions.

Many people use the very same Inyan Kara aquifer that the mining will be done in, and are at lower elevations. The deep disposal of waste into lower aquifers, is just an easy means for disposal of this toxic waste. Out of sight, out of mind, and too deep to be monitored.

Will it flow into other aquifers?

What happens after they are finished and long gone?

Who monitors it then?

Who cleans up any leaks or excursions from waste disposal ponds?

Who pays for it?

Once stirred up, the process continues, leaching forever into the ground water around the project area. Into Beaver Creek, into the Cheyenne River, into Angostara Reservoir, where people swim, fish and enjoy the outdoors.

Since the recovery of the uranium is not 100% and they are not pulling the other harmful elements out for production, arsenic, which is a known cancer-causing metal and contaminates wells. Molybdenum and Vanadium, etc. are another elements that could be extracted. But I see no intention within permits to recover anything other than uranium. All that will be waste. We recycle plastics, glass and cardboard. Why wouldn't it be fiesable to insist on the recovery of all heavy metals and elements that are extractable from the process?

The market for uranium is at an all-time low. Thanks to the ongoing fiasco of Fukushima and the shift to new renewable technology on the rise.

Why would we risk contamination of a more precious resource, for uranium, that may not be used for energy in the future? Again is this worth the risk? Here I would like to remind you that the half life of uranium is 4.5 BILLION years.

At this time it is not economical to extract. At \$22.50 a pound, perhaps Mr Hollenbeck with his organic farming background should look for a more economic and ecologically sound idea for creating jobs in Edgemont by growing hemp. It's worth far more than uranium.

Once extracted and shipped to Canada for placement on the International market, where would this uranium end up? Perhaps China, North Korea, or Iran?

There are concerns for the safety of our tourists, our second largest economic sector.

We have so many scenarios of accidents going through our minds. What would happen if one of our vacationers had an accident with a truck filled with uranium heading to Canada?

What if there was a fire at the accident? Who would respond?

What if there was a fire at the operation?

Who would respond? Are the first responders equipped and trained to deal with such accidents? The trucks would have to be marked as radioactive. How does that look to people vacationing here? What would be their Perception of the Black Hills then? Would that deter them from a return visit? The company, when asked at the hearing prior to this, they were unclear on many safety issues.

The Black Hills enjoys a relatively sound economy. Agriculture and tourism supports the majority of businesses. We who live here have an opportunity to enjoy the attractions and the beauty as well. It's just a nice place to live. I hope you have a chance to enjoy some of the beauty here in the Black Hills while you're here. If you should visit the shrine of democracy, Mount Rushmore, think about the people, the water people drink from the fountains there. This is water from one of our aquifers. What statement does it make if we allow Powertech Azarga to use and contaminate that same water?

Thank you, and I hope you reach the conclusion that you must not further this permit. Thank you.

EPA Hearing

We drink water. If these water aquifers will be contaminated, then we will have no clean water to drink. As a licensed EMT, we will see more hospital visits. We will have more ambulance rides here to Rapid City. This means severe dehydration cases. We must prevent these cases, so the ambulance and personnel can be used for heart attacks. I will be quoting Emergency Care 12<sup>th</sup> Edition on how water is a part of the human body.

“About 60 percent of the body is made up of water and without this fluid the functions of the cells would cease. Water is distributed throughout the body both inside and outside the cells and balancing this distribution is an important part of maintaining normal cellular function. Normally water is divided among three spaces in the body, with the following percentages representing averages.

- Intracellular (70 percent) – this is water that is inside the cells
- Intravascular (5 percent) – this is water that is in the bloodstream
- Interstitial (25 percent) – this water can be found between cells and blood vessels.

We regulate the levels of water in our body by drinking fluids and making excretions, urine. This allows us to constantly adjust our hydration based on our levels of activity. Inside our bodies, fluid is distributed appropriately through a number of factors:

- The brains and kidneys regulate thirst and elimination of excess fluid
- The large proteins in our blood plasma pull fluids into the bloodstream
- The permeability of both cell membranes and the walls of capillaries help determine how much water can be held in and pushed out of cells and blood vessels.

Each of these factors helps us regulate the amount and distribution of fluid. If these factors were to be interfered with, fluid levels and distribution can become problematic.

Dehydration is an abnormal decrease in the total amount of water in the body. This may be caused by decreased fluid intake or a significant loss of fluid from the body by one or more of a variety of means. Remember, however, that maintaining a balance of water relies on a healthy gastrointestinal system. Fever, vomiting or diarrhea can also significantly alter the amount of water in the body. Fluid can be lost, as well, through rapid breathing (as in a respiratory distress patient) and profuse sweating. The plasma protein of blood can be lost with injuries such as burns.” “Dehydration results from losing more fluid than the patient takes in. This is very common in hot weather, when the patient sweats a great deal but does not drink enough liquid to keep up with the fluid (heat exhaustion).”

Quote from Brady, *Emergency Care, 12th Edition*, Daniel Limmer and Michael F. O'Keefe.

If our waters are contaminated, then our youth will not be protected. Our citizens will not be protected. Our future is at stake. We protect our youth and help our EMTs and first responders by leaving the uranium in the ground. As a candidate for City Council, and if I get elected, I will fight to protect our youth and citizens of Hot Springs. So I am asking you to stop the mining and the wells, to protect American citizens. I don't want to see the Black Hills become a third world country. I just helped with a 6K for water from World Vision to bring clean water to 22 kids and families overseas. So



let's not turn the Black Hills into a third-world country. As candidate for City Council, if I am elected, I will fight to protect the City of Hot Springs, Black Hills and Reservations.

Note: the EPA needs to visit the Evans Plunge, water from the Madison aquifer.

May 18,

**Resolution 2017-10**  
**A Resolution to Reaffirm a Citywide Commitment for**  
**Clean Water and Water Resource Protection**

BE IT RESOLVED by the Common Council of the City of Hot Springs, South Dakota, that we are committed to preserving and maintaining the amount and quality of water for the citizens of Hot Springs and its surrounding environs, and

Whereas: The City of Hot Springs was first developed as a town in the late 1800's due to its proximity to the Fall River and the abundant natural warm mineral springs within the valley, and

Whereas: The City of Hot Springs has made long-term investments in stormwater management, potable water systems and wastewater management programs and infrastructure to reduce nutrients and pollution in our waters and to protect our vital water resources, and

Whereas: The Common Council is obligated to preserve and protect the public health, safety and welfare by preventing the pollution of, and maintaining the quality of the water entering in, held within and removed from aquifers serving as the City's water source, and

Whereas: The City of Hot Springs has stated in its water ordinance that our mission is to provide the City's water customers with a safe drinking water supply, water for fire protection and an adequate supply of water for our essential daily needs, and

Whereas: The City of Hot Springs Common Council finds that any pollution or contamination, willful or not, of our water supply to be a direct threat to our community and its health, safety and welfare, and

Therefore: Be it resolved that the City of Hot Springs will take necessary action to ensure the perpetual purity and quality of the waters available for use by the citizens of Hot Springs and those the City distributes water to, and

Therefore: Commit to support any action from the County, State or Federal Governments aimed at protecting the waters of South Dakota, both surface water and underground aquifers, as a critical natural resource necessary for life.

RECEIVED JUN 19 2017

[REDACTED]  
[REDACTED]  
June 14, 2017

Valois Shea  
U.S. EPA Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129

Dear EPA, Region 8:

My name is [REDACTED]. Thank you for the opportunity to comment regarding the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells in South Dakota. I am grateful to have been able to attend some of the public hearings held at the Ramkota in Rapid City in May; grateful that some avenue is open to the people to have a voice in this important decision that will affect everyone. At the hearing, I was nonetheless surprised and encouraged to find that citizens from every walk of life, political stripe, age, race, and religion stood together in opposition to the threat that the proposed permits would bring to our land.

Not knowing what to expect at the public hearings, I went to show my opposition just by being there. Never did I anticipate rising to the podium to speak. Since time allowed and no other speakers had submitted their names, I too, stood before you to beg you to please deny these permits. Here I have taken some more time to formalize my thoughts.

As a concerned citizen and life-long resident of Rapid City and the Black Hills, I am opposed to any further uranium mining in this area and to the use of in-situ recovery of the uranium. The risk of irremediable harm to the water supply, the environment, and ultimately human life should any contamination by radioactive agents occur, far outweighs any economic gain or consideration.

My Bachelor's Degree is in Chemistry from the South Dakota School of Mines and through my studies I understand that radioactive waste must be thought of as forever, since the half-life of some of the materials might be hundreds, thousands, even millions of years. To disrupt the mineral deposits by in-situ recovery and then return the spent water into the underground aquifers is simply too great a risk.

It is not possible to remediate nuclear waste, only contain it. A deep disposal well in an aquifer, no matter how deep, is connected to other water sources and should not be considered a place of containment. Water is not stationary; surface water and ground water are interconnected. The proposed wells are in an area known to have geological faults and fractures, and thousands of old boreholes. If during the in-situ recovery and disposal the massive volumes of water are pumped in and around these potential escape routes, the poisoned water might easily find its way into other aquifers or water sources. Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible, and our groundwater is likely

to be contaminated. Furthermore, the use of such large volumes of water would alone create great hardship for our ranching families and their livestock. Most of my life we have experienced year after year of drought in western South Dakota.

What science experiment ever has one-hundred percent efficiency? Since the history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination by radioactive and heavy metal pollutants, the text of the permits already includes exemptions to the uranium-bearing portions of the Inyan Kara Group aquifers. In my reading I have learned that if no exceptions or exemptions to existing environmental laws were granted, no part of this operation would be allowed.

Simply because we can obtain uranium through in-situ recovery does not mean we ought. As I listened to each speaker, my horror of allowing the permits only intensified. I heard a South Dakota Legislator tell of the hasty way some state laws were crafted to allow for the work on the Dewey-Burdock project to proceed, a young Native American mother promise to pray for those making this decision and remind us all that monetary riches are fleeting, a woman rancher from the area describing how quickly in just a normal summer the wells might dry out enough to run toxic for the cattle, how the company in charge of this mine has already left a Colorado mine without cleaning it up, and a U.S. Veteran describe the chemical munitions stored at the Army Depot near the mining site, yet another threat to our water supply and life. Earlier in the day, my own father wondered just who would end up with the uranium should it be mined.

Thus for reasons of national security, the protection of the water supply for all the Black Hills and western South Dakota, the livelihood of area ranchers, and the health of the water we leave for our children and theirs, I once again beg you to please deny these permits.

Should the water permits be allowed and the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells project move forward, I fear for the life of the Hills, the land and its people.

Thank you for your kind consideration.

Sincerely,

[REDACTED]

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

To Whom it may concern,

In response to the two draft permits and future proposed Dewey-Burdock uranium mining plan, I would like to respond as follows:

First, as a Critical Care Registered Nurse, I have practiced nursing for 40 years. With all the most advanced technology available, in all practice, it is the basics of life that precedes all else - Airway, Breathing, Circulation - "ABC's of Life". So it is with this proposal, there is NO LIFE without WATER! Absolutely no water source should be purposefully contaminated. Attached is a copy of the Well Drilling Report for my well. It shows that it was drilled through the Minnelusa aquifer, down to the Madison aquifer. This hole will be a source of contamination from the Minnelusa to the Madison. There are MANY such wells throughout the area that will allow this cross-contamination to occur. Natural fracturing of the geological layers will also serve as contamination points between aquifers. I also have several neighbors who have wells drilled into the Minnelusa and utilize this water for their every day use. Water is VERY precious in this area as many people haul their water or have it delivered to cisterns. Contamination is NOT AN OPTION!! It is a scientific fact that the Minnelusa flows from west to east. It would flow directly to my area, and ultimately contaminate the entire regions' water sources.

I also am against this proposal for the following reasons:

- \* The previous mines in the Dewey-Burdock area have not been fully reclaimed.
- \* Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible and NOT a SINGLE accident can be allowed.
- \* There are over 7000 old boreholes that have not been properly plugged, making it impossible to contain mining fluids or waste liquids. Contamination of our groundwater would be almost guaranteed.
- \* There is no need for uranium for use in the United States. All of it would be shipped out of country - contaminating our lives, for foreign countries, i.e. potential enemy use. AMERICA FIRST!
- \* The Black Hills region is dependent on Tourism as one of our prime sources of income. Contamination of our water sources would render this a "Dead Zone" to tourism, not to mention total evacuation of the local population would follow.

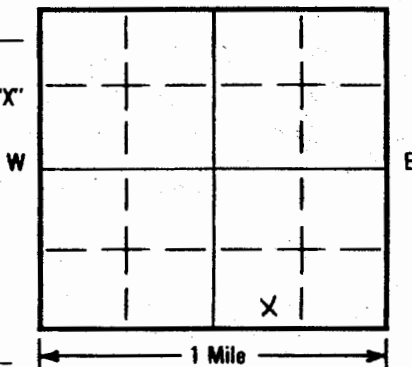
This is not another "Not in my back yard" argument. This has the potential for severe disastrous consequences. I IMPLORE YOU to deny these permits.

Sincerely,  
[REDACTED]

Sec. 5: Lot 11 Block 1 of Amended Plat of Pine Shadows Subdivision according to  
 Plat Thereoff recorded SOUTH DAKOTA WATER WELL COMPLETION REPORT in Book XVIII 07-92 of Plats

Location SW 1/4 SE 1/4 Sec 28 Twp 85 Rg 5E  
 County Fall River  
 North

Please mark well location with an "X"



Well Completion Date

12/7/04

**LOCATION:**

Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? 150 ft. from Septic (identify source).

**PROPOSED USE:**

☒ Domestic/Stock ☐ Municipal ☐ Business ☐ Test Holes  
☐ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well

**METHOD OF DRILLING:**

AIR Rotary

**CASING DATA:**

☒ Steel ☐ Plastic ☐ Other

If other describe \_\_\_\_\_

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>17</u> LB/FT	<u>5.5</u> IN	<u>+1.5</u> FT	<u>558</u> FT	<u>7 7/8</u> IN
<u>11.35</u> LB/FT	<u>4.5</u> IN	<u>545</u> FT	<u>861</u> FT	<u>4 7/8</u> IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN

**GROUTING DATA**

Grout Type	No. of Sacks	Grout Weight	From	To
<u>PORTLAND</u>	<u>90</u>	<u>14</u> lb./gal	<u>560</u> ft.	<u>0</u> ft.

Describe grouting procedure PRESSURE grouted through casing

**SCREEN:** ☐ Perforated pipe ☐ Manufactured

Diameter \_\_\_\_\_ IN Length \_\_\_\_\_ FEET

Material \_\_\_\_\_

Slot Size \_\_\_\_\_ Set From \_\_\_\_\_ Feet to \_\_\_\_\_ Feet

Other information \_\_\_\_\_

**WAS A PACKER OR SEAL USED?** ☐ YES ☒ NO

If so, what material? \_\_\_\_\_

Describe packer(s) and location? \_\_\_\_\_

**DISINFECTION:** Was well disinfected upon completion?

☒ YES, How: Chlorine

\_\_\_\_\_  
 NO, Why Not? \_\_\_\_\_

Laboratory sent to for water quality analysis \_\_\_\_\_

Well Owner [Redacted]  
 Business [Redacted]  
 Address [Redacted]

**WELL LOG:**

**DEPTH**

FORMATION	FROM	TO
Minnekaota limestone	0	40
Opeche shale	40	140
Minnelusa	140	840
MADISON limestone	840	980

STATIC WATER LEVEL 330 Feet

If flowing: closed in pressure \_\_\_\_\_ PSI

GPM flow \_\_\_\_\_ through \_\_\_\_\_ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other \_\_\_\_\_

Reduced Flowrate \_\_\_\_\_ GPM

Can well be completely shut in? \_\_\_\_\_

**WELL TEST DATA:**

☐ Pumped Describe: AIR Rotary  
☐ Bailed \_\_\_\_\_

☒ Other \_\_\_\_\_

Pumping Level Below Land Surface

540 ft. After 2 Hrs. pumped 17 GPM

440 ft. After 2 Hrs. pumped 10 GPM

If pump installed, pump rate \_\_\_\_\_ GPM

**REMARKS**

This well was drilled under license # 705

And this report is true and accurate.

Drilling firm DAKOTA BICE DRILLING

Signature of License Representative: [Signature]

Signature of Well Owner or Equitable Property Holder: [Signature]

Date: 1/26/05



May 10

# Nutrition Facts

Serve Size 8.11 oz (240 mL)  
Amount Per Bottle

Total Fat	0g	0%
Sodium	0g	0%
Total Crap	0g	0%
Sugar	0g	0%
Total Crap	0g	0%
Total Crap	0g	0%

% DV is based on diet

Manufactured by  
Beverages  
12345 Ave.  
NY 12345

The Hotel Alex Johnson  
bottled water is drawn from  
deep in the Madison  
formation at the base of  
the Big Horn Mountains,  
Wyoming.

Worland Aquifer #1 & 3,  
Ten Sleep Aquifer #1.



## 5/17 EPA HEARING TESTIMONY

My name is [REDACTED]. I'm a retired pathologist living in the Black Hills.

I'd simply like to report to you that in 2014, after a discussion of the ISL uranium mining technique and the potential risks to SD aquifers, the SD Medical Association adopted a resolution opposing uranium mining in the state. It was felt that the risks outweighed any potential benefits to residents of the state.

In this action, SD followed the example of the CO medical association, which also went on record to oppose uranium mining.

I think physicians in the region are concerned about the public health consequences of any prolonged increase over background radiation exposure (even if small) experienced by humans or food animals, and are concerned as well about the chemical toxicity of uranium and other heavy metals freed during the ISL procedure.

Proven and potential cross-communication and cross-contamination among aquifers pose a significant risk to health which the proponents of ISL uranium mining have no way of providing absolute protection against.

Thank you.



My name is [REDACTED]. I am currently living in Edgemont, South Dakota. I have a relative whose first wife grew up here. She died of cancer at 37. The only thing he will say is, "Don't drink the water."

As a young man, I lived a few years in Utah, where I had to comfort a roommate from St. George, Utah who lost a 19-year-old brother to cancer. Children there used to write their names in the nuclear fallout dust covering automobiles.

A July 2017 eleven-page Special Report to the Oregonian reported there were an estimated 400,000 Atomic Veterans ordered to be nuclear guinea pigs under or near atomic test blasts, and the reluctance of government experts to acknowledge ongoing health damages.

Salt Lake's Deseret News spent years documenting the culture of insensitivity and denial of first the Atomic Energy Commission and then the Nuclear Regulatory Commission, a cosmetic change that made little actual difference. More recently, I knew a Rapid City South Dakota photographer who loved vacationing in the beautiful Utah areas with the aftereffects of hundreds of uranium mines and nuclear tests. He died of cancer. I could not resist picking up a copy of the book titled, The Day They Bombed Utah by John Fuller.

The list of nuclear test problems and losses is mind-numbing. These countless examples demonstrate an ongoing culture of denial and insensitivity that carries forward to this day. I can see why regulators would block out things which would cost them their jobs and bring billions of dollars in lawsuits.

According to paid engineers working for the Chinese uranium mining company, Azarga, they and the Nuclear Regulatory Commission are best qualified to look after our safety and welfare.

Not everyone always sees it that way. In 2007, then candidate Barack Obama stated, "The NRC is a ... moribund agency that needs to be revamped and has become captive of the industries that it regulates," according to a Keene (N.H.) Sentinel interview.

A ProPublica website article dated December 26, 2012 on Wyoming in situ mining notes "The Safe Drinking Water Act forbids injecting industrial waste into or above drinking water aquifers, but the EPA issued what are called aquifer exemptions that gave mine operators at the ranch permission to ignore the law. Over the last three decades, the agency has issued more than 1,5000 such exemptions nationwide, allowing energy and mining companies to pollute portions of at least 100 drinking aquifers."

A USGS study published by Otton in 2009 found "to date, no remediation of a ISR operation in the United States has successfully returned the aquifer to its baseline."

Tree rings throughout the West provide an historic record of droughts lasting as long as 30 years. This would drastically argue against proposed calculations of ground water recharge.

When tritium from nuclear fallout moved through groundwater in the Inya Kara Group at fifteen feet per day it indicated possible flaws in the rocks, or porous lenses. This data was either ignored or explained away. A recent paper said the 1963 tritium

**data showing much faster velocity is an unresolved issue. (South Dakota Academy of Science, Vol. 93 (2014) p. 28.)**

**Research experiments by Duke University published on October 26, 2010 showed placing CO<sub>2</sub> underground for greater than 300 days, “could pose a risk to overlying fresh groundwater.” They further said, “potentially dangerous uranium and barium increased throughout the experiment in some samples.” This showed underground storage of CO<sub>2</sub> creates carbonic acid and is not harmless.**

**No exemption should allow placing nuclear waste in waters which could be used by agricultural animals and thus indirectly by humans.**

5/9/17

MY NAME IS [REDACTED]. I LIVE IN RAPID CITY. MY PH.D. IS IN POLITICAL SCIENCE, WITH AN EMPHASIS ON ENVIRONMENTAL POLICY. I STARTED STUDYING URANIUM MINING IN 1979, WHEN ABOUT TWO DOZEN LARGE COMPANIES THAT WANTED TO MINE URANIUM HERE WERE CONVINCED TO LEAVE EMPTY-HANDED. IN RECENT YEARS, 11 URANIUM COMPANIES HAVE EXPRESSED AN INTEREST IN THE BLACK HILLS.

MY DISSERTATION CONSIDERED TRIBAL-FEDERAL-STATE GOVERNMENT RELATIONSHIPS AROUND NATURAL RESOURCES. PART OF THAT RESEARCH WAS CONDUCTED UNDER AN EPA FELLOWSHIP. I HAVE PUBLISHED ON THESE TOPICS IN PEER-REVIEWED JOURNALS AND PRESENTED THE RESULTS OF MY RESEARCH AT A NUMBER OF PROFESSIONAL CONFERENCES.

I FOCUS ON POLICY AND THE ROLES OF GOVERNMENT AGENCIES ON THE URANIUM ISSUE. I AM ON MY THIRD DAY OF OBSERVING YOUR HEARINGS ON THE DEWEY-BURDOCK PROPOSAL, AND I HAVE READ LARGE CHUNKS OF THE RELATED DOCUMENTS. MY PRELIMINARY CONCLUSION IS THAT SOME OF THE EPA HAS BEEN CAPTURED BY THE URANIUM INDUSTRY. FOR THOSE IN THE AUDIENCE WHO DON'T KNOW THIS TERM, WHEN I SAY "CAPTURED," I MEAN THAT THE AGENCY HAS COME TO RELATE TOO CLOSELY TO THE COMPANIES IT REGULATES, TO THE DETRIMENT OF THE GENERAL PUBLIC.

THIS IS A DIFFICULT THING TO SAY, AND YOU DESERVE TO HEAR MY REASONS FOR THIS CONCLUSION.

THE FIRST REASON I SAY THIS IS THE USE OF LANGUAGE BY REPRESENTATIVES OF THE AGENCY AT THESE HEARINGS. INSTEAD OF SAYING THAT PARTS OF THE INYAN KARA AQUIFERS ARE UNDER CONSIDERATION FOR EXEMPTION, YOUR STAFF SAID, "THE AREAS THAT WE **ARE** EXEMPTING" – AS IF THE EXEMPTION HAS ALREADY BEEN GRANTED – OR AT LEAST AS IF THE DECISION HAS ALREADY BEEN MADE. IN THE POWER POINT THAT I HAVE NOW OBSERVED SEVERAL TIMES, THE SLIDE ON THE ROLES OF THE VARIOUS AGENCIES MAKES IT SOUND AS IF THE PERMITTING PROCESS IS ALL BUT COMPLETE. IN FACT, THE NRC LICENSE IS UNDER LITIGATION. THE STATE DENR HAS ONLY HELD ONE WEEK OF

HEARINGS ON THE PROPOSED LARGE-SCALE MINE PERMIT, AND THAT HAPPENED 3 YEARS AGO. IN FACT, THE PROCESS HAS BEEN ON HOLD SINCE THEN.

THE SECOND REASON I SAY THAT SOME OF THE EPA HAS BEEN CAPTURED CAN BE FOUND ON THE INFORMATION SHEETS THAT HAVE BEEN PASSED OUT TO THE PUBLIC AT THESE HEARINGS. ONE OF THEM IS TITLED "HOW MUCH GROUNDWATER WILL BE LOST FROM THE INYAN KARA AQUIFERS?" THIS SHEET, AS WELL AS THE INFORMATION PRESENTED WITH THE POWER POINT, INDICATE THAT ONLY "A SMALL PERCENTAGE" OF INYAN KARA WATER WILL BE CONSUMED. THIS FOLLOWS THE COMPANY'S LINE, BUT IT DOES NOT FIT THE FACTS. THE INYAN KARA WATER THAT IS BEING USED FOR MINING WILL BE RUN THROUGH THE REVERSE OSMOSIS PROCESS. IT IS COMMON KNOWLEDGE THAT REVERSE OSMOSIS IS AN INEFFICIENT WAY TO PURIFY WATER, BECAUSE IT TURNS AT LEAST 30% OF THE WATER IT HANDLES INTO WASTE WATER. THIS MEANS THAT AT LEAST 30% OF THE INYAN KARA WATER USED BY THE PROPOSED MINE WOULD BECOME WASTE, NOT THE 1% OR THE 3% THAT THE COMPANY – AND THE EPA – CLAIM. THE EPA MAPS MAKE THE BARRIER LAYER BETWEEN THE MINNELUSA AND MADISON AQUIFERS UNNATURALLY LARGE – AND CONSISTENT – AND MINIMIZE THE SIZE AND IMPORTANCE OF THE MADISON AQUIFER.

THE EPA FAILS TO ACKNOWLEDGE THE DOZENS OF VIOLATIONS AND REPORTABLE INCIDENTS AT JUST ONE IN SITU LEACH MINE – THE CROW BUTTE MINE – OR TO TALK REALISTICALLY ABOUT THE FACT THAT EXCURSIONS AND LEAKS ARE "NORMAL" FOR IN SITU MINES. IN FACT, AT AT LEAST TWO ISL MINES, EXCURSIONS HAVE REACHED OUTSIDE THE MINE BOUNDARY. INSTEAD, THE PUBLIC IS PRESENTED WITH A SANITIZED, READY FOR PRIME-TIME VERSION OF THE ISL PROCESS THAT CAN BE DISPLAYED BY NEAT DRAWINGS.

THIS LACK OF REALISTIC CONSIDERATION OF THE IN SITU LEACH MINING PROCESS BODES POORLY FOR THE PUBLIC, AS IT INCREASES THE PROBABILITY THAT THE AGENCY WILL ISSUE FINAL PERMITS WITHOUT EVER HAVING GIVEN A "HARD LOOK" AT THE PROPOSAL. I KNOW THAT THE

AGENCY IS LIKELY TO GET SUED, WHETHER IT ISSUES FINAL PERMITS OR NOT, BUT THIS ONE-SIDED CONSIDERATION OF THE SITUATION SIMPLY INCREASES THE PROBABILITY OF EXTENDED LITIGATION – AT TAXPAYERS' EXPENSE. SO DOES THE LACK OF PROPER TRIBAL CONSULTATION, WHICH HAS CAUSED THE NRC ENDLESS HEADACHES. YOU CAN'T START TRIBAL CONSULTATION PART WAY THROUGH THE PROCESS. IT NEEDED TO BE COMPLETED YEARS AGO.

I WOULD STRONGLY SUGGEST THAT THE EPA REFOCUS ITS EFFORTS WITH FULL CONSIDERATION OF THE EASILY-AVAILABLE INFORMATION ON THE PROBLEMS ASSOCIATED WITH ISL URANIUM MINING AND DEEP DISPOSAL WELLS. AS I THINK HAS BEEN ABUNDANTLY CLEAR DURING THESE HEARINGS, ONLY THEN CAN THE AGENCY REALLY DO ITS JOB TO THE BENEFIT OF THE PUBLIC, RATHER THAN A FOREIGN CORPORATION. YOU ARE SUPPOSED TO BE ACCOUNTABLE TO US.

THANK YOU FOR THIS OPPORTUNITY TO COMMENT. I PLAN TO SUBMIT FURTHER COMMENTS BY MAY 19.

①

My primary concern with this project is the willful contamination of the pristine minnetonka aquifer which is the water source for me and most of my neighbors.

My secondary concern is the economic viability of fission, nuclear powered, electrical power generating future. As has been exemplified <sup>by the two G.E. nuclear power plants <sup>under construction</sup> back east that have been terminated and the subsequent bankruptcy of the parent company Toshiba due to cost overruns.</sup> The unresolved nuclear waste problem, <sup>Three mile island</sup> and the legacy of Chernobyl, ~~and~~ Fukushima, and now the Hanford reservation failure.

The price of renewable energy is dropping precipitously

(2)

making it the energy of the future. The shortfalls of transmission and storage will be overcome by innovation and brute force effort. The price of yellow cake is well below the breakeven point and demand is decreasing.

Back to my primary concern, the injection of "treated water" into the Minelusa aquifer. Mr. Hollebeck stated the solution injected as a waste stream into the aquifer would be a saltwater solution. Let's talk about this. The Romans, after the conquest of Carthage in North Africa, spread salt ( $\text{NaCl}$ ) into the fields of Carthage to kill the

③

soil thus starving the population into subjugation.

But, the term "salt" is a chemically generic term. Like the generic terms dog, flower, or bug. There are many and varied examples within each category.

The most commonly known salt is table salt -  $\text{NaCl}$ , which was illustrated previously. In chemistry a salt is ~~the~~ result of the chemical reaction of an acid and a base. Thus salts are a combination of all sorts of elements that have the opportunity to react under the right conditions.

The process that is described by Powertec is the injection



④

of  $H_2O$ ,  $O_2$  &  $CO_2$ . This is really the injection of an oxidising agent ( $H_2O_2$ ) and an acid (carbonic acid). Carbonic acid is made by adding  $CO_2$  to  $H_2O$  under pressure. Think Coca Cola. Pour coke on the sidewalk and it will fizz, with continued application it will dissolve the concrete, along with <sup>the</sup> other minerals present.

What Powertec is after is uranium oxide (yellow cake). After the uranium oxide is removed from the solution that is pumped from underground the remaining mineral salts that are not money makers need to be disposed of. These are the salts that are to be disposed of in our drinking water.

⑤

The chemical nature of these waste salts has not been defined, and considering <sup>the</sup> mineral complexity of the ore body I suspect there are mineral salts that are deleterious to life.

Mr. Hollebeck stated that he would be willing to drink this waste salt water that is to be injected into our aquifer, which reminds me of a classmate of mine in school who worked at the sewage treatment plant in the summer. On a double dog dare, he drank a glass of effluent from the plant and was immediately taken to the hospital to have his stomach pumped and given every injection they could think of. He did not die, but he did not receive any awards for intelligence.

⑥

I am not willing  
to fake a double dog dare!

U.S. Environmental Protection Agency, Region 8  
Attention: Valois Shea, mail code: 8WP-SUI  
1595 Wynkoop St.  
Denver CO 80202-1129

May 14, 2017

I am writing to express my concern for a proposed mining activity in the southwest corner of Custer County, S.D. and northwest corner of Fall River County S.D., in and around the area of Dewey and Burdock S.D.

The proposed in-situ mining of uranium, water extraction for that purpose, processing, and disposal of waste, in my opinion, has not been adequately researched prior to consideration for permitting this operation. The potential impact to life and environment possess a significant threat.

I learned of this concern from public opinion, the Black Hills Clean Water Alliance (BHCWA), and the population that would be impacted by this activity. Unable to attend any public hearings that addressed all the concerns and their recording, I explored these issues by reading a formal research report compiled by BHCWA. I believe there is, validity for opposition; particularly that detailed in the report performed by Dr. Hannan LaGarry and his assistants, which was recorded and submitted to the NRC in November 2014. A copy of Dr. LaGarry's research is attached for your consideration.

This report captured my attention mainly because of my education; I am a geological engineer with an emphasis in hydrogeology. I found this research/report to be quite appropriate and significantly accurate enough to reconsider any permits that may have already been issued or are now being considered to allow this proposed mining, water extraction, and waste disposal to take place.

It is my professional opinion that Powertech's proposed mining and activities surrounding such will have a detrimental impact in the immediate area, as well as downstream of the Cheyenne River and beyond. I am opposed to this activity the way it has been presented.

Sincerely,

A large black rectangular redaction box covering the signature of the sender.

Geological Engineer (Colorado School of Mines)

RECEIVED MAY 19 2017

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the matter of	)	
	)	
POWERTECH (USA) INC.	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium	)	
Recovery Facility)	)	November 21, 2014

**WRITTEN SUPPLEMENTAL TESTIMONY OF DR. HANNAN LAGARRY**

I, [REDACTED], hereby declare as follows:

1. I am an expert in the above-captioned proceeding; my testimony, CV, and area of expertise are already in the record. To summarize, I am a stratigraphic mapper and full-time professor at Oglala Lakota College in Kyle, South Dakota. In preparing this declaration, I relied on the expertise gained through my training and experience in reviewing and interpreting borehole logs and other geologic data to create and review narratives, representations, and maps of subsurface geology and hydrogeology.
2. My testimony herein is based on my review of Powertech's recently disclosed borehole logs, maps, and other data. My testimony is also based on my review of the testimony and exhibits submitted by both NRC Staff and Powertech to the Nuclear Regulatory Commission Atomic Safety and Licensing Board, and my expert opinions offered before and during the hearing in Rapid City, South Dakota.
3. On November 12, 14, and 15, 2014 myself and 3 student assistants continued to review drillers' notes and borehole logs prepared by the Tennessee Valley Authority and recently disclosed by Powertech. This review was conducted at the Powertech offices in Edgemont, South Dakota.

The available data consists of paper files contained in 28 bankers' boxes, 5 file cabinets, and 31 sets of mini logs (reduced to about 1/10<sup>th</sup> of the full-sized logs). Based on records I reviewed during my initial visit to the Powertech offices on September 14-16, 2014 these boxes, cabinets, and mini logs contain *at least*:

7515 total borehole logs  
7454 known borehole logs prior to acquisition of the recently described data  
3920 borehole logs owned prior to acquisition of the recently disclosed data  
3075 digitized data logs

These totals may underreport the number of logs made available, as I was not able to confirm whether my count was inclusive of all logs made available. Our understanding was that the newly disclosed borehole logs numbered over 4,000 data sets.

In total, my assistants and I were able to review drillers' notes from 4,177 boreholes (56% of the 7515 listed above) in 2.5 bankers' boxes, with at least 2.5 bankers' boxes of similar records remaining unexamined. We also examined 488 full-sized (in 3 boxes) and 1774 "mini" resistivity and gamma log pairs (30% of the 7515 listed above), with at least 6 bankers' boxes and 5 file cabinets of similar records remaining unexamined. The number of notes and logs examined was likely 5% fewer than the total number of records reviewed because some logs and notes were discovered to be moved or missing (see below). Also, there is overlap between the drillers' notes and the "mini" borehole logs reviewed. The "mini" logs, although briefly reviewed, did not contribute to the observations listed below.

My review confirmed my previous testimony that the raw data was not presented by modern modeling I would expect to find in such data compilations. Because of the limited time available and the lack of modelling, we did not attempt to reconstruct the geology of the proposed license area. Rather, we focused on the first-hand accounts of the geology of the site and the drilling conditions recorded by the geologists logging the wells. Based on our review of the data, we documented the following unique instances:

- 140 open, uncased holes
- 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 within or beside drilled 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

Many notes contained references to water at various levels and poor, muddy, or destroyed samples. We also found that, in the data sets we reviewed, blocks of records had been moved or were missing.

4. Based on the observations noted above, I offer the following expert opinions:

#### **Sample size**

We examined drillers' notes from 4,177 boreholes, which is at least 56% of the available data. In my expert opinion, while this sample likely underrepresents the total number of features listed above, it is sufficiently large to characterize the data and to reasonably reflect the geological conditions in the licensed area. In contrast, the NRC review of 34 boreholes

constitutes less than 1% of the available data, grossly misrepresents the sample, and is not scientifically valid or useful in any meaningful way.

**Open, uncased holes, including redrilled open holes  
(Exhibit SNT25)**

Casing of boreholes prevents the unwanted migration, transfer, and cross-contamination of water within a borehole. Uncased holes allow unrestricted communication between water-bearing strata at the site. Each uncased hole is a breach of the confining layers assumed to restrict the movement of mining fluids and contaminants. Redrilling of previously cased holes destroys the pre-existing casing and returns the borehole to the open, uncased condition. In my expert opinion, while it is possible that confinement may yet exist in undrilled areas, there is no reasonable expectation that confinement remains in drilled areas.

**Artesian water  
(Exhibits TRT44, ELT4)**

Artesian water is water that flows under pressure exerted by connected waters at higher elevations. The presence of artesian water in the licensed area clearly demonstrates such connections, and that there is communication of water between the aquifers onsite and offsite. Artesian flow allows the rapid transfer of water along the subsurface conduits through which it flows, and greatly increases the likelihood of large amounts of highly contaminated subsurface water reaching the surface and contaminating it. In my expert opinion, artesian flow demonstrates a lack of containment at the site and poses a significant risk of unexpected, serious contamination of the Cheyenne River and its tributaries.

**Plugged holes**

Typically, boreholes are plugged with concrete. Plugs made of wood rot and disappear. Plugs made of ferrous metals, including steel, rust and disappear. It is my expert opinion that, for purposes of determining aquifer isolation, boreholes plugged in such a way should be considered open, uncased boreholes.

**Faults and sinkholes**

**(Exhibits DS178 back side, DS392, IHK2, IHM32, IHM62, TRR17, TRT16, FBM95)**

During hearings before the ASLB in August of 2014, Powertech repeatedly asserted that faults and sinkholes were not present in the license area, and that the license was somehow unique in that regard. In my previous testimony, I offered the expert opinion that faults were almost certainly present, and the license area was most likely crossed by numerous faults. The observations I document herein demonstrate that my previous expert testimony was correct, and there are numerous faults present in the licensed area. Likewise, the drillers' notes document a sinkhole along a drilled transect associated with two closely spaced faults also intersecting the drilled transect. Sinkholes typically form along faults, as the fault allows the initial penetration of acidic surface waters, which then dissolve a conduit through the rock which eventually form a cave that subsequently collapses to form the sinkhole.

### **Suppression and redaction of data (Exhibit TRJ111)**

Notations in the drillers' notes to withhold data imply that there was an attempt to deceive somebody about the character of particular boreholes. The possible motivation for withholding the data was not clear from our limited review in these instances. More troubling is the deliberate masking (redaction) of borehole log data. This information may not be recoverable without additional drilling adjacent to the original borehole, and is clear evidence that information was withheld for some reason. As in the previously mentioned withholding of data, what this is and why it was withheld cannot be determined. A competent and complete scientific review upon which a determination could be based that containment of mining solution can be achieved at the Dewey-Burdock property would account for this missing data.

### **Water in boreholes**

The presence of water at various levels in the drill holes suggests that there are multiple aquifers present at the site, and in the case of uncased holes, open communication and unrestricted flow between water-bearing strata at the site.

### **Poor, muddy, and destroyed samples**

Problems with samples can bias rock descriptions and create circumstances in which the confining units would be misidentified, leading to miscorrelations of strata and confining layers considered present when in fact they are not. In order to determine if miscorrelation or false identifications have occurred would require detailed redescription of the available data. In my expert opinion, conclusions based on such samples, such as the presence or absence of a confining layer, should remain tentative at best.

### **Moved or missing data**

The amount of moved or missing data and its significance is difficult to ascertain from our brief review. It may have been extracted from the set it is part of and relocated to another box, withheld, or destroyed. Only a thorough review and inventory can determine the disposition of the missing data. A review of this data is necessary to form concrete conclusions as to the confining properties of the geological strata.

5. In conclusion, the numerous records of open holes, artesian water, faults, and sinkholes. My prior testimony and opinions regarding Contentions 2 and 3 are supported by the observations recounted here.
6. It is my further expert opinion that NRC-directed "spot check" of 34 borehole logs from somewhere between 1750 and 6000 available borehole logs does not provide a scientifically recognized analysis that can support any hydrogeological conclusion about the project area. In my professional experience, there are numerous methodologies for analyzing the raw data contained in borehole logs. There are also numerous methodologies for presenting the results of the analysis of the raw data. Modern methods typically result in GIS/three-dimensional visualization and modeling of systems or similar computer modelling based on the raw data



in borehole logs. A copy of the website is attached to confirm the widespread and accepted use of these methodologies within the profession.

7. A “spot check” of borehole logs is not proper where analysis has not been carried out and recorded by GIS/three-dimensional visualization and modeling or similar technique. The NRC Staff testimony indicates that Powertech has not conducted the necessary mapping of available data. In such a circumstance, NRC Staff’s conclusions are not reliable where NRC Staff accepts assertions of scientific fact made by Powertech that are not supported by accepted methodologies used to review data in borehole logs.
8. The NRC Staff testimony makes no mention of the information contained in the drillers’ notes. Drillers’ notes are an important source of interpretive information, often revealing information not disclosed by sliding logs. For example, drillers’ notes can reveal the location of caves, artesian water, and the intermittent absence of confining layers. Although my review is not complete, the drillers’ notes I have reviewed do contain this type of information.
9. The NRC “spot check” of 34 data points does not provide a statistically reliable testimony or basis for any conclusions regarding confinement or hydrology. I teach various math and statistics courses at Oglala Lakota College. Multivariate statistics is one of the formal research tools required for my PhD in Geology from the University of Nebraska-Lincoln. I am charged with review of research students at OLC who frequently apply statistical methods in their capstone research sequence required for their BS in Natural Science. NRC Staff’s “random” analysis lacks the basic safeguards applicable to those who would rely on statistical methods.
10. The minimum number of data points for a statistically valid and meaningful sample is generally 10%. In the Powertech instance the minimum acceptable sample size would be a randomly selected sample of at least 175 borehole logs. Based on the recent disclosure of over 4,000 previously withheld borehole logs, the appropriate sample would be 10% of the entire set, or about 575+ borehole logs checked. NRC Staff presents no basis for its so-called “random” selection. Without such information, professionals in my field cannot accept such assertions where it is possible that the limited data set resulted in poor methodology that is the hallmark of modern junk science. Having examined only 37 data points out of thousands available, NRC would have failed my Math 123 Introduction to Statistics class. None of my student researchers would be allowed to publish or present their research findings had they made such a fundamental error.
11. In my experience and training, NRC Staff’s methodology is fundamentally flawed and the testimony based on the NRC Staff’s review cannot be relied upon for any legitimate scientific purpose.


12. Although I relied on student assistants as appropriate, the testimony and opinion provided herein are based on my direct professional review and personal knowledge. Any errors or misinterpretations of data herein are exclusively my own.

*I declare under penalty of perjury that the foregoing is true and correct of my own knowledge.  
Executed in accord with 10 CFR 2.304(d).*

Executed in Chadron, Nebraska on November 21, 2014

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## Dewey-Burdock Injection Well Permits

U.S. EPA Region 8

Dewey-Burdock-class-III and class-V injection-well-draft-area-permits



All of the aquifers in this proposal are presently being used for potable water by local residents, thus no exemption to the safe drinking water act of 1974 should be allowed. Both domestic and agriculture wells are in use. The NRC has prohibited the in-situ mining operation in this area until the 7600 plus abandoned bore holes are properly sealed. Geologically this is part of the Black hills uplift area, which is still rising, causing the rock to be highly fractured and constantly changing. Both of these conditions allow flow between all area Aquifers. This will make containment of mining and waste fluids impractical or improbable. Aquifer flow data as presented is inconsistent. In the mining application a flow rate of feet per year is cited, yet in the next paragraph a pump test showed a drop in a test well 1500 feet away in less than 5 minutes, pressurized injection would certainly move faster than pump suction head values. USGS Aquifer data shows tritium levels which would infer high flow rates from the known recharge sources. This was assumed to be caused by an unknown recharge source. TVA driller notes (Initially suppressed by Powertech) show that at least one bore hole went into an underground cave. This could be due to the Jewel Cave and/or Wind Cave structures extending under this area. USGS Aquifer data also concludes that flow rates through such structures is similar to surface flows in the area. This could easily explain the deviation between well data and tritium data without the need to identify an inferred new recharge source. I am concerned that this project has a high probability for rendering my water unusable forever in the next few years. I do not understand how radioactive waste is acceptable for injection into an actively used Aquifer which sits above another Aquifer which is also actively used. Present Ion exchange technology will not remove organified heavy metals, including uranium. Disposal of this waste fluid should require permitting for a class 1 well and continuous independent monitoring of the waste. Since no mining operations are occurring, no need is shown for disposal wells at this time. This area is also seismically active, with known faults in close proximity. Given the known occurrences of induced seismicity from injection well operations, containment of hazardous materials cannot be guaranteed. Will the agency granting these exceptions be responsible for mitigating any damages caused by this permit? Will a bond be required sufficient to provide water to all affected residents and to cover any damages like those seen in Oklahoma. Who will be responsible for the cost of testing present domestic wells, to obtain a true water quality baseline? I understand the concept of putting a few rural residents at risk for the perceived benefit of a larger population base. However you must accept that agricultural products grown on soil you allowed to be contaminated, with water you allowed to be polluted will end up in your grocery market shelves. It's called karma.

A large black rectangular redaction box covering the signature area of the document.

10 May 2017

# **Hydrogeologic Framework for the Madison and Minnelusa Aquifers in the Black Hills Area**

by

████████████████████

A thesis submitted to the Graduate Division  
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN GEOLOGICAL ENGINEERING

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY

RAPID CITY, SOUTH DAKOTA

2013

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## Abstract

More than 50 percent of the public drinking water systems and more than 90 percent of the population in South Dakota rely solely on groundwater. This dependence on groundwater raises important questions regarding the Madison and Minnelusa aquifers in and near the Black Hills of South Dakota, including groundwater availability, the effects of water use or drought, mixing of regional flow and local recharge, and the effects of capture zones of springs and wells on the groundwater-flow system. These questions are best addressed with a three-dimensional numerical groundwater-flow model that includes the entire Black Hills area. In preparation for such a model, a three-dimensional hydrogeologic framework was constructed for the Black Hills and surrounding area. The study area includes approximately 60,000 square miles, extending approximately 150 miles from the center of the Black Hills in all directions. Structural-contour maps, potentiometric maps, and summaries of aquifer properties presented in this report will enhance groundwater modeling of the Madison and Minnelusa aquifers on a regional scale and allow for more realistic modeling of boundary conditions on a local, site-specific scale.

Structural-contour maps and well logs quantifying the top and bottom altitudes of the Madison and Minnelusa aquifers were aggregated from numerous previous investigations to construct continuous surfaces defining the hydrogeologic framework. The primary challenge in this aggregation was that structural-contour maps from different sources frequently were inconsistent for overlapping areas, usually as a result of varying resolution in spatial data. For these inconsistencies, a systematic workflow was developed to determine which source was most accurate or reliable and would be used in the final aggregation.

Potentiometric maps delineating the hydraulic head of the Madison and Minnelusa aquifers are a result of aggregating numerous previous investigations using a method similar to the construction of the structural-contour maps, with modifications based on additional groundwater-level measurements. The data were combined to construct continuous surfaces defining the regional potentiometric surface for the Madison and Minnelusa aquifers. The Minnelusa aquifer potentiometric map is largely similar to recent publications. The Madison aquifer potentiometric map enhances understanding of a trough, or valley-shaped feature, in the potentiometric surface extending from Rapid City through Philip and eastward. This trough was previously identified by Downey in U.S. Geological Survey Professional Paper 1402-E but not shown in many other recent publications.

Aquifer properties, including hydraulic conductivity, transmissivity, and storage coefficient, also were summarized from 40 wells for which estimates were available from various types of aquifer tests. Hydraulic ranged from  $2 \times 10^{-3}$  ft/day to 113.62 ft/day for the Madison aquifer and from 0.36 ft/day to 24.43 ft/day for the Minnelusa aquifer. Storage coefficient values derived from pumping tests ranged from  $1 \times 10^{-7}$  to  $2 \times 10^{-3}$  for the Madison aquifer and from  $7 \times 10^{-5}$  to  $2 \times 10^{-3}$  for the Minnelusa aquifer.



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## Simulation of Groundwater Flow in the Madison and Minnelusa Aquifers, Black Hills Area

**Project Period: 2011-2017**

**Cooperator: National Park Service, Black Hills National Forest, City of Rapid City, West Dakota Water Development District**

**Project Chief: [Bill Eldridge](#)**

### Executive Summary

The Madison and Minnelusa aquifers are critically important water resources that were a primary focus of the [Black Hills Hydrology Study](#) of the 1990s. These aquifers have a large influence on surface-water systems and provide the most important source of groundwater for municipal, domestic, agricultural, and industrial use in the area. Rapidly increasing demand from these aquifers may affect groundwater availability and surface-water resources.

Our aim is to construct a groundwater flow model of the Madison and Minnelusa aquifers for the Black Hills and surrounding area to help address hydrologic questions on local and regional scales. Several parties in the Black Hills area, including the National Park Service and the Black Hills National Forest, have sought answers to questions concerning groundwater—the primary water supply for this area. These questions are summarized by three questions of broad scope: (1) What is the influence of the regional aquifer on local groundwater flow? (2) What is the aquifer sustainability in different areas to pumping and drought? (3) How might future data collection efforts be planned most effectively? These questions are difficult, or impossible, to answer objectively without rigorous quantification of numerous local and regional hydrologic influences on groundwater. A three-dimensional groundwater flow model for the Black Hills area would provide these estimates better than any other known method and provide a tool that will help define sustainable groundwater use for the Black Hills area. The U.S. Geological Survey (USGS) previously has developed site-specific models of the Madison and Minnelusa aquifers for the Rapid City and Spearfish areas. The need for updated models in these and other areas is expected to continue in the long-term future.

Developing a regional groundwater flow model that includes the entire Black Hills area will have several benefits over a continuation of site-specific modeling efforts:

1. Developing a single regional model would be more cost effective than multiple smaller models.
2. Simulation of site-specific areas (e.g., Rapid City) is more accurate when placed within a regional flow model.
3. Artesian springs are critical water sources that capture groundwater from regional areas and thus are best simulated with a regional model.
4. The model grid can be modified for high-resolution simulations in any area of special interest or to answer specific hydrologic questions (e.g., the effects of pumping in a small area).
5. As additional future questions arise, other hydrologic scenarios can be cost-effectively evaluated without the need for new site-specific models.

Until recently, the success of developing a meaningful and useful model for the entire Black Hills area would have been questionable. Since the completion of the [Black Hills Hydrology Study](#), a wealth of new data have been collected, and this combined with our improved conceptual understanding of groundwater flow in the area and recently developed modeling capabilities make this effort now feasible. The model will be designed to address current objectives and hydrologic questions but also will have a generic underlying structure for adaptation to future objectives and model refinement. This model is envisioned as a long-term tool that will be available for numerous future studies and will symbiotically benefit multiple interested parties.

[Further details on the project](#) 

### Objectives

Study objectives are to (1) better understand the influence of regional groundwater flow on local groundwater; (2) assess the effects of pumping and drought on groundwater availability; and (3) help guide further data collection efforts.

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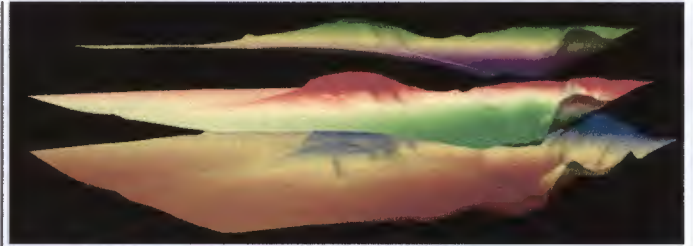
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This cave intercepts water from Spring Creek, which recharges the Madison aquifer.



Three-dimensional view of the top of the Minnelusa aquifer (upper surface), top of the Madison aquifer (middle surface), and bottom of the Madison aquifer (lower surface) in the study area.





## U.S. Geological Survey - Earthquake Hazards Program

# Induced Earthquakes

## USGS Publications

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Testimony of [REDACTED], geologist stratigrapher, to NRC and ASLB 2014, shows that there are extensive fractures, fissures, sinkholes and breccia pipes in the area that dramatically increase permeability within confinement layers. These geological features go unrecognized by Powertech.

Powertech was “cherry-picking” data from the first TVA exploration in the 1950’s and 60’s, carefully selecting only the data that supported their project. They were not even in possession of the latest exploration TVA data from the 1970’s and 80’s when they submitted their permit requests. Powertech obtained those documents in May of 2014. In the discovery of that data in the NRC/ASLB hearing of 2014, Dr LaGarry found that the drillers logs, notes and hydrological pump tests “did not provide a scientifically recognized analysis that can support any hydrogeological conclusion about the project area”. He also concluded that “The NRC ‘spot check’ of 37 random data points does not provide a statistically reliable testimony or basis for any conclusions regarding confinement or hydrology.”

[REDACTED] also added “NRC Staff presents no basis for its so-called “random” selection. Without such information, professionals in my field cannot accept such assertions where it is possible that the limited data set resulted in poor methodology that is the hallmark of modern junk science. Having examined only 37 data points out of thousands available, NRC would have failed my Math 123 Introduction to Statistics class. None of my student researchers would be allowed to publish or present their research findings had they made such a fundamental error.”

[REDACTED], hydrologist, testimony before NRC/ASLB thoroughly established that, “Dewey-Burdock uranium ore zones are not hydraulically - isolated from other geologic units, other aquifers, or zones outside the project area.” He provides many examples of what he refers to as, “NRC Staff disregarding the conclusions of numerous hydrogeologic experts (both Powertech-funded and independent).

#### **4. The Proximity of Igloo, Black Hills Army Depot/Black Hills Ordnance Depot**

- The Black Hills Ordnance Depot was officially designated in February 1942 in Fall River County. The site consisted of 21,095.85 acres, and was utilized for long-term storage of ammunition. In August 1962, the site was renamed the Black Hills Army Depot. The facility was developed with industrial storage, administrative buildings, housing, and related support facilities and utilities. The Depot was used for the receipt, storage, maintenance, inspection, testing, restoration, issuance and shipping of ammunition, propellants, and chemical toxics, the unpacking and functional packing of small arms ammunition, and the demilitarization of unsafe, obsolete and

#### section 3.4.2.3.2

For the sandstone of the Fall River Formation, the laboratory core data indicate a horizontal hydraulic conductivity of 6.1 ft/day ( $2.2 \times 10^{-3}$  cm/s, Table 3.4-3). Based on pump test results, the average horizontal conductivity is approximately 1.8 ft/day ( $6.4 \times 10^{-4}$  cm/s). Within the lower Fall River Formation, the test results indicate transmissive, rapid response (2 to 3 minutes) between pumping and observation wells up to 467 feet apart with nearly 10 feet of drawdown. Response was nearly 9 feet of drawdown at a 1,400-foot distance. This indicates that the aquifer was stressed to produce good quality analytical results.

How can you have an average conductivity of 1.8 ft/day and see a 9 foot drawdown at 1/4 mile in 2-3 minutes?

#### section 3.8.3

##### Pass Creek Update

In 2007, Pass Creek had 0.503 acre of PEM wetlands surveyed along its stretch; however due to the recent boundary change there are now only 0.05 acre of wetlands present on Pass Creek. The boundary change moved the boundary east of W22, and now excludes the three wetland points of W20, W21, and W22. The wetlands present on Pass Creek are primarily due to an old open flowing well on the other side of the road outside the permit boundary.

In 2007, Pass Creek was surveyed from the southern permit boundary to the old mine pit and no wetlands were identified except near the spring. No surveys were conducted on Pass Creek in 2008 as the map indicated that the area is likely dry.

Has any monitoring program been instituted to insure that proposed activities will not adversely impact this wetland and it's resident wildlife ?

#### section 5.3.3.1.2.2

1) The Unkpapa Sandstone shows substantially higher potentiometric head than the Fall River and Chilson throughout the permit area. During ISR operations, the potentiometric head will be reduced (creating a cone of depression) in the Chilson and Fall River due to a net withdrawal (production flow greater than injection flow) in order to maintain well field bleed. Flow into the Unkpapa from production zones in the Fall River and Chilson operating at a substantially lower potentiometric head would be impossible.

The head will only be reduced at the recovery well site, substantially higher potentiometric pressures will exist at the injection well sites. Impossible is an inaccurate description of events in an operating system subject to failures.

2) The Morrison Formation is prevalent across the entire permit area, with a thickness ranging from 60 to 140 feet, and will act as an aquitard to prevent flow between the Unkpapa and the Fall River and Chilson. This was demonstrated by the pumping tests conducted by Powertech (USA), where no response occurred in the Unkpapa during pumping of either the Fall River or Chilson.

# POPULAR SCIENCE

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## Can We Stop The Surge Of Man-Made Earthquakes?

There's a whole lot more shaking going on in the Midwest lately—and humans are causing it.

By BARRY YEOMAN Posted DECEMBER 22, 2015

Mark Crismon and I were sitting outside his Oklahoma house, looking at the day lilies that lined his pond, when our conversation was interrupted by a distant boom. “Did you feel that?” Crismon asked. “Just be quiet. Sit still.” He’s a lanky 76-year-old, retired from an electronics career, with gray hair combed straight back from his ruddy face. The booms continued, once or twice per minute; I felt them under my skin. “That’s a small earthquake,” he said, seconds before the sound recurred. “There it was again. We’ll go and look on the seismometer—I’ll show you what it looks like.”

We walked into his garage. It was July and approaching 100 degrees in the countryside north of Stillwater. The building was filled with freezers where Crismon and his wife store the food they grow, catch, shoot, and smoke. Deer and coyote tails covered corrugated-tin walls. On a desk in the corner, beside a hand-labeled bottle of peach brandy, sat a Dell laptop connected by a cable to a buried

seismometer. Oklahoma State University scientists had given Crismon the seismometer in 2014, as part of a project to monitor the state's current rash of earthquakes.

He took a drag from his cigarette, then turned his attention to three parallel bars scrolling across the screen: blue on the bottom, red in the middle, green on top. They were mostly straight but had become jagged for the several minutes we had felt the tremors. "How'd you like to put up with that day and night?" he asked.

Crismon sits at this desk, on and off, for 14 hours a day. He arrives at six in the morning and takes pictures of the spikes with a digital camera to document what he calls a growing menace (even though the data gets recorded regardless). There's plenty to photograph: Oklahoma, which historically has had few earthquakes of magnitude 3.0 or higher, started rumbling regularly in 2009. The Oklahoma Geological Survey recorded 35 such quakes in 2012, 109 in 2013, and 584 in 2014. (The prior annual average was fewer than two.) By late October, the 2015 figure had already exceeded 700.

Scientists have figured out the reason: the oil-and-gas industry's practice of injecting wastewater deep underground.

The granite basement that underlies the continent, a mile below Oklahoma's wheat and alfalfa fields, is full of faults. Usually, natural stresses clamp the rocks and keep them from moving—like "a vise that's slammed on the east and west side, and someone's turning the screw," says Todd Halihan, a hydrogeophysicist at Oklahoma State University. Inject fluid deep enough, he says, and it travels into the fractures in the granite, in effect lubricating the rock and causing faults to slip.



Halihan compares this to tabletop air hockey. “When it’s off, the puck doesn’t move particularly well,” he says. “Turn on the air, and it’s like you’re injecting. That puck moves *real* well.”

Sometimes these quakes arrive as jolts like those Crismon and I felt outside his house. Sometimes they topple buildings and claim lives.

It’s not only in Oklahoma where we’re giving the proverbial puck more room to slide. Our species, unintentionally, keeps finding new ways to unleash earthquakes. We have rattled the ground by impounding reservoirs, excavating mines, testing nuclear weapons, tapping geothermal power, and pushing carbon dioxide underground to slow global warming.

Sometimes these quakes arrive as jolts like those Crismon and I felt outside his house. Sometimes they topple buildings and claim lives. Whether they hit the Midwest, California, Switzerland, India, or China, some of those who feel the shocks are asking: Can we control the tremors, or are damaging quakes an inevitable feature of the future?

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**We first recognized** the problem of man-made earthquakes around the turn of the 20th century, as they began hitting the regions around South Africa’s gold mines and Europe’s coal mines. The release of gravitational energy, when the rock above the mines sagged, triggered them.

It took until the 1930s for Americans to notice man-made quakes beneath our own soil. When engineers created Lake Mead behind

the Hoover Dam, the sudden addition of 12 billion tons of water apparently set off hundreds of small tremors along the Arizona-Nevada border.

“This was an ‘aha moment,’ an important benchmark in the science,” says Bill Ellsworth, an emeritus seismologist with the U.S. Geological Survey and geophysics professor at Stanford University. Since then, reservoirs have been linked to devastating quakes around the world: definitively to a magnitude-6.3 quake that killed 200 people in 1967 near India’s Koyna Dam, and more speculatively to the 2008 Sichuan quake, a magnitude-7.9 colossus that flattened schools and hospitals in China, and left more than 80,000 people dead or missing. The Sichuan quake was triggered less than 6 miles from the Zipingpu Dam reservoir, says natural-hazards researcher Christian Klose, who has linked water levels there to tremor frequency.

The most ominous precursor to Oklahoma came in the 1960s, when a series of earthquakes walloped the normally quiet Denver area. During two particularly lively days in 1962, the shocks broke windows, cracked plaster, and left electrical outlets hanging by wires. “Children cried with fright,” read a federal field report from Dupont, a town just north of the city.

Scientists traced this seismic uptick to the Rocky Mountain Arsenal, an Army facility that manufactured chemical weapons and rocket fuel. Weeks before the trembling began, the arsenal had started injecting wastewater 2 miles down into the crystalline basement rock. After the injections stopped, in 1966, it took a year for the shaking to cease: A magnitude-5.3 quake knocked bricks from

chimneys in 1967 and caused more than \$1 million in damage.

A geologist named David Evans found an association between the amount of fluid injected at the arsenal and the number of earthquakes, and suggested cause and effect. (To demonstrate how lubricated rocks slip, Evans reportedly would perform the “Coors experiment”: He perforated the bottom of a beer can, and then showed how the seeping liquid eased its slide down an incline.) The Army disputed Evans’ hypothesis, but he was vindicated by USGS researchers, who triggered seismicity soon after by methodically injecting fluid into Colorado’s Rangely oil field.

Since then, scientists have grown more sophisticated about documenting changes in earthquake activity. About 200 miles south of Rangely, in Colorado’s Paradox Valley, the U.S. Bureau of Reclamation has been injecting briny groundwater into a deep limestone formation in order to keep it from contaminating a river. “Somebody had the foresight to say, ‘Let’s see what kind of seismicity’s out there before we start injecting,’” says bureau geophysicist Lisa Block. Six years of baseline data showed almost no natural activity. By contrast, the agency has recorded 6,200 quakes, most of them small, since underground disposal began in 1991.

By the time Oklahoma starting ramping up its own wastewater injection—now more than a billion barrels a year—the notion that humans can induce earthquakes by putting fluid underground was already familiar. Still, Sooner State residents were caught off-guard when that geologic principle hit home.

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## The Surge in Shaking

A decade ago, this part of North America experienced just 14 tremors a year. In 2014, 650 quakes hit the area, most of them clustered around wastewater injection wells.

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**Todd Halihan** was standing in the hallway of his Stillwater home one night in November 2011 when he noticed glasses starting to rattle. As the building shook, the hydrogeophysicist flashed on his sleeping 6-year-old. “Should I get my kid out of bed and run out of the house?” he recalls thinking. “Should I get him under a table?”

Halihan was feeling the effects of a magnitude-5.7 quake—Oklahoma’s largest, it turns out. Its center was near Prague (rhymes with “vague”), almost 50 miles away, where it buckled a highway and destroyed 14 homes. In one living room, rock from a fireplace and chimney struck a woman as she watched TV. The earthquake also toppled a historic turret at St. Gregory’s University in nearby Shawnee. A team from the University of Oklahoma, Columbia University, and USGS determined the source: a fault rupture that began about 650 feet from active injection wells.

“That’s when a lot more people started paying attention,” says Austin Holland, Oklahoma’s state seismologist until this past summer.

The idea that the oil-and-gas industry could be producing these quakes was a touchy subject, both for companies and for the administration of Gov. Mary Fallin. One study shows the industry

has created one-fourth of Oklahoma's new jobs since 2010. Emails obtained by the EnergyWire news service paint a picture of a government that, in the words of Fallin chief of staff Denise Northrup, tried to "make this go away." Shortly after the Prague earthquake, Fallin aides contacted Devon Energy, an oil-and-gas producer, and obtained talking points to use with constituents. Among them: "There is no current evidence that oil-and-gas operations had anything to do with the recent large earthquakes in Oklahoma." When Fallin addressed a National Governors Association forum on shale-energy development in 2013, a reference to underground injection wells was deleted from her speech. "We had other issues we wanted to highlight," says Alex Weintz, Fallin's communications director until this past November.

The problem doesn't stop at Oklahoma's borders; man-made earthquakes have hit other midcontinent states too.

Weintz says Fallin's personal views were always more nuanced than Devon Energy's talking points, even if those points were used by her staff. Her own reticence to blame disposal wells, he says, reflected the state of the research when she took office in 2011. "It was only the beginning of a spike in seismic activity," he says. "Since then, the science has evolved."

Even the Oklahoma Geological Survey, a university-affiliated state agency, was slow to acknowledge the disposal-well connection. In a 2013 statement, it noted that the Prague earthquake appeared to be the result of "natural causes." Holland, who worked for the survey, says, "Oil-and-gas is a very important industry, and so . . . some of the public statements saw a lot of wordsmithing."

As scientists dug into data, a consensus emerged that fluid injection was indeed behind the spike in earthquake activity. Even Fallin has come around. "We all know now there is a direct correlation between the increase of earthquakes that we've seen in Oklahoma and the disposal wells," she said at an August meeting of her administration's Coordinating Council on Seismic Activity.

In fact, new research shows earthquakes now pose a risk to the oil-and-gas industry itself. The largest crude-oil storage facility in the world sits in Cushing, Oklahoma, right above a fault recently activated by injection. Continued injection could produce a magnitude-5.7 earthquake, large enough to rupture oil tanks and pipelines.

The problem doesn't stop at Oklahoma's borders; man-made earthquakes have hit other midcontinent states too. On New Year's Eve 2011, a magnitude-4.0 tremor in Youngstown, Ohio, shook buildings and led to the shutdown of a disposal well that was deemed the likely culprit. Waste injection has also been linked to quakes in Arkansas, Colorado, Kansas, New Mexico, and Texas.

**"Oil-and-gas is a very important industry, and so . . . some of the public statements saw a lot of wordsmithing."**

If the same quakes had happened overseas, they might have caused far more damage. "The technologies that have been pioneered primarily in the U.S.—to unlock gas from tight shale and to produce oil from unconventional reservoirs—have the potential to be applied around the world," says Ellsworth, the USGS seismologist. "Many countries will find it irresistible to produce their own resources. Unfortunately, in many of these countries, the building standards are not what they are in the United States, and the

potential for severe damage and loss of life is really high.”

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**As we keep** using the earth as a vault to stash our waste—and as a tappable resource—we’re creating a global-energy system that will likely increase the risk of small and potentially large earthquakes. Engineers will need to weigh every resource, looking at how much power it provides, how green it is, and what type of seismic risk it poses.

In some cases, the technologies we’ve engineered to ease our impact on the environment have proved likely to shake the ground. In a pilot project in Decatur, Illinois, carbon dioxide captured from an ethanol plant is being injected, in liquidlike form, almost 7,000 feet down into a sandstone formation. The goal is to slow climate change by keeping the greenhouse gas out of the atmosphere (a tactic also advanced by proponents of “clean coal”).

So far, the injections have caused only the smallest of tremors, too faint to be felt. But Stanford University geophysicist Mark Zoback and hydrogeologist Steven Gorelick have argued that for underground carbon storage to benefit the climate, it must happen at a “massive scale”—one that will likely trigger more seismicity, and therefore potentially defeat its own purpose by discharging the carbon into the atmosphere. “Even small to moderate earthquakes threaten the seal integrity of a CO<sub>2</sub> repository,” they wrote in a 2012 journal article. For that reason, they concluded, carbon injection will be “an extremely expensive and risky strategy” to reduce greenhouse gases.

Ole Kaven—a USGS geophysicist involved in the Illinois project—says that if researchers can map faults, fractures, and fluid pathways using sophisticated instruments, they can reduce the hazard, though not eliminate it entirely. “If one factors in the cost of greenhouse-gas emissions, and what effect CO<sub>2</sub> sequestration can have on reducing some of the long-term effects, this conversation changes,” he says. “Some of these risks might be tolerated.”

That’s a critical point: A technology might produce earthquakes, but what harm might come from not using it? Take geothermal production, a reliable and underused source of electricity that causes little environmental damage. “If we could tap all the heat in the earth, we wouldn’t need anything else,” says Ernest Majer, a geophysicist affiliated with both the Lawrence Berkeley National Laboratory and Sandia National Laboratories.

That was no comfort in Basel, Switzerland, where in December 2006 operators of the Deep Heat Mining project began injecting cold water into the naturally hot granite below the city. The following week, a magnitude-3.4 shock rattled windows and cracked plaster. Injection was halted. A government study projected a 15 percent chance of a man-made earthquake causing more than \$500 million in damage if production resumed. In 2009 the project was scrapped entirely.

Geothermal production continues in rural areas—most notably at the Geysers, north of California’s Bay Area, where locals have routinely endured minor quake damage. “Sometimes it feels like a big truck just bumped into the house,” says Jeff Gospe, who sits on a seismic-monitoring advisory committee there. Neighbors have



reported cracked windows and a retaining wall that crushed a van.

Majer believes that the hazard posed by geothermal fields is minor compared with their potential to produce clean energy. (He says the Geysers alone could power all of San Francisco.) “There’s no such thing as zero risk,” Majer says. “Driving to the grocery store is a risk. Everybody risks when they get out of bed in the morning.” Compare that, he says, with the cost of carbon emissions: “If you start looking at the health impacts, the climate impacts—all the nasty things coming out of the fossil-fuel economy—well, maybe we better do something else. Induced seismicity associated with putting carbon into the ground, associated with geothermal: Those are minor, minor things compared with all these other risks facing us.”

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**Assuming we’re not** going to shut down energy production, scientists now face a more complex question: whether it’s possible to minimize the hazard.

After the experiments in Colorado’s Rangely oil field in the 1960s and ’70s, which showed that we could control induced seismicity by varying the pressure of injected fluid, scientists were bursting with hope. Not only might they reduce damage from man-made quakes, the thinking went, but maybe they could control natural ones. Rather than waiting for the next bridge-toppler to hit California, USGS scientists suggested drilling wells along the San Andreas Fault, injecting water, and releasing the accumulated stress in a series of small, harmless quakes.

The idea never got traction. Not only would it take thousands of

mini quakes to offset a major one, but it is also too risky. More than a century has passed since San Francisco's deadly 1906 quake, which means the city is sitting on highly stressed rock. Inject water underground, says Oklahoma's Halihan, and "you might not release 100,000 small ones. You might release a big one." Even if the experiment did work locally, he says, "you might set off the next segment of the fault. It's 3D and it's complicated: 'Hey, we didn't cause an earthquake in San Francisco.' 'Well, you just knocked down LA.' 'Sorry.' "

Today, nobody's talking about setting off microtremors in Oklahoma in order to avoid the next Prague earthquake. But scientists are talking about more-modest ways to manage seismicity.

"The toolbox is growing," says Austin Holland, who now works for USGS in New Mexico. It includes avoiding known faults, scaling back the volume and rate of fluid injected into the rock, injecting at a shallower depth, improving monitoring, and preparing to abandon wells altogether if seismicity can't be stopped. This past year, the Oklahoma Corporation Commission—which regulates the industry—ordered volume reductions for some wells, as well as "plug backs" to limit how deep some wastewater is injected. The state's "traffic light" system, instituted in 2013, allows regulators to scale back or halt drilling in response to seismic activity.

Still, eight magnitude-3 and -4 quakes struck northern Oklahoma during a 24-hour period as this story went to press. There's a lot we haven't yet learned about what happens underground—and that knowledge gap stymies us from managing the earthquakes we do create.

“Probably the greatest unknowns are the properties and processes deep within the earth, things that are very difficult to measure directly,” Holland says. “How is pressure being communicated? Do faults act as seals or as conduits? What are the actual stress states deep within the earth? That’s where science has to spend a significant amount of effort and resources.”

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**Back in Stillwater**, Todd Halihan understands both sides. He wants his students to find work in the energy industry when they graduate. But he also doesn’t want to have to dive for his son the next time an earthquake shakes his house.

“We’re going to make some decisions, and none of them are going to be super-simple or super-pleasant,” he says. Ideally, that means talking levelheadedly about both the value of oil-and-gas production and the threat of earthquakes—how to balance those competing concerns and how much uncertainty we’re willing to tolerate.

It’s not easy to talk, though, when the ground is rattling. Each side retreats into a corner. Some industry and political leaders refuse to acknowledge the emerging science. Some quake-zone residents, feeling ignored and outgunned, pull out the only weapon they have: their rhetoric. The conversations grow polarized rather than solution-oriented.

It’s not easy to talk when the ground is rattling. Each side retreats into a corner... The conversations grow polarized.

Technology, Halihan says, often carries harm. “The Titanic’s a nice example,” he says. “We were developing big ships, and we sank them. Developed airplanes; we crashed them.” Addressing unintended consequences doesn’t necessarily mean scrapping innovations. Nor does it mean pretending the consequences don’t exist.

With seismicity, as with addiction, the first step is admitting we have a problem that’s not fully within our control. “The government, as well as these companies, should be upfront,” says Leonardo Seeber, an earthquake geologist at Columbia University’s Lamont-Doherty Earth Observatory. “You want to drive your car. It takes gasoline. To produce that, you have to make wells. You have to pump in here and pump out there. And when you are doing that,” he says, “you are changing the stress in the subsurface. Sometimes there could be earthquakes that we can’t predict. There could be consequences. But we’re all in it together.”

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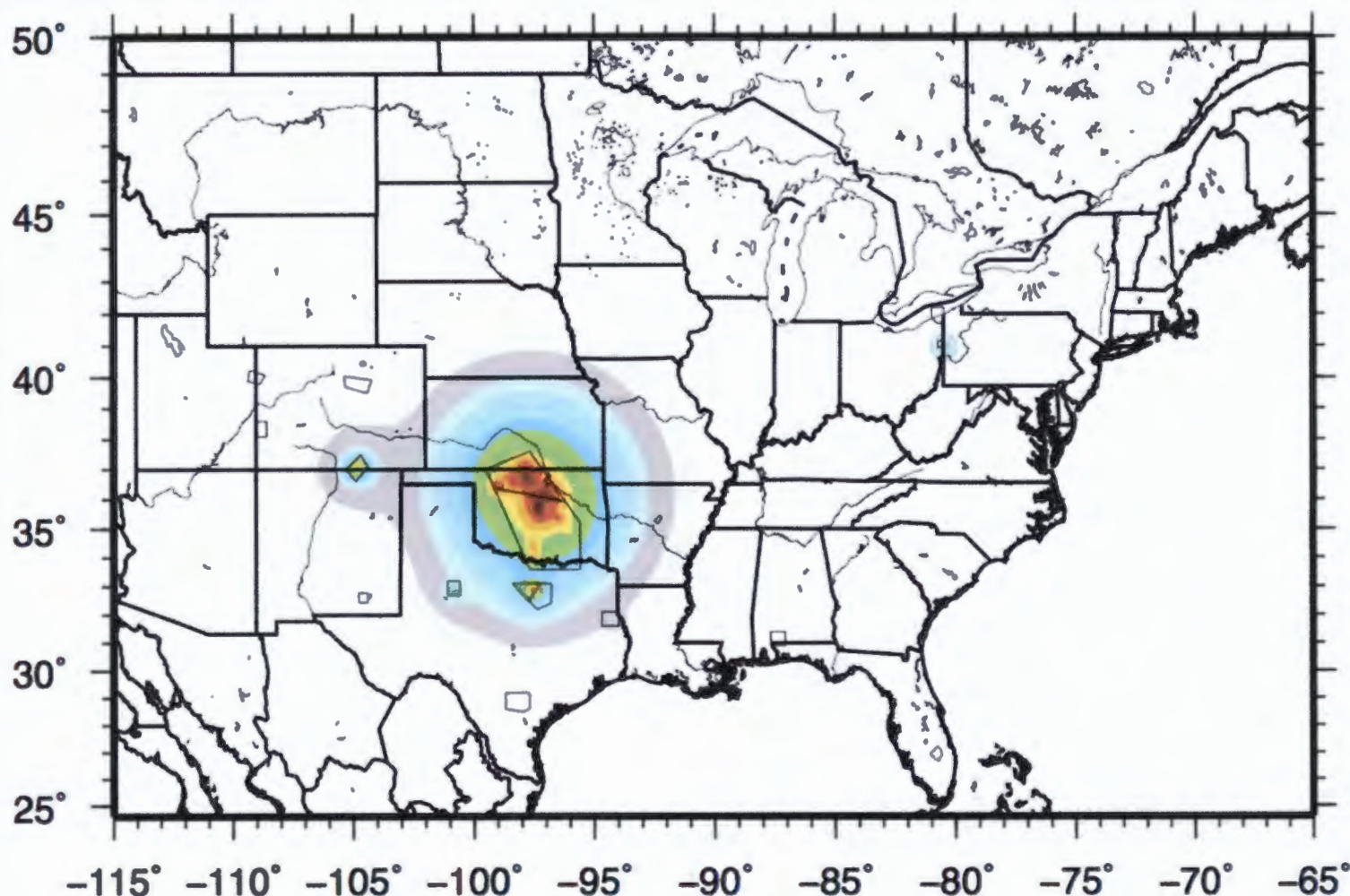
## **The Case for Human-Caused Earthquakes, in Charts**

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U.S. Geological Survey - Earthquake Hazards Program

# Induced Earthquakes

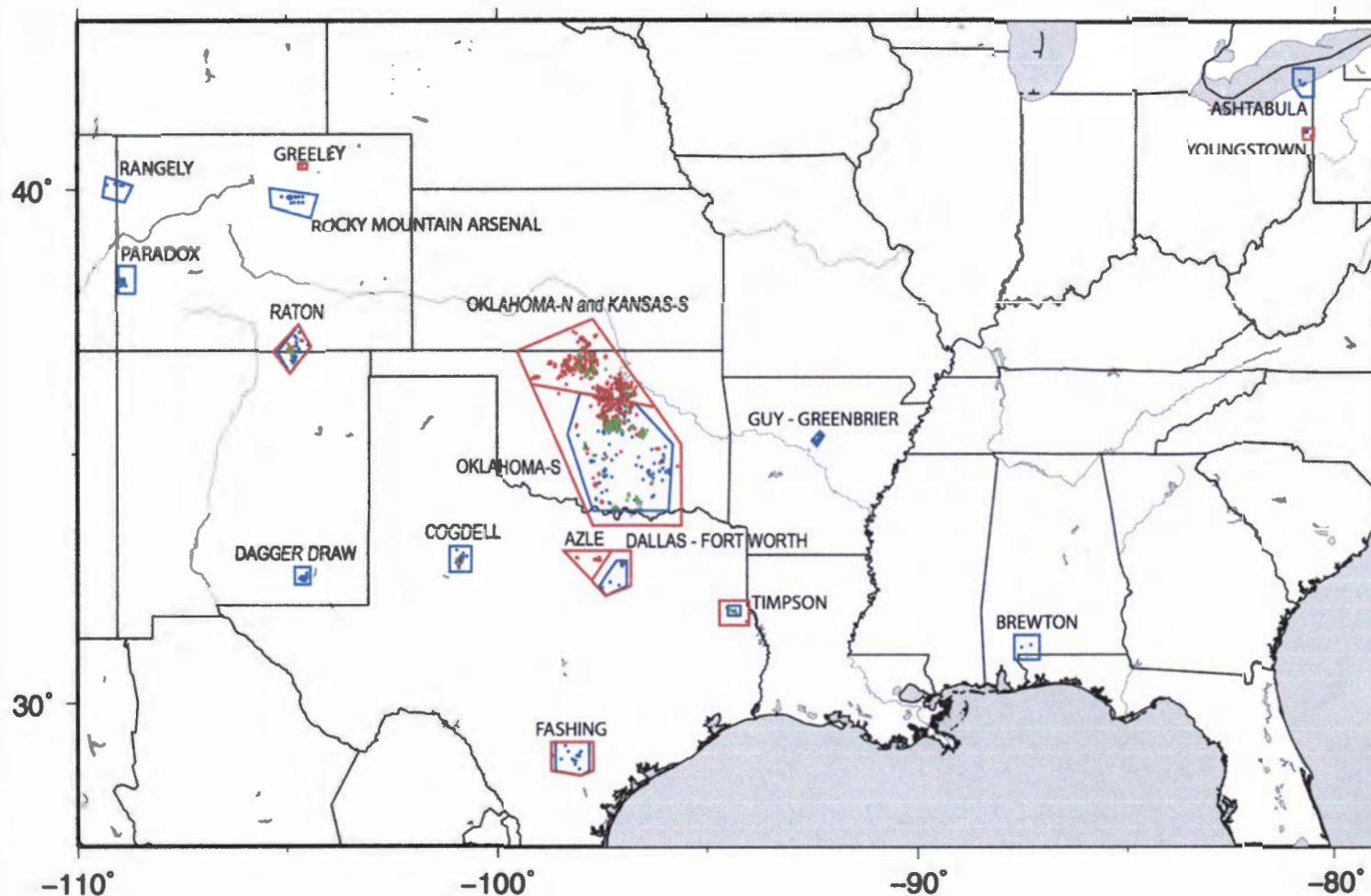


Example computation of ground shaking probability from induced seismicity. This map does not represent a final model, as several different options for how to include induced seismicity in the national seismic hazard model are being considered.

## Hazard Estimation

The [2014 National Seismic Hazard Model](#) (NSHM) forecasts the strength and frequency of ground shaking in future earthquakes. The hazard model underlies the seismic provisions used in the design of buildings, bridges, highways, and other structures. It also provides critical information about areas of higher hazard for use by governmental disaster management agencies, companies and the public for use in developing [earthquake risk reduction plans and actions](#).





Seventeen areas of potentially induced seismicity considered in a preliminary estimate of seismic hazard from induced earthquakes. Green dots represent earthquakes that occurred fall 2012 to fall 2013; red dots show earthquakes that occurred fall 2013 to fall 2014; blue dots and blue lines represent earthquake activity prior to 2013 (areas identified but intentionally excluded from the 2014 national seismic hazard model). Red lines indicate areas where the polygons were expanded to incorporate recent (2013 and 2014) earthquakes that fell outside of the blue polygons.

In previous editions of the NSHM, earthquakes that were attributed to human activity were not included. The recent increase in induced earthquakes in the Central United States is so large that induced earthquakes need to be considered in the national seismic hazard model.



## 2016 One-Year Seismic Hazard Forecast for the Central and Eastern United States from Induced and Natural Earthquakes

By Mark D. Petersen, Charles S. Mueller, Morgan P. Moschetti, Susan M. Hoover, Andres L. Llanos, William L. Ellsworth, Andrew J. Michael, Justin L. Rubinstein, Arthur F. McGarr, and Kenneth S. Rukstales



Open-File Report 2016-1035

U.S. Department of the Interior  
U.S. Geological Survey

With input from scientists, engineers, regulators, industry representatives, and the public the USGS is developing methods to estimate the earthquake hazard from induced earthquakes. Preliminary models display the intensity of potential ground shaking from induced earthquakes for a one-year period based on the seismicity in the previous year. This method is a first step in accounting for the rapid changes in seismicity that we are observing.

The USGS has released a preliminary report on methods to estimate the hazard from induced earthquakes, [Incorporating Induced Seismicity in the 2014 United States National Seismic Hazard Model—Results of 2014 Workshop and Sensitivity Studies](#) (OFR 2015-1070) and welcomes feedback as work continues towards completion of a seismic hazard model that includes the hazard from induced seismicity.

# **Earthquake Hazard Associated With Deep Well Injection— A Report to the U.S. Environmental Protection Agency**

**By CRAIG NICHOLSON and ROBERT L. WESSON**

**Prepared in cooperation with the  
Environmental Protection Agency**

**Under certain circumstances, the increased pore pressure resulting from fluid injection, whether for waste disposal, secondary recovery, geothermal energy, or solution mining, can trigger earthquakes. This report discusses known cases of injection-induced seismicity and how and why earthquakes may be triggered, as well as conditions under which the triggering is most likely to occur. Criteria are established to assist in regulating well operations so as to minimize the seismic hazard associated with deep well fluid injection**

**U.S. GEOLOGICAL SURVEY BULLETIN 1951**



# Simulation of groundwater flow in the Madison and Minnelusa aquifers, Black Hills area

27 November 2012

U.S. Geological Survey, Rapid City, South Dakota

Principle Investigator and Project Chief: Andrew J. Long, PhD

## Executive summary

The Madison and Minnelusa aquifers are critically important water resources that were a primary focus of the Black Hills Hydrology Study of the 1990s. These aquifers have a large influence on surface-water systems and provide the most important source of groundwater for municipal, domestic, agricultural, and industrial use in the area. Rapidly increasing demand from these aquifers may affect groundwater availability and surface-water resources.

This document describes a proposed study to construct a groundwater flow model of the Madison and Minnelusa aquifers for the Black Hills and surrounding area to help address hydrologic questions on local and regional scales. Several parties in the Black Hills area, including the National Park Service and the Black Hills National Forest, have sought answers to questions concerning groundwater—the primary water supply for this area. These questions are summarized by three questions of broad scope: (1) What is the influence of regional groundwater flow on local groundwater flow? (2) What is the aquifer sensitivity in different areas to pumping and drought? (3) How might future data collection efforts be planned most effectively? These questions are difficult, or impossible, to answer objectively without rigorous quantification of numerous local and regional hydrologic influences on groundwater. A three-dimensional groundwater flow model for the Black Hills area would provide these estimates better than any other known method. The U.S. Geological Survey (USGS) previously has developed site-specific models of the Madison and Minnelusa aquifers for the Rapid City and Spearfish areas. The need for updated models in these and other areas is expected to continue in the future. For example, the National Park Service recently has expressed a desire for a groundwater model of the southern Black Hills.

Developing a regional groundwater flow model that includes the entire Black Hills area will have several benefits over a continuation of site-specific modeling efforts:

1. Developing a single regional model would be more cost effective than multiple smaller models.
2. Simulation of site-specific areas (e.g., Rapid City) is more accurate when placed within a regional flow model.
3. Artesian springs are critical water sources that capture groundwater from regional areas and thus are best simulated with a regional model.
4. The model grid can be modified for high-resolution simulations in any area of special interest or to answer specific hydrologic questions (e.g., the effects of pumping in a small area).

5. As additional future questions arise, other hydrologic scenarios can be cost-effectively evaluated without the need for new site-specific models.

Until recently, the success of developing a meaningful and useful model for the entire Black Hills area would have been questionable. Fourteen years of data collection have occurred since the Black Hills Hydrology Study resulting in a wealth of available data, and this combined with our improved conceptual understanding of groundwater flow in the area and the recently developed modeling capabilities make this effort now feasible. The model will be designed to address current objectives and hydrologic questions but also will have a generic underlying structure for adaptation to future objectives and model refinement. This model is envisioned as a long-term tool that will be available for numerous future studies and will symbiotically benefit multiple interested parties. Objectives are to (1) better understand the influence of regional groundwater flow on local groundwater; (2) assess the effects of pumping and drought on groundwater availability; and (3) help guide further data collection efforts.

If multiple interested parties contribute to this effort, the cost to any one party will be minimized, and all will benefit. For 2011 and 2012, the combined contributions from the National Park Service and the Black Hills National Forest were \$101,650, or 11% of the total estimated cost of \$960,000. Contingent on availability of funding through its Cooperative Water Program, USGS will plan to contribute matching funds for contributions from local or state governments in a ratio of at least 40 percent USGS funds to 60 percent local/state funds. The remaining funding will be spread over the next four years (2013-2016) or more, depending on annual funding levels. Several local agencies have expressed potential interest in participation, including the cities of Rapid City and Spearfish, Lawrence County, and the West Dakota Water Development District.

## Introduction

The Madison and Minnelusa aquifers are critically important within the complex hydrogeologic framework of the Black Hills area. These aquifers were a primary focus of the Black Hills Hydrology Study of the 1990s for several reasons. These aquifers have a dominating influence on area surface-water systems in several critical settings (Driscoll and others, 2001) including (1) large springs in the headwaters of many major streams; (2) sinking streams, or loss zones, along the eastern flanks of the Black Hills where substantial groundwater recharge occurs; and (3) large artesian springs that provide stream base flow downstream from the Black Hills. These aquifers provide the most important source of groundwater for municipal, domestic, agricultural, and industrial use in the area. Rapidly increasing demand in numerous communities and suburban areas may affect groundwater availability and surface-water resources. Availability of groundwater varies with annual, decadal, or longer-term changes in climate. In response to climatic changes and possibly groundwater withdrawals, water levels for the Madison aquifer have changed by more than 100 ft in some places in less than a decade, both increasing and decreasing. Understanding groundwater flow is essential for assessing and managing groundwater resources. Numerical simulation of groundwater flow is the most common method for assessing the effects of multiple influences on aquifers, including groundwater use, natural

spring flow, variability in precipitation and streamflow, population growth, long- and short-term climatic changes, and contaminant transport.

This proposal describes an approach for construction and application of a numerical groundwater flow model of the Madison and Minnelusa aquifers for the Black Hills and surrounding area. The overarching approach is to develop a generalized Black Hills flow model that will help to answer current hydrologic questions as well as to serve as the underlying framework for current and future focused studies and refined flow simulation in localized areas. Such a model will benefit multiple governmental agencies and other parties interested in water management, will be available for future studies, and could be refined and updated for any particular area of interest. Until recently, the success of developing a meaningful and useful numerical model for the entire Black Hills area would have been questionable. However, the current wealth of data for the area combined with the most recent modeling and optimization software and computing power, such as cloud computing, results in a high likelihood of success.

A wealth of new data useful for modeling has been collected since the Black Hills Hydrology Study was completed, which included data through 1998. New datasets include (1) 14 years of streamflow, spring flow, and groundwater levels for continuous gages and manual measurements, which adds an additional wet and dry cycle to the record; (2) multiple groundwater tracers (e.g., chlorofluorocarbons, stable isotopes, tritium, major ions) collected at about 70 sites and used to better characterize groundwater flow, conduit networks, and groundwater transit times; (3) microgravity measurements to estimate effective porosity and better characterize unconfined aquifer zones; and (4) several years of stable-isotope time-series data for selected wells and streams.

## **Problem**

Local and federal agencies in the Black Hills area are seeking answers to questions regarding groundwater availability, the effects of current or future groundwater extraction or drought, the proportions of regional groundwater inflow and local recharge in particular areas, the capture zones of springs and wells, and the influence of springs and wells on flow directions and hydraulic gradients. These questions are difficult, or impossible, to answer objectively without a thorough quantification of myriad hydraulic influences and stresses on any given area. The influence of regional groundwater flow on local hydrologic responses is particularly difficult to quantify. A three-dimensional groundwater flow model would provide these estimates better than any other known method, but such a model does not exist for the entire Black Hills area. Without the availability of a calibrated regional model, smaller models would need to be developed independently to address issues in site-specific areas, which is an inefficient approach. Smaller areas for which models previously have been developed include part of the northern Black Hills (Greene and others, 1999) and the Rapid City area (Putnam and Long, 2009). Considering the complexity of the Black Hills hydrogeologic framework, the value of the water resources, and the abundance of hydrologic issues and questions, many needs for additional modeling efforts are foreseen in the near future. Developing one regional model has several advantages over developing separate smaller models for specific areas. These advantages are (1) it would be a more cost effective approach, (2) simulation of site-specific areas is more hydrologically accurate when

nested within the context of regional flow, and (3) artesian springs capture groundwater flow from large, possibly regional, areas that can be simulated with a regional model but not with small-area models. The latter item is particularly important in the northern and southern Black Hills, where regional flow sweeps around the Black Hills toward the east and mixes with local recharge.

## Objectives

Study objectives are to (1) better understand the influence of regional groundwater flow on local groundwater; (2) assess the effects of pumping and drought on groundwater availability; and (3) help guide further data collection efforts.

The primary focus of the proposed model will be in and near the Black Hills where water from the Madison and Minnelusa aquifers is used extensively. Areas of complex hydrogeology, such as where Tertiary intrusive rocks have disrupted parts of the Madison and Minnelusa aquifers, will be simplified to a level that can be represented by the model. When constructing a model, one of the first considerations is the locations of boundaries, which frequently are set arbitrarily if a natural aquifer boundary, such as a recharge area, does not exist in proximity to the area of interest. These arbitrary boundaries generally are flux boundaries across which simulated groundwater flows horizontally through a cross-section of an aquifer. To minimize artificial boundary effects, flux boundaries will be set far from populated areas of interest and much wider than the limits of the Black Hills Hydrology Study (Figure 1). The focus area near the Black Hills (Figure 2) will have smaller model cells and will be given more weight in model calibration than other areas of the model.

Specifically, this model will be a three-dimensional numerical groundwater flow model for the Madison and Minnelusa aquifers in and near the Black Hills of South Dakota, constructed in MODFLOW (Harbaugh, 2005). The model for the Rapid City area (Putnam and Long, 2009) will be incorporated into the regional model, with a similar model cell size. Model grid cells will increase in size outside of the Rapid City area. Automated procedures for constructing the model from an independent geospatial database in ArcGIS will allow for efficient grid refinement in particular areas of interest for future focused modeling studies. These automated procedures will consist of utilities that interface between the geospatial database and MODFLOW. Hydrogeologic data or estimates, including aquifer tops, aquifer bottoms, potentiometric surfaces, well locations, recharge, and hydraulic conductivity, will be stored in the geospatial database.

The scope of the project includes a data-collection component, which will provide hydrochemical tracer data useful for calibrating the model to flow directions and groundwater mixing. The project consists of two phases: (1) a hydrogeologic framework and conceptual model and (2) a numerical groundwater flow model.

In developing numerical flow models, a large part of the effort involves collecting and analyzing data, constructing surfaces for aquifer tops, bottoms, and potentiometric surfaces, and so forth. However, as a result of various previous investigations, many of the basic data components necessary for developing a numerical flow model already exist. The Black Hills Hydrology Study (area shown in Figure 1) included numerous investigations that were summarized by Carter and others (2002; 2003) and Driscoll and others (2002). Other previous investigations with detailed information for focused areas of study in the northern, southern, and eastern Black Hills include Long and Putnam (2002), Putnam and Long (2007a 2007b; 2009), and Long and others (2008; 2012). Regional data beyond the Black Hills also are available from numerous other investigations listed in the "References Cited" section. Geologic maps and cross sections for the Black Hills are available from Strobel and others (1999) and Redden and DeWitt (2008).

The model will be used to assess and better understand regional groundwater flow in relation to the Black Hills area and the relative mixture of local recharge and regional flow, which might originate from as far away as the eastern flanks of the Rocky Mountains in Wyoming. This is of particular importance at the northern and southern tips of the Black Hills, where local and regional flow converges. The capture zones of artesian springs, the influence of these springs on the mixing of regional and local flow, and the relative proportions of regional and local spring flow will be assessed. Also, the converging and mixing of recharge on the western flank of the Black Hills with regional flow from farther to the west will be assessed.

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achieved. GWM is groundwater management process (Ahlfeld and others, 2005) developed for MODFLOW that might be useful for this purpose.

One or more drought periods similar to those that occurred in western South Dakota between 1930 and 1960 (Driscoll and others, 2000) will be simulated, and the resulting declines in hydraulic head will be shown on a map of the focus area, and spring-flow declines will be evaluated.

Because data collection can be costly, an objective assessment of future groundwater data collection scenarios would be useful. Model predictive uncertainty analysis, as described in Doherty (2010) and Fienen and others (2010), will be used to assess possible scenarios. Specifically, this will indicate what new data would reduce the model's uncertainty if these data were acquired at some future time. Future revisions of the model, as well as other future hydrologic studies, will benefit from this assessment. GWM might be useful in this application.

## Approach

The MODFLOW finite-difference groundwater flow modeling software will be used to construct the model and simulate groundwater flow (Harbaugh, 2005). The grid will be coarse near model boundaries (~15-km spacing) and finer within the focus area (300–500-m spacing; Figure 2). The highest resolution will occur in the Rapid City area, with a grid spacing of about 150 m. The coarse-gridded areas will have few model cells with a small effect on execution times but will minimize artificial boundary effects. One method for varying the size of grid cells is to vary the widths of model rows and columns in the desired area, as described in Harbaugh (2005). This method was used by Long and Putnam (2008) and Putnam and Long (2009). Another method is to use the Local Grid Refinement (LGR) capability that is now available for MODFLOW-2005 (Mehl and Hill, 2007). This option allows nested grids of fine resolution within an otherwise coarse-gridded model. Also, the USGS soon plans to release a new version of MODFLOW that allows for much more freedom in the structure of the model's grid and will allow grid cells to be almost any shape desired. For example, small triangular grid cells could be used for the Rapid City area and could increase in size outward in all directions. This versatility would easily accommodate small cells in any area of interest where high resolution simulation is desired.

The full extent of the Madison and Minnelusa aquifers in the model area will be simulated, each with two model layers, similarly to the approach of Putnam and Long (2009). Outside of the focus area, the Madison and Minnelusa aquifers each will be simulated as one layer unless additional information indicates benefits to simulating them with two layers each. The Englewood Limestone underlies and has similar properties to the Madison Limestone, and this formation will be combined with the lower Madison aquifer layer. Upward flow into the Madison aquifer layer from underlying aquifers will be simulated, but the model will not be calibrated for these underlying aquifers, which consist of the Whitewood, Winnipeg, and Deadwood aquifers. This method was used in the numerical model by Putnam and Long (2009). These three aquifers will be combined into one model layer, hereafter referred to as the *sub-Madison* layer and will be included in the model for the purpose of providing a

lower model inflow boundary only. The rate of this flow component will be estimated by the method used by Long and Putnam (2002) for the eastern-central Black Hills, which was also used in the numerical model by Putnam and Long (2009). This method uses Darcy's law and the difference in hydraulic head between the Madison and Deadwood aquifers to estimate a flow rate. This estimated flow rate will be assigned as recharge to outcrops of the Whitewood, Winnipeg, and Deadwood aquifers and allowed to leak upward into the Madison aquifer. As a minimum areal extent, the sub-Madison layer will be included below exposed areas of the Madison aquifer, with the option of a larger areal extent if necessary for upward flow.

Some of the Phase 1 tasks have been completed or are in progress. This proposal describes the project in its entirety, including completed tasks.

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A hydrogeologic framework will be assembled primarily on the basis of existing data from numerous sources (see References cited). The first step is to define the model area and hydrogeologic boundary conditions (e.g., head-dependent, no-flow, specified-flux, or constant-head boundaries). Figure 2 shows the approximate model area. The exact model area and focus area will be finalized after further examination of data and literature. The second step is to define altitudes of the tops and bottoms of the hydrogeologic units as they will be represented by model layers. The third step is to define general potentiometric surfaces for the hydrogeologic units. Fourth, recharge from direct precipitation and sinking streams, evapotranspiration, and discharge to springs and streams will be estimated on the basis of available data. Groundwater pumping will be obtained from publically available water use data (U.S Geological Survey, 2011). If necessary, data on water permitting for South Dakota, Wyoming, and Montana will be acquired. Manual flow measurements will be made at selected springs and streams where continuous gages do not exist one or more times during the study and will be used as model calibration data. Geochemical data consisting of stable isotopes of oxygen and hydrogen ( $\delta^{18}\text{O}$ ,  $\delta^2\text{H}$ ) and major ions will be collected at sinking streams, wells, and springs for use as natural tracers. Samples will be analyzed at the USGS Isotope Laboratory in Reston, Virginia and the USGS National Water Quality Laboratory in Denver, Colorado. Sampling will consist of about 50-70 samples, collected either once at each site or multiple times at few sites. These data, together with existing geochemical data, will be used to better characterize groundwater flow directions and mixing and also in model calibration or to help assess model uncertainty (e.g., how well does the model simulate flow directions and mixing determined by natural tracers). Hydraulic conductivity estimates will be assembled where available from aquifer tests and previous groundwater flow models. Because these estimates are sparse, hydraulic conductivity will be estimated primarily during the model calibration phase. All assembled data and estimates will be used to describe the groundwater flow system conceptually, which will then become the basis for a numerical flow model.

Groundwater recharge will be estimated using the method of Westenbroek and others (2010), which is a soil-water-balance (SWB) model that uses precipitation, temperature, land-use, and soil-type data. Methods similar to SWB also are available and possibly will be used as a comparison to SWB.

Recharge near sinking streams and hydrologic processes in semi-saturated cavernous aquifer zones in the Black Hills are poorly understood because of lack of data and complexity of these areas. A pilot

project to test the capabilities of microgravity measurements for assessment of transient groundwater storage processes in recharge areas of the Black Hills currently is near completion. Results indicate that microgravity methods are useful for characterizing physical properties and flow processes in recharge areas of the Madison and Minnelusa aquifers (Koth and Long, 2012 *in review*), and this information could not be obtained from previously applied methods. Microgravity investigations will continue in previously studied areas because longer data records for these areas will better constrain gravity-based effective porosity estimates and other flow characterizations. Microgravity investigations may be applied to areas not previously studied if, at some time, this is determined to be more useful than continuation at current measurement locations.

Nuclear magnetic resonance (NMR) is a geophysical method that has been used successfully in karst aquifers. This is the same technology that is routinely used in medical imaging; i.e., magnetic resonance imaging (MRI). NMR can be used to determine the depth and volume of groundwater, particularly in aquifers with large porosity and large voids, such as karst aquifers. NMR can be applied over an area of the land surface, imaging to depths of 150 meters in some cases, or as a down-hole tool in boreholes. NMR initially will be tested in areas where microgravity methods have been applied, and the combination of these two methods to characterize recharge areas will be tested. Additional NMR work may be used with or without microgravity, depending on what is found to be useful.

Some combination of microgravity and NMR investigations will be conducted at existing microgravity survey areas, and additional measurement areas may be added. The number of measurement areas and the relative effort invested in the two methods will be determined as data are collected and analyzed. Effort will be allocated according to what is most efficient for obtaining useful data to characterize recharge areas.

#### **Phase 1 tasks**

1. *Identify and assemble existing data sources* – Several categories of data have been previously described.
2. *Define model area and boundary conditions* – The approximate model area shown in Figure 2 will be revised as necessary after further examination of previous studies, which describe the geology and hydrology of the model area. Particular attention will be given to the southern model extent, at or near the limit of the Madison aquifer.
3. *Construct datasets for aquifer tops and bottoms* – Several contour maps of formation tops and thicknesses cover different parts of the model area. These will be merged or matched at the edges of the individual map extents for continuous surfaces across the model area. These will be checked for consistency in the three-dimensional hydrogeologic framework.
4. *Construct datasets for potentiometric surfaces* – Several contour existing maps of potentiometric surfaces cover different parts of the model area and will be merged similarly to what is described for the aquifer tops and bottoms.



5. *Construct datasets for hydraulic conductivity* – Estimates from previous modeling studies and aquifer tests will be assembled. These will provide initial values that will be refined during model calibration.
6. *Interpolate spatial and temporal precipitation for Black Hills* – Data from precipitation gages will need to be interpolated between gages. This has been completed for 1931-1998 (Driscoll and others, 2000) but will need to be updated for 1999-2012.
7. *Apply the soil water balance (SWB) method to estimate areal recharge from precipitation* – This method is described by Westenbroek and others (2010).
8. *Estimate groundwater recharge from sinking streams* – This will involve assembling streamflow records for existing gages and estimating recharge rates on the basis of maximum streamflow loss rates indicated by Hortness and Driscoll (1998). Recharge rates also will need to be estimated for ungaged streams and when maximum loss rate estimates are not available.
9. *Estimate and construct datasets for spring and stream discharge* – Discharge records for springs and gaining streams will be assembled when available. In some cases, these will be determined by estimating stream base flow at gages downstream from springs or gaining streams.
10. *Acquire or estimate groundwater-use data*
11. *Collect geochemical and flow data* – Geochemical data include stable isotopes of oxygen and hydrogen ( $\delta^{18}\text{O}$ ,  $\delta^2\text{H}$ ) and major ions. Flow rates will be measured at selected springs and streams.
12. *Analyze geochemical samples* – Samples will be sent USGS laboratories
13. *Apply microgravity and NMR methods* – Geophysical methods primarily include microgravity work, but new geophysical methods are continually being developed and might be found useful for this project. Wells will be site visited when necessary for quality control of elevation or water-level data.
14. *Report writing including figure and table preparation.*
15. *Respond to review comments and reciprocate reviews* – The review process is essential to a quality scientific report.

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Data and estimates from Phase 1 will be used to develop a numerical groundwater flow model for the regional area shown in Figure 2 using MODFLOW-2005 (Harbaugh, 2005) or an updated version of MODFLOW if available. The model of the Rapid City area (Putnam and Long, 2009) and the model of the Spearfish area (Greene and others, 1999) will be incorporated into the regional model. Hydraulic conductivity values used in these models will be used as initial, or pre-calibration, values for the regional model. These values may change during calibration of the regional model because of differences in boundary conditions between the small models and the regional model. The regional

model first will be calibrated to steady-state flow conditions, where all inflows and outflows are constant in time. Initial estimates of model parameters, such as hydraulic conductivity values, will be refined by adjusting these values to achieve similarity between observed and simulated hydraulic-head and flow values. The abundance of hydraulic-head values makes this an effective method for estimating hydraulic conductivity. The parameter optimization software PEST will be used to achieve this calibration (Doherty, 2005). This state-of-the-art software eliminates the need for inefficient trial-and-error parameter adjustment. A relatively new and powerful method known as *pilot points* described in Doherty (2005) will be used in model calibration. This method interpolates hydraulic conductivity values in each model cell between pilot points, where the optimization occurs.

Once the steady-state calibration is complete, the model will be executed in transient mode, which will simulate a specific historical time period of up to 20-30 years of record for annual data. Model calibration will be refined in this mode to achieve optimum similarity between temporal changes in observed and simulated hydraulic-head and flow values on an annual basis.

## **Phase 2 tasks**

1. *Format all data for MODFLOW input files and construct model* – Data stored in ArcGIS will be exported to populate model cells. Data stored in other formats will be formatted for MODFLOW input.
2. *Link MODFLOW model to PEST optimization software* – PEST runs as a parent program to MODFLOW. Several instruction files need to be created so that PEST can read MODFLOW output. Debugging the PEST instruction files generally is part of this process.
3. *Calibrate steady-state model to measured data* – The model is calibrated to average flow conditions in this step. This is a lengthy process with many stages of increasing model complexity and parameter definition and categorization.
4. *Execute and calibrate transient model to historical data* – This process is similar to Task 3, except that the model is calibrated to long-term records. Parameter estimates from the steady-state calibration will be used as initial estimates.
5. *Define spring capture zones and ratio of regional flow* – Backward particle tracking from spring discharge points will be conducted on the calibrated model to determine spring capture zones. The point of origin for these particles will determine the ratio of regional flow for each spring.
6. *Assess spatial aquifer sensitivity to pumping and drought* – A series of model executions will be conducted, where one simulated well will be pumped for each execution. Average drawdown in proximal cells will be determined for each pumped well, and a map of relative drawdown will be created. An extended drought period will be simulated as previously described, and a map showing the resulting hydraulic-head decline at the end of this period will be created.
7. *Determine the focus of future data collection efforts* – A model predictive uncertainty analysis will be conducted to determine areas and types of data that, if collected, would decrease the model's predictive uncertainty.

8. *Report writing including figure and table preparation*
9. *Respond to review comments and reciprocate reviews*

## Potential Future Studies

Hydrologic scenarios related to increased water use, additional pumping wells, or extreme climatic conditions, such as drought, could be simulated for particular areas of interest. Refined model calibration for these areas might be necessary, and grids with finer resolution could be nested into these areas. Contaminant-transport simulations could be conducted to investigate water-quality issues. One potential approach for these investigations might be to simulate flow in discrete conduits in the Madison aquifer for areas where knowledge of conduit locations exist. The conduit-flow process for MODFLOW-2005 (Shoemaker, 2008) could be applied in this case. Plans for the new version of MODFLOW include pipe-flow simulation capability, which also could be used for this purpose. Hypothesis testing for conduit flow and conduit locations could be applied in areas for which knowledge of conduit locations is lacking. The model will be constructed such that flow in the Precambrian aquifer in the Black Hills also could be simulated in the future. GMM might be useful in many future studies involving this model.

The proposed model will be available and useful for studies long into the future, both within and outside of the USGS. The USGS South Dakota Water Science Center consistently has had experienced staff with groundwater modeling expertise for more than 25 years, and is committed to continuing this past record. For most of this time, there have been at least two hydrologists with groundwater modeling experience on staff, with additional assistance from several part-time students. Kyle Davis, a recent graduate with groundwater modeling experience, has recently been hired as a permanent employee. All numerical models are archived electronically according to USGS protocol for the purpose of future use. These archives include all model input files, the executable program (e.g., MODFLOW), model input and output data in ArcGIS format, and documentation describing how to execute the model. All archived models are available upon request to the public. For example, the groundwater flow model for the Rapid City area (Putnam and Long, 2009) currently is being used by Colorado State University for research in karst aquifers. Another example of a USGS model that was first documented and published but later updated is a groundwater flow model of the Ogallala and Arikaree aquifers in South Dakota. The model first documented by Long and others (2002) was later updated with improved estimates of recharge, current hydrologic conditions, higher grid resolution, and an assessment of potential future hydrologic scenarios (Long and Putnam, 2008).

## Budget Timeline WAS ~~USGS~~

The project is planned for completion within a 6-year period at an estimated cost of \$960,000 (Table 1). The budget represents the project in its entirety, including all completed tasks. Assuming that the USGS Cooperative Water Program continues in the future, the USGS will contribute matching funds for any contributions from local or state governments. Funding provided by Federal agencies cannot be matched by the USGS. For 2011 and 2012, the combined contributions from the National Park Service and the Black Hills National Forest are equal to \$101,650, or 11% of the total cost. Additionally, several local agencies have expressed potential interest in participation, including the cities of Rapid City and Spearfish, Lawrence County, and the West Dakota Water Development District. The USGS and Rapid City currently are engaged in a cooperative program involved groundwater flow modeling and Rapid City has expressed especially keen interest in regional model development.

Two USGS Scientific Investigations Reports to document data and results for each of the two phases of this study and are planned for publication in 2014 and 2016, respectively. The first report will describe the hydrogeologic framework and conceptual model on which the numerical model will be built. The second report will document calibration of the numerical model, results of groundwater flow simulations, and an assessment of future data needs.

Table 1. Budget and timeline. Funding by Federal fiscal year indicates time frame for planned tasks.

[L - labor; LA - laboratory analyses; P - publications; Tv - travel; V - vehicle; Tu - tuition; Sh - shipping; C- Software or computing]

	Cost in Federal fiscal year						Cost type
	2011	2012	2013	2014	2015	2016	
<b>Geologic Data</b>							
Identify and assemble existing data sources	\$8,800						L
Define model area and boundary conditions	\$3,800						L
Construct aquifer top and bottom surfaces	\$17,700						L
Construct potentiometric surfaces		\$14,400					L
Create datasets for hydraulic conductivity		\$18,400					L
Interpolate spatial & temporal precip for Black Hills		\$8,200					L
Apply SMB to estimate areal recharge		\$18,500	\$19,200				L
Estimate stream recharge		\$12,300					L
Estimate & build datasets for spring and stream discharge		\$16,300					L
Acquire or estimate groundwater use			\$4,200				L
Collect geochemical and flow data			\$7,700	\$27,000	\$3,900		L
Analyses of geochemical samples			\$2,800	\$9,800	\$30,300		LA
Apply microgravity and NMR methods		\$77,500	\$70,300				L
Report writing including figure & table prep		\$16,400	\$22,800	\$17,700			L
Respond to review comments & reciprocate reviews				\$10,900			L
<b>Modeling</b>							
Format all data for Modflow input files and build model			\$42,500				L
Link Modflow model to PEST optimization software			\$27,600				L
Calibrate steady-state model to measured data			\$26,500	\$64,400			L
Execute and calibrate transient model to historical data				\$24,900	\$99,800		L
Define spring capture zones and ratio of regional flow					\$13,100		L
Assess spatially aquifer sensitivity to pumping & drought						\$13,700	L
Determine focus of future data collection efforts						\$25,000	L
Report writing including figure & table prep					\$23,700	\$57,400	L
Respond to review comments & reciprocate reviews						\$13,700	L
<b>Infrastructure</b>							
Report 1 processing, layout, printing				\$18,200			P
Report 2 processing, layout, printing						\$18,900	P
Tech assist on PEST software			\$5,500				Tv, L
Vehicle for field work		\$2,500	\$2,500	\$2,500			V
Cloud computing service			\$5,000	\$5,000	\$5,000	\$3,000	C
Training & travel		\$3,000	\$5,000	\$5,000			Tu, Tv
Shipping		\$500	\$1,000	\$800	\$200		Sh
Software		\$4,000	\$300	\$300	\$300	\$300	C
Fiscal year totals	\$30,300	\$182,000	\$242,900	\$186,600	\$176,300	\$132,000	
Project total						\$960,000	

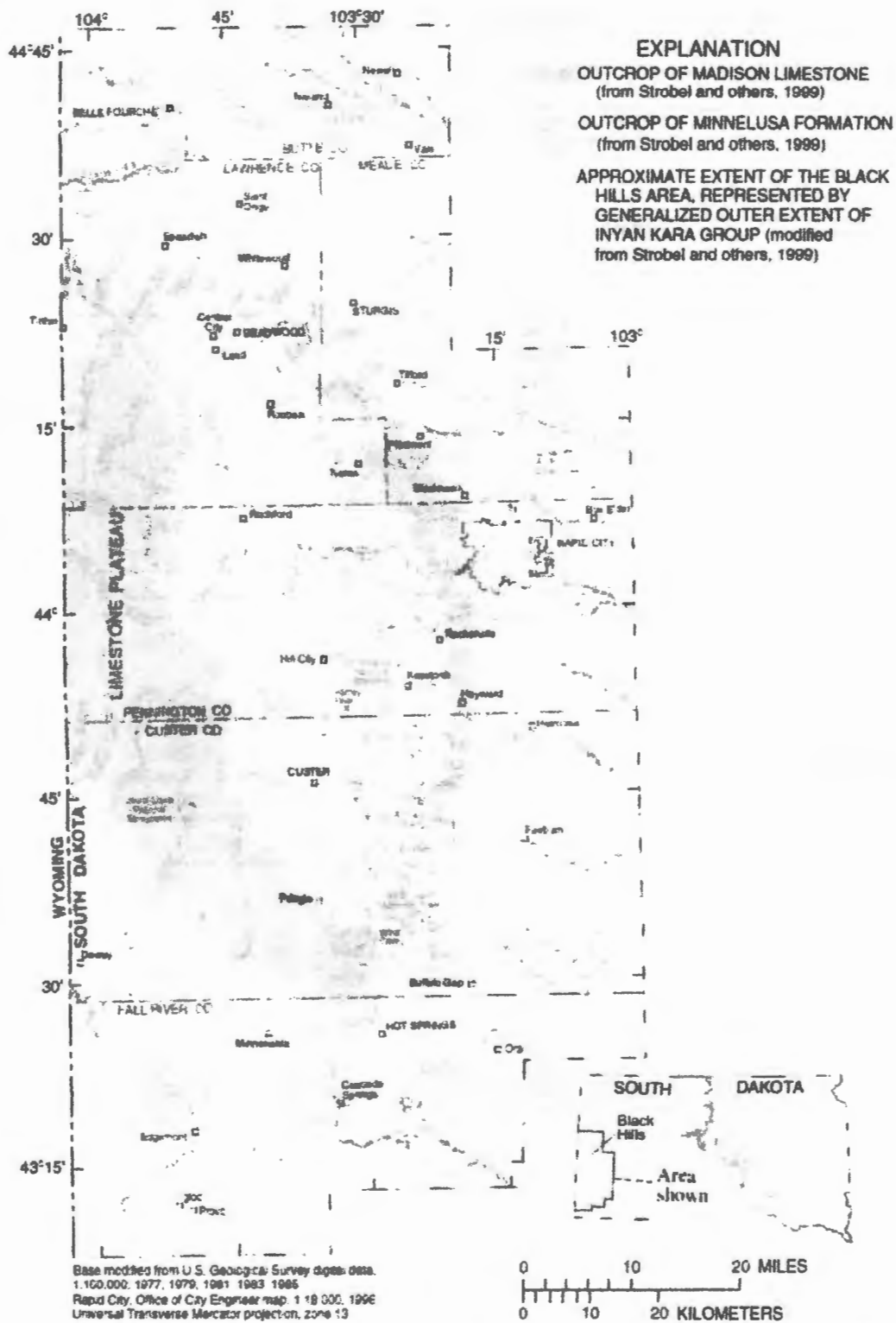


Figure 1. Area of investigation for the Black Hills Hydrology Study (From Driscoll and others, 2002).



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8

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DENVER, CO 80202-1129  
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EPA PUBLIC HEARING  
WRITTEN COMMENT CARD

For the Record  
May 10, 2017 in  
Hot Springs, SD.

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Comments: Enclosed "two letters to the editor" from local individuals opposed to the uranium mining in this area.

Also - The Unexpected: The future is important. Here is a recent example of a disastrous event; unexpected. The event was caused by old gas wells lost over time in Colorado. The consequences to Colorado is also reported.



# Colorado considers statewide gas-well map after deadly blast

KRISTEN WYATT  
Associated Press

DENVER — Colorado lawmakers are considering the nation's first statewide gas well map requirement in response to a deadly home explosion traced to an inactive line.

The proposal would force energy drillers to provide state regulators the locations of all their gas lines, a national first. A Democratic House committee approved the idea 6-3 Friday.

The measure is inspired by a home explosion that killed two people last month in Firestone, a small town in northern Colorado. The April 17 blast was traced to gas seeping from an old severed underground pipeline, called a flow line.

The well was drilled in 1993. State records show it was shut down all of last year and resumed production in January, although the records do not show the reasons.

"This transparency has never been more urgent. We simply cannot go on this way," said Sophia Guerrero-Murphy of Conservation Colorado, an environmental group that supports the bill.

But the measure faces long odds of becoming law.

First, Colorado oil-and-gas regulators have already ordered safety reviews of the state's 54,000 wells, with



ASSOCIATED PRESS

Workers dismantle the charred remains of a home May 4 at the location where an unrefined petroleum industry gas line leak explosion killed two people inside their home, in Firestone, Colo. Two state lawmakers have proposed a bill to force energy drillers to provide state regulators the locations of all their gas lines.

additional testing over the next two months. And the bill doesn't address old well lines whose owners are out of business.

Colorado has a Democratic House and a Republican Senate, making bipartisan agreement crucial for any measure. That bipartisan agreement seemed elusive Friday, with some Republicans calling the proposal a knee-jerk reaction that won't improve well safety.

"This is about politics. It's not about safety," said Republican Rep. Lori Saine,

who is from Firestone.

The state Legislature has just three working days left — the minimum amount of time that a bill can pass and head to the governor's desk. And Democratic Gov. John Hickenlooper, a former geologist, told reporters Wednesday that improved well maps are important but may be better kept by county and local authorities, not state regulators.

"I don't think it's unreasonable to want to know where those lines are. I'm not compelled that it's got

to be the state that controls that," Hickenlooper said.

A representative of the administration testified Friday that the state agency overseeing drilling regulators is neutral on the bill.

Supporters insisted the state shouldn't wait for regulators' safety checks to demand comprehensive mapping.

"People have no way of knowing what's going on, what's near their homes.... I think that's important," said Democratic Rep. Adrienne Benavidez.

## Marijuana found stashed in shipment of Ford Fusions

ASSOCIATED PRESS

NOGALES, Ariz. — A shipment of Ford Fusions traveling by rail from Mexico to Minnesota has been found to have marijuana hidden inside the vehicles.

the other 13.

Each of the first two cars had 40 pounds of marijuana molded into the shape of spare tires and tucked inside plastic wrap, aluminum foil, coffee grounds and garbage

Nogales, Arizona.

Police do not have any suspects, said Steve Linders, a spokesman for the St. Paul, Minnesota, police.

A spokeswoman for Ford said the company is aware of

from Mexico.

Police searched more than 400 other vehicles in the Dilworth rail yard and found 217 pounds of marijuana packaged and sealed to look like spare tires in



# Small gas pipeline blamed for fatal Colorado home explosion

DAN ELLIOTT  
Associated Press

FIRESTONE, Colo. — A home explosion that killed two people was caused by unrefined natural gas that was leaking from a small abandoned pipeline from a nearby well, fire officials said.

The April 17 explosion in Firestone about 30 miles north of Denver happened when the odorless gas in the old line leaked into the soil and made its way into the home's basement, Ted Poszywak, chief of the Frederick-Firestone fire department, said Tuesday.

Investigators do not know how or when the small pipe was cut. The house was within 200 feet of the well, and the pipeline was buried about seven feet underground.

The well was drilled

in 1993 and is owned by Anadarko Petroleum. Investigators are still trying to determine who is responsible for the abandoned line.

Anadarko and Great Western Oil & Gas said last week they would shut down and inspect more than 3,060 similar wells as a precaution during the investigation.

State records show the well near the home that exploded was shut down all of last year and resumed production in January, although the records do not show the reasons. Anadarko has previously declined to comment, citing the ongoing investigation.

The well was last inspected in 2014 and received a "satisfactory" rating.

Mark Martinez and Joseph William Irwin III were killed in the blast and resulting

fire. Erin Martinez, who was married to Mark Martinez, was badly burned. Irwin was her brother.

Anadarko and Great Western's actions prompted nearby Boulder County to ask energy companies to shut down and inspect all vertical wells there, about 300 total. Adams County, which is just south of Firestone, also asked oil and gas companies to inspect vertical wells near occupied buildings, but the county did not call for any wells to be shut down. It wasn't known if any operators complied.

The proximity of subdivisions and wells is a source of contention in Colorado, where fast-growing cities sometimes overlap with lucrative oil and gas fields.

Conflicts have generated lawsuits and attempts to

overhaul state rules. The Legislature killed a proposal this year that would have increased the minimum distance between schools and new oil and gas facilities.

The state Oil and Gas Conservation Commission regulates the distance between new oil and gas wells from existing structures, but local governments set the rules for the distance between new homes and existing wells. In Firestone, the minimum distance is 150 feet.

The commission said last week it tested air samples in the neighborhood but found no evidence of leaking gas. The commission also planned to test the soil for evidence of underground leaks. A commission spokesman didn't immediately respond to a request for comment Tuesday.

## Transit

From A1

In September, the city documented 7,691 youth passenger trips, or about 379 trips per day. By April 2017, that figure had risen to 10,522, equal to 585 trips per day.

Rapid Transit System manager Rich Sagen estimated that by the end of the school year his department would provide nearly 90,000 free rides to local students.

"I think it has far exceeded our expectations," he said.

The Rapid Transit System has six fixed routes as well as its door-to-door, dial-a-ride service. Students are picked up along the fixed routes with one destination for the summer program, Sagen said. Rapid City high schools do



A group of high school students pose for a photo outside a Rapid Ride bus Tuesday afternoon outside Rapid City Street.

CHRIS HUBER, JOURNAL STAFF

on summer programming," Simons said. "This just gives them a little bit more opportunity to get to know our city and to continue

Allender echoed that sentiment before widening his sights even further.

"Some kids are stuck in a house where things aren't

there, and we're inviting them to come out and see it this summer."

Contact Samuel Blackstone at

War that began 16 years after Jackson's death. Having, let us fancifully imagine, considered and found unconvincing William Seward's 1858 judgment that the approaching Civil War was "an irrepressible conflict," Trump says:

"People don't realize, you know, the Civil War, if you think about it, why? People don't ask that question, but why was there the Civil War? Why could that one not have been worked out?"

Library shelves groan beneath the weight of books asking questions about that war's origins, so who, one wonders, are these

Korea should reciprocate this worry. Yes, a 70-year-old can be callow if he speaks as sophomorically as Trump did when explaining his solution to Middle Eastern terrorism: "I would bomb the s--- out of them. ... I'd blow up the pipes, I'd blow up the refineries, I'd blow up every single inch, there would be nothing left."

As a candidate, Trump did not know what the nuclear triad is. Asked about it, he said: "We have to be extremely vigilant and extremely careful when it comes to nuclear. Nuclear changes the whole ballgame." Invited to elab-

of this mind, a presidential discretion that is largely immune to restraint by the Madisonian system of institutional checks and balances. So, it is up to the public to quarantine this presidency by insistently communicating to its elected representatives a steady, rational fear of this man whose combination of impulsivity and credulity render him uniquely unfit to take the nation into a military conflict.

George Will is a nationally syndicated columnist. He can be reached by emailing [georgewill@washpost.com](mailto:georgewill@washpost.com).

YOURS

*May 4, 2017 Rapid City Journal*

## Why in-situ mining needs many permits

**R**ecently, I have heard two themes in the discussion of the potential for uranium mining in the southwestern Black Hills.

One is that some people believe that the mining has already received a go-ahead, which is far from true. The company that wants to mine in Custer and Fall River counties — Azarga/Powertech — must get at

least ten permits of various types before it can begin mining. And to date, they have exactly one — and that one is tied up in court.

The second theme is that some people, mainly the company, think

that the permitting process is too hard. But the number of permits needed is a result of three things.

First, it's a result of our nation's division into counties, states and a federal government. (Each level of government has different responsibilities under our Constitutional system of government.) Second, it is a result of the fact that uranium is both radioactive and toxic, so we need protection from its impacts. And third, the number of permits is a result of the nature of in-situ each uranium mining, which has impacts on water, land and air.

This type of mining involves huge amounts of water — 9,000 gallons per minute — so it needs permits to use water. The proposed project would pump from two groundwater aquifers, the Inyan Kara and the Madison. The mine would tear up the surface of the ground, so it needs a mining permit. And it can pollute the air, so it needs an air quality permit.

Equally important, this type of mine needs to get rid of wastewater. In this case, the company's first choice is to pump wastewater into the Minnelusa aquifer. Note that the Inyan Kara, Madison and Minnelusa aquifers are our three major drinking water sources in the Black Hills, so it's important that some branch of government tracks the things that go into or out of them.

If the company can't get permission to pump its wastes into our groundwater, then it wants to spray them on the ground. This would impact over 1,000 acres.

So, if the company wasn't threatening our air, land and water to do something that is inherently dangerous, there wouldn't be as much need for permits. Radioactivity is, after all, permanent. And there is no alternative to water. I say if you want to use and pollute our natural resources, there should be a process in place that is designed to protect public health, our economy

and our environment.

This is especially urgent when we are dealing with a Canada-based, China-led uranium company whose biggest stockholder (seven of whose leaders are under federal charges for such things as fraud) is based in the Cayman Islands.

It is also especially urgent because the mining industry produces one-third of the nation's total toxic pollution, and taxpayers end up holding the bag when companies go bankrupt — which happens regularly, as the history of the Black Hills shows.

Luckily, in one case, each of us has the opportunity to be part of the permit process — when the Environmental Protection Agency holds public comment hearings on May 8-9 at the Ramkota in Rapid City, May 10 at the Mueller Center in Hot Springs, and May 11 at St. James Church in Edgemont (1 to 8 p.m. each day, with a break from 5 to 6 p.m.). Anyone can have their say.

So if you have an opinion about the proposed uranium mine and waste disposal, bring it to the hearings, or just come to observe. We are, in this case, part of the permit process.

Lilias Jarding is a member of the Rapid City-based Clean Water Alliance.



LILIAS JARDING



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**Julianne Thomsen**  
— "I'll remem-  
ber how great  
my friends  
looked all  
dressed up and  
how much hard  
work the parents  
put in so we  
could have a  
nice prom."

**Logan Block**  
— "I will  
remember it as  
being one of the  
most decorated  
ones I have been  
to so far. It was  
an amazing  
night spent with  
all my closest  
friends."

**Skylar Dekker**  
— "I will think  
about how awe-  
some my date  
was and how I  
couldn't have  
had a better  
group of friends  
to go with."

**Tori Glazier**  
— "I will  
remember how I  
had a blast at  
prom making  
memories with  
my best  
friends."

# YOUR Viewpoint *Custer County Chronicle* April 26, 2017

## Capitol

## It doesn't make sense

fire with the intention of  
pping the gunfire by tak-  
out (killing) the shooter.  
e officer will be able to  
tinguish the bad guy,  
bably because the good  
oter will look like  
palong Cassidy or Gene  
try, or even maybe a bit  
John Wayne type. Or  
l the officer just take out  
h shooters?

The governor in this  
ision made the right  
ice to veto the propos-

This subject reminds me  
the Johnny Cash song:  
n't take your guns to  
n son, (or the Capitol or  
courthouse). Leave your  
s at home, (or at the  
al detector and screen-  
ing to prevent  
s in the Capitol or court-  
se would seem to be the  
st solution for all.

John D. Murphy  
Custer

Dear Editor,

Renewable energy is  
now cheaper than coal, oil,  
gas and nuclear power.  
Since October 2012, U.S.  
nuclear plant owners have  
closed about a dozen reac-  
tor units.

The EPA issued draft  
permits to  
Powertech/Azarga for a  
proposed in-situ leach ura-  
nium mine in Custer and  
Fall River Counties that  
proposes to operate for 10  
years. No such mine has  
been successfully cleaned  
up, despite sincere efforts.  
When the mining ends the  
pumps are turned off, and  
the heavy metals such as  
uranium which were loos-  
ened by the mining solution  
continue flowing through  
the aquifer.

Yes, in-situ leach mining

occurs within an aquifer. In  
this case, mining would  
occur in the Inyan Kara  
aquifer via 4,000 wells.  
Waste would be injected  
into the Minnelusa aquifer.  
People are using the water  
in these aquifers!

Do we risk precious  
water for a type of mining  
that historically has deplet-  
ed and contaminated water  
in exchange for a handful of  
jobs to provide fuel to the  
dying nuclear power indus-  
try?

Or do we think beyond  
10 years and reserve our  
water to support the sus-  
tainable economic growth  
that is happening in the  
Black Hills? The econom-  
ics of uranium mining do  
not make sense here.

Gina Parkhurst  
Custer

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673-2217

## POWERTECH WATER PERMITS\*

My name is [REDACTED] and my wife and I live on a small ranch south of Pringle and have been there for 23 years. Thank you for this opportunity to speak today.

I do not receive payment of any kind for being here. I am not a for profit corporation. Unlike P/T, I have no loyalties or any responsibilities to show a profit to any stockholders. I am free to do the right thing and I have only the truth as I see it to give.

Men of my age are usually referred to as "old men" but 50 years ago when I was "young and in my natural prime" I was a Naval Aviator on a carrier in the Gulf of Tonkin flying low level photo reconnaissance missions over North Vietnam. When commissioned by Congress as an officer, I swore an oath to uphold and defend the Constitution as maybe some in this room have done. The Constitution and the Bill of Rights of course support a prime directive: Clarify the responsibilities of the government and the rights of the people. Not businesses nor corporations' rights but citizen's rights. Our governments' responsibility is to the health and welfare of the citizens. This is ostensibly why our military is asked to get in harm's way: to make sure these rights, our rights are protected and secured. Every civil servant, every citizen's board, every governor is accountable to the citizens who have allowed

them to serve and if they do not protect the public interest , if they forget about protecting the health and welfare of all the citizens and the rights of the people then they have abrogated their prime directive and can and should be removed. If it is not in the PUBLIC INTEREST, it should not be done. This hearing is all about the water. That is the heart of this matter. Because the water will be polluted, contaminated, radioactive, marginalized and made unusable, this permit application is not in the public interest.

State law says that all surface and ground water belongs to the people. To the public. Not miners, not corporations, not polluters. Polluters should have no rights to the people's water. Ever. We all know that the world is warming. We all know that our climate is changing. We all know that we have had dangerous droughts, tremendous storms with massive flooding and hail damage. We all know that the world's supply of fresh water is being depleted faster than it can regenerate by overuse from an ever expanding population. We all know that we cannot waste what water we have, that we must conserve it, use it wisely and conservatively in order to provide for the following generations. To do otherwise is irresponsible in the extreme.

I have a series of questions to ask this board in the hopes that they will be spurred to answer them and find therein the courage to deny this permit application.

\* Why allow mining in soils where the hazards for erosion are extreme?

Why allow mining where the winds will disperse contaminants into Edgemont and Hot Springs.

\* Why allow a company to contaminate three of the four aquifers in the area and risk the contamination of the fourth?

Why risk contaminating of the best source of water in the Black Hills; the Madison?

Why allow a company that has no ISL experience to risk all four aquifers?

Why even consider allowing a company to spread contaminated effluent onto hundreds of acres of land that slopes 2 to 6 degrees into Pass Creek and Beaver Creek and thence to the Cheyenne, Angostora, Pine Ridge and the Missouri?

\* How can this board allow the withdrawal of millions, no, even billions of gallons of water and still be able to state that it would be in the public interest?

Why allow this permit when PT admits that millions of gallons of water in the Inyan Kara will be contaminated?

\* Why think that 551 gpm from the Madison, which is almost 800 thousand gpd is possibly in the public interest?

Why consider that the use of this water which will allow PT to mine is socioeconomically valid when the funds garnered by the counties and the state will in most scenarios provide only \$30 or so dollars a year for the citizens affected?

\* Why allow mining if PT cannot clean the water for human or livestock or wildlife use but rather has to inject it into the ground, into existing aquifers so it will not contaminate anything other than that aquifer, which of course, makes it totally unusable, possibly forever? or until our sun goes red giant?

How many heads of livestock could be watered with 250,000 gallons per day? 25,000 maybe?

How many gardens could that amount of water serve?

How much food could be grown utilizing this amount of water? How much hay?

\* How much does water cost and why should millions, no, billions of gallons of water be given to PT at no charge at all? Is this in the public interest?

\* Why allow aquifer injection when it is known that the aquifers can communicate, moving water between them? How can this board allow a permit if a table in the application, Table 3.4-10 of the NRC application, shows that the water quality in the formations includes such poisons as thorium, uranium, arsenic, cadmium, mercury, thallium, polonium, radium, and radon all of which are dangerous and all of which will be released by the mining and released to the air or into solution into aquifers or spread upon the ground to blow away or seep into ground waters?

Why allow a company to mine if it has only planned for one 100 year 24 hour precipitation event when we can



expect at the very least a 100 year event every ten years and not just for 24 hours but for 72 or more as recently experienced by eastern Colorado? Will a 72 hour downpour cause dangerous erosion and contamination of the flood plain and the watershed?

\* Can this board approve a permit when it is impossible for PT to remediate an aquifer to an original state, as made clear by the NRC and it's minimum standard of ALARA which means AS LOW AS REASONABLY ACHIEVABLE?

(Is anyone going to be comfortable with PT having taken the samples with no independent oversight by DENR, EPA or NRC? In fact, as we cannot depend on the DENR or the EPA or the NRC to protect our water, is it not up to this board to do so?)

As PT has no idea of the total available space for aquifer injection or an appreciation for aquifer regeneration, how can this board approve of the practice without acknowledgement that the aquifer may be overfilled, and therefore over pressured producing the real risk of leakage, earthquake and external contamination? Why take any water from the Madison, why 551 gpm? Why not use all the Inyan Kara 100% again and again? If the water is treated, why must it be injected or sprayed? Why is it not clean from the treatment? How is it treated? Is this waste drinkable? Why not?

5.4.1.1.4.1 "The typical water quality during land application will be better than shown....since the water



quality will be continually improving during aquifer restoration." Is this board comfortable with the idea that by putting clean water into a radioactive and contaminated aquifer that the aquifer will be cleaner rather than the clean water becoming contaminated?

Phrases such as "Anticipated....application water quality." "Estimated worse case", "typical land application water quality." "Improving to approximate base line water quality", "in addition, Madison water may be used at any time to improve the land application water quality", "anticipated that trace metal concentrations at or below....human health standards." Referenced table 5.4-2 and 5.4-3 were estimated. Also estimated chloride, magnesium, arsenic, barium, cadmium, chromium, selenium, lead, radium, thorium, etc.

Figure 5.4-4 Estimated process waste water quality: arsenic, chloride, Carbonate, Hydrogen Carbonate, ammonium, selenium, radium, sulphate, TH230, U. Should not these provisional statements cause grave concern?

5.5.4.1 "Anticipated land application rate of 297 to 653 gpm" The land application is the 2%170 gpm bleed from the Inyan Kara. Where does the 297 to 653 come from?

Figure 5.3-2 Should the board be concerned that PT can only "clean" 5000 gallons per day while they are producing a minimum of 250000 gallons of waste a day?

"Potential radiological impacts demonstrate no significant exposure pathway from vegetable garden to potential human receptors." Is this the kind of double speak with which we should be comfortable?

5.5.1.3 I am concerned that in referencing ground water restoration that PT has admitted that this will contaminate millions of gallons in the I/K and make a large area of the aquifer unusable for many of the existing users? Is it not worrisome that the Minnelusa and Deadwood are the two injection sites and therefore wholly contaminated leaving only the Madison with the hope of remaining clear but overused?

5.6.5.1.3 Should the board be concerned that PT accepts the potential for accidents, leaks and spills which could release pollutants; bulk chemical products, uranium loaded resin, dry yellow cake, solid by-product material. PT says it will simply remove the contamination. That they admit that the consequences of these spills range from minor exposures to "significant"? That these spills and leaks and accidents can result in runoff into the watershed?

5.7.2.4 Will the permit area, the water and the land, be contaminated as a result of the reality that ANY AREA WITHIN THIS FACILITY MAY CONTAIN RADIOACTIVE MATERIAL?

6.0 Should it concern this board that the reclamation plan is produced by WWC Engineering, which is on the PT payroll, and VPs Blubaugh and Mays who have no experience in ISL mining operations when ARSD 74:29:07:18 requires that "The individual who develops the reclamation plan must be competent in the management and planning of the specific type or types of reclamation selected."?

NRC states that "The primary goal of ground water restoration is to protect present or potential future sources of drinking water....." "However, restoration to pre-mining may not be practicable or feasible...." Is this really in the public interest?

6.3 Decontamination and decommissioning. PT has said that radiation can simply be hosed off with high pressure water or steam cleaning. If, indeed, it is even possible, there is no mention of what to do with the now contaminated water that is the result. PT says it can decontaminate the soil. NRC indicates that that cannot be done. Are these contradictions not of concern?

PT gives it's "95% confidence that the ...units...meet the clean up guidelines or action levels." Would the public interest find 95% lacking?

6.4.3.6 Erosion control practices will be removed when no longer needed. As long as the soil is contaminated and as long as it rains, would it not serve the public interest to maintain all anti erosion systems?

Finally, how can this board approve these permits when it would appear that this company does not have the financing to even start construction, that the personnel responsible for the operation do not have the necessary experience or the competence or the ability to operate the system, that this company has left unanswered how it plans to assure the safety of the public from the disposal of truly dangerous chemicals and compounds, that has yet to find the one management position that will oversee the mining itself, that failed to produce a completed application on time, that has made incorrect, misleading and confusing statements, that cannot guarantee what it has to guarantee, that will abuse and possibly ruin three aquifers, while threatening the fourth? Simply put, it cannot. The USGS clarifies that there are no ISL operations that have ever cleaned or remediated or treated returned the mining back to baseline or original condition, none that have not contaminated the mining area and none that have not left ruined aquifers and other waters. The Dewey/Burdock area will not be cleaned. It may never be safe. The NRC estimates that the reclamation will cost upwards of \$65 to 70 million. PT will not have that amount available based on foreseeable yellow cake pricing. It will be left in a contaminated condition and will most likely be left to the state and/or the counties to attempt the impossible and bankrupting clean up.

\*All numerical numbers refer to the NRC application filed by Powertech/AZARGA.

To: The Environmental Protection Agency  
From: [REDACTED]

May 10, 2017

Re: Azarga plan for deep well injection

There are many reasons why the EPA should deny Azarga any permit to mine uranium and/or inject toxic fluids into currently used aquifers in the Dewey Burdock area of South Dakota, including the Inyan Kara, Minnelusa, Deadwood and the Madison.

- 1: There is no market for yellow cake. There is no profit to be made by mining Uranium. Therefore, there is no reason for Powertech to drill deep injection wells for toxic fluid that they will not be creating. It would appear that the only way for Powertech/Azarga to profit by their permits is to make deep injection wells available to outside sources of toxic waste. Powertech denies the idea of outside sources of waste saying they do not "plan" to take in outside toxic waste despite the fact that their permit allows it and profit demands it. And remember, Powertech cannot do any mining at all unless the laws protecting the water and the land are put aside and waivers issued allowing the contamination which is by law not allowed. These new permits will allow Powertech to pollute the Inyan Kara and Minnelusa aquifers directly and the Deadwood and Madison aquifers by transmissivity. Once these aquifers are contaminated, there will be no remedy. They say they only need 1 1/2% bleed replacement, so why ask for thousands of gallons per minute. If they will not take in outside waste, why allow for it? They say the waste to be injected into the aquifers is just salt water. The laws of chemistry refute the claim. The application to the NRC by Powertech shows that the waste will be impregnated with Radium, Cadmium, Chromium and Arsenic among many other poisons. These chemicals will absolutely be part of the so called lixiviant.

New bore holes for toxic waste disposal are being requested because the original plan to mine uranium In Situ is now irrelevant due to the low value of the material and the lack of demand worldwide. Also, alternative energy sources such as wind and solar are now employing more new workers than the oil and gas industries combined.

2. Professional geologists and chemists from the South Dakota School of Mines, Chadron State and private practice have testified most effectively as to the danger of this plan for all the residents in the area due to the irreparable damage done to the water supply. The misuse or contamination of the aquifers in the Black Hills flies in the face of good judgment due to the increasing importance of usable water not just in drought affected South Dakota but the nation as well. We are depleting our water supplies by allowing the very kind of destruction envisioned by Azarga and the EPA. With the demand for water ever increasing due to continued world population increases, it is imperative that the protection and careful use of our water supplies be our guiding light. To actually embrace the opposite behavior is to violate the EPA stated

the purpose of actually protecting the environment. It is no longer possible to deny threats to our remaining water supplies driven by In Situ mining and water ruination. It is the EPA's responsibility to make sure the water and environment remain safe. The Black Hills Hydrology Study available from the USGS is a fine and revealing scientific paper available for your review.

3. The fact that Platinum Partners, which is Azarga's largest share-holder, is being charged with a variety of misdeeds which if convicted could provide prison terms for the guilty, should be a wake-up call to the EPA as to the kind of ethics embraced by Azarga. With the company based in China, overseeing a Canadian company with offices in Colorado, one can easily guess how Azarga feels about the long term health of the citizens in this area when compared to the drive for profit at all costs.
4. How am I to explain to my granddaughter how her government decided that it was safe and reasonable to exchange her healthy drinking water for a few pieces of silver in the pockets of a few profiteers?

Thank you for your attention.

Sincerely,

A black rectangular redaction box covering the signature area.

EPA testimony

May 08, 2017

Good afternoon, My name is [REDACTED], and I've been a homeowner in Rapid City for the past 11 years.

I oppose ISL uranium mining in Custer and Fall River counties because I am very concerned about contamination of our groundwater. This area is prone to drought, so water conservation is a priority. South Dakota's two largest industries, agriculture and tourism, depend on adequate supplies of clean water.

The United States Geological Survey also known as USGS has found that no ISL uranium mining operation has been able to return water quality to pre-mining cleanliness. The U.S. Nuclear Regulatory Commission has been quoted saying that "the restoration of an ISL-mined aquifer to pre-mining water quality is ... an impossibility.

There are a number of factors that indicate a mine in the Dewey-Burdock area would likely result in contaminated groundwater.

There are old uranium mines in the Dewey-Burdock area that are not fully reclaimed, enhancing the risk of groundwater water contamination.

It will be impossible to have adequate oversight of the quality of liquid wastes pumped into the Minnelusa formation through the proposed deep disposal wells, resulting in likely groundwater contamination.

The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes. In addition, over 7,000 old boreholes have not been properly plugged in the proposed project area. It will be impossible to contain mining fluids or waste liquids and contamination of our groundwater is very likely.

I urge you not to exempt a portion of the Inyan Kara aquifer from the Safe Drinking Water Act. The Inyan Kara is used by many people and livestock and given the aforementioned risk factors, water contamination is likely. I've heard that the Minnelusa aquifer contains 125 drinking water wells – please verify with the South Dakota Department of Environment and Natural Resources.

With uranium mining we need to keep in mind that fact that the half-life of uranium is 4.5 billion years. Yes, that is billion with a B as in boy.

Untold numbers of people living now and those yet to be born could be affected.

As you are probably aware, in the 2011 legislature, SD gave up its statutory authority to oversee wastewater aquifer injection in ISL uranium mines at the urging of Powertech now Azarga Uranium. Other types of mining in South Dakota such as gold, oil/gas are regulated much more thoroughly than ISL uranium mining.



If a petition for review of the new permits is filed, the new permits are not in effect pending final agency action. If a petition for review of the permit modifications is filed, the permit conditions subject to the modification would be deemed not to be in effect pending a final agency action.

Within a reasonable time of receipt of the petition for review, the EAB will either grant or deny the appeal. The EAB will decide the appeal on the basis of the written briefs and the total administrative record of the permit actions. If the EAB denies the petition, EPA will notify the petitioner of the final permit decisions. The petitioner may, thereafter, challenge the permit decisions in Federal Court.

If the EAB grants the appeal, it may direct the Region III office to implement its decision by permit issuance, modification or denial. The EAB may order all or part of the permit decisions back to the EPA Region III office for reconsideration.

In either case, a final agency decision has occurred when a permit is issued, modified or denied and that decision is announced. After this time, all administrative appeals have been exhausted, and any further challenges to the permit decision must be made to Federal Court.

May 9, 2017

Good afternoon Judge Sutton and EPA officials,

My name is [REDACTED] and I live in Rapid City. I'd like to clarify a comment I made yesterday about the number of drinking water wells in the Minnelusa aquifer after speaking with Ken Buhler of the South Dakota Department of Environment and Natural Resources (or DENR).

In November 2014 the DENR started identifying which aquifer a well draws from on the permit forms. This means that for many wells in use, it is unknown which aquifer they drawn from. Mr. Buhler said there are hundreds to thousands of domestic wells using water from the Minnelusa aquifer. The exact number is unknown at this time. However, Mr. Buhler said it is known that there are 196 appropriated water rights permits in the Minnelusa which include municipal, commercial, industrial and housing use.

In addition, the USGS Water Resources Investigations Report 01-4119 Abstract starts with this statement *"The Madison and Minnelusa aquifers are two of the most important aquifers in the Black Hills area of South Dakota and Wyoming."*

The USGS Water Resources Investigations Report 01-4226 Abstract begins with *"The Black Hills are an important recharge area for aquifers in the northern Great Plains. The surface-water hydrology of the area is highly influenced by interactions with the Madison and Minnelusa aquifers, including large springs and streamflow loss zones."*

In Valois Shea's presentation yesterday she mentioned that a Class V injection well permit could not be issued for an aquifer that is an Underground Source of Drinking Water. The Minnelusa is being used as such, so I think it is safe to say it is considered an Underground Source of Drinking Water.

The EPA's website defines an Underground Source of Drinking Water as following:

1) it supplies any public water system, which the Minnelusa does, 2) the source of water contains a sufficient quantity of ground water to supply a public water system which the Minnelusa does, 3) it currently supplies drinking water for human consumption which the Minnelusa does, 4) it contains fewer than 10,000 mg/1 total dissolved solids which according to USGS tables I've found online applies to most parts of the Minnelusa, and 5) the source of water is not an exempted aquifer which the Minnelusa is not as far as I know.

Thank you for listening.

Background information:

<https://www.epa.gov/uic/general-information-about-injection-wells>

Definition of underground sources of drinking water:

An underground source of drinking water (USDW) is an aquifer

*aquifer* is a geological formation or group of formations or part of a formation that is capable of yielding a significant amount of water to a drinking water well or spring, or a part of an aquifer that is currently used as a drinking water source. A USDW may also be ground water needed as a drinking water source in the future. A USDW is defined in the Code of Federal Regulations (40 CFR 144.3) as:

an aquifer or its portion: (a)(1) Which supplies any public water system; or (2) Which contains a sufficient quantity of ground water to supply a public water system; and (i) Currently supplies drinking water for human consumption; or (ii) Contains fewer than 10,000 mg/l total dissolved solids; and (b) Which is not an exempted aquifer.

5-9-17

May 9, 2017 testimony

Dear Judge Sutton and EPA officials:

My name is [REDACTED] and I live in Rapid City. Yesterday I mentioned a Resolution passed by the Rapid City Common Council. Today I'd like to read the full text for the record:

RESOLUTION NO. 2013-083

A RESOLUTION EXPRESSING GRAVE CONCERN ABOUT THE IN SITU MINING OF URANIUM BY

POWERTECH IN CUSTER AND FALL RIVER COUNTIES.

WHEREAS, Powertech Uranium Corp. has submitted applications to the South Dakota Water Management Board for permits to use water from the Madison and Inyan Kara Aquifers to conduct in situ mining of uranium in Custer and Fall River Counties in the Black Hills of South Dakota; and

WHEREAS, In situ mining, or in situ recovery involves pumping solutions incorporating water from the aquifers into an ore body through wells which will then circulate through the porous rock and recovering the minerals from the ground by dissolving them and pumping the solution containing the ore to the surface where the minerals can be recovered.

WHEREAS, hearings on Powertech's water permit applications will be held by the South Dakota Water Management Board in Rapid City at the beginning of October of 2013; and

WHEREAS, the City of Rapid City obtains a majority of its drinking water from the Madison Aquifer; and

WHEREAS, the safety of the water in the Madison Aquifer is of utmost importance to the City of Rapid

City; and WHEREAS, due to the unanswered questions regarding the safety of the community's water supply, the Common Council of the City of Rapid City believes that the proposed in situ mining of uranium in the Black Hills poses an unacceptable risk to the primary source of Rapid City's drinking water.

NOW THEREFORE, BE IT RESOLVED, by the City of Rapid City that due to the potential risk to the Madison Aquifer the City expresses grave concern about the proposed in situ mining of uranium in the Black Hills.

Dated this 19th day of August, 2013.

CITY OF RAPID CITY

s/ [REDACTED]

Mayor

ATTEST:

s/ [REDACTED]

Finance Officer

(SEAL)

Thank you for listening.

May 10, 2017

To the EPA,

We are present at today's meeting because we have deep concern over the proposed Dewey-Burdock uranium mining in Custer and Fall River Counties of South Dakota.

We bought our home in Fall River County in 2015. One of the main reasons for purchasing this particular home was the fact that it had it's own well. To our knowledge our well is 400 feet deep and likely in the Minnelusa aquifer. If we had known at the time of the proposed uranium mining and the pumping of the waste into the Minnelusa aquifer, we would not have purchased this property and have concern for it's resale in the future.

It makes no sense for any kind of waste to be pumped into the drinking water supply of an aquifer let alone possible radioactive and or toxic waste.

The only other alternatives for our water supply would be to hook up to rural water which is very expensive or put in a cistern and haul in water which is also expensive. This is why we wanted to purchase a property with an established well which currently has safe and good drinking water. We are not even sure where rural or hauled water comes from and if it may also be affected.

We don't need another "Flint Michigan" in the Black Hills. We don't want to wait for children and adults in the area to become ill in future years due to this incomprehensible proposal.

It appears to us that the EPA has more concern to protect gophers, toads and mice than people.

**We pay taxes for you to PROTECT US the PEOPLE.**

**WE ARE OPPOSED TO THIS PLAN, WE WANT OUR WATER SUPPLY LEFT ALONE!**

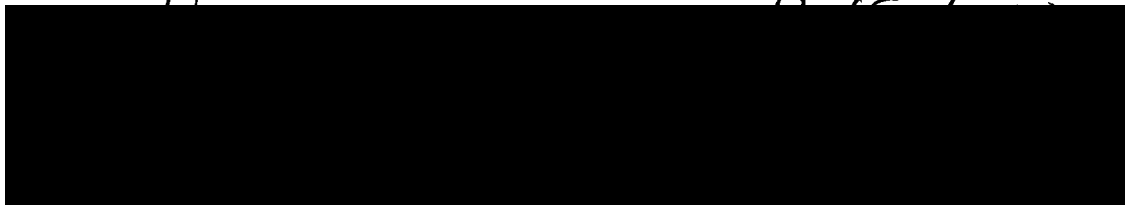
Sincerely

[REDACTED]

May 10<sup>th</sup> 2017

Mother ~~Earth~~ weeps as we fill  
her with evil toxins and contaminants,  
destroying her naturalness. How much  
can we rob? Don't be fooled, she will  
retaliate! Eventually she will punish  
us wrongful, greedy souls!

In behalf of us mother earth conservatives.



There's NO safe mining!  
Leave OUR WATER ALONE

69

Dear EPA, Region 8:

Here are my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:

- Old uranium mines in the Dewey-Burdock area should be fully reclaimed before new mining is permitted.
- Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible, and our groundwater is likely to be contaminated.
- A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected.
- The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is very likely.
- The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather than relying on imperfect protection and clean-up processes.

Sincerely,

Name (Print)

Name (Signature) 

Mailing Address (Print)

[Redacted signature and address block]



# Comments from Hearing Comment Cards

	Name	Email	Comment
1	[REDACTED]	[REDACTED]	Building uranium mines will not only affect the environmental but the people surrounding. The release of metals and radionuclides can equal to having 100 X-rays in one hour. Therefore, it can cause many health concerns.
2	[REDACTED]	[REDACTED]	I believe there is no need for uranium. It is used for nuclear weapons. We need to STOP going to war. STOP damaging the Earth. But mostly we need to STOP treating the Earth like its replaceable...
3	[REDACTED]	[REDACTED]	Water is Life, Stop <u>polluting</u> !
4	[REDACTED]	No email address	One of my favorite pass times was exploring the Black Hill with my family & children, <u>until</u> I discovered just out of sight from Hwy 385, several abandoned mine sites, old tools & equipment & very odd looking dirt, like they just walked away, when the market price of whatever (uranium/gold – etc.) they were mining fell below profitability. This was all after the last E.P.A. promises to not harm the sacred Black Hills. I have <u>recent</u> tests of water flowing from the Black Hills is still contaminated/radiated/ All of a sudden it's supposed to be all good/credible! I don't believe it. Leave the Hills alone. <u>NO</u> approval
5	[REDACTED]	[REDACTED]	Not control over 'bleed production;' manmade disasters; corporations monitoring corporations; no oversight; abandoned uranium mines; Can you put your 'Climate Change' site back up? Actions to address: abrupt climate change involving water; when will foreign companies be held accountable for restoration of water, groundwater and aquifers?
6	[REDACTED]	Email blank	Who is Powertech? Who makes procedures? What is half-life of constituents going into the deep injection wells?
7	[REDACTED]	[REDACTED]	As an educator, I support his project. I hope that the decision towards this project listens to the science and realizes that this moves us closer to a better and cleaner way of using our sacred earth's resources and can help make our future better for our future students.
8	[REDACTED]	[REDACTED]	I am a teacher in the Edgemont School District. I was born here, attended school and graduated from here, and have lived here my entire professional career. I do my best to respect the cultural traditions of all nations. It is a hard decision to choose right and wrong in disputes of culture and tradition vs. changes. I do not

			envy your decision-making. As an educator and an optimist, I choose to trust science and the studies that the EPA has conducted. I trust the EPA to make these hard decisions. There is no easy fix to cultural differences. Science and technology has changed a lot over the years and will continue to change. It has improved and will continue to improve. Again, I ask you with an optimistic view to use science to guide your decisions. Thank you for what you do.
9			I trust the science and research behind this project. Please move forward with the project if it is safe and best for our community and country.
10			The Black Hills have been awarded to the Lakota People by Supreme Court decision
11			I am a science teacher and an environmentalist. The uranium mining is a safe method based on the facts presented. These decisions should be based on the facts and not on emotions. Believe in the science and trust the science experts. Good science is unbiased and this is good science.
12	Name blank	Email blank	There are protestors outside trying to save their land. It is not your land it is our land.
13	Name blank	Email blank	I am a resident of Edgemont and have been for several years. I have two children and I am employed at the Edgemont School. I believe the uranium project is an excellent thing and will boost our economy. I fully support this project as I believe the check and balances are in place for safety
14			I support the science and I'm in favor of this project.
15			I am a teacher in the Edgemont School District. I have lived in the area for over 24 years. I have a strong belief in science and bettering our world – clean fuel is the way! Please use SCINCE and a real common sense in your decisions-not illogical statements and feelings fueled by emotions. Please understand and use science and not emotions in decisions. Yes to Powertech and the harvesting of uranium for clean fuel.
16			I do support this project and can see no reason not to except for being misled.
17			NO URANIUM!
18	Name blank	Email blank	Have you even been to Evans Plunge? It is a water park. If you mine the uranium it can poison water so water parks will close.

19			DO NOT allow Powertech to mine or dispose of waste. There is no company that will keep our water safe. This company in particular has no experience and <b>no</b> history of performance. Throughout the U.S .there has been a tragic history of environmental threats and leaks. <b>We cannot</b> afford to risk our future.
20			Stand up to the corporate interests. Water is precious and unreplaceable. Save the water for our residents; <u>don't</u> pollute it for generations.
21			If permits are granted we will stop it what ever means necessary. We will fight...P.S. FUCK YOU
22			We had enough uranium to allow Obama & Clinton to give them uranium. Our water is a limited resource. I don't see any sensible reason to risk it for foreign interest.
23			My family depend on well water from this area. It's outrageous that our water safety, and that of future generations, is being put at risk for short-term gains by a few.
24		No email	I see no compelling reason or need for uranium mine. I have neither heard nor read about a shortage of or more demand for uranium. To my mind, the only ones to benefit are the out of state and out of country companies. Figure out what to do with the waste we already have.
25			Is Powertech and their owner able to afford cleanup costs" Need guarantee! Am very concerned about water migration from the Minnelusa to the Madison,. How does Powertech plan to remove all particulates and chemicals, heavy metals, etc.? The drilling presentation charts from Powertech (?) do not show the severe faulting of the aquifers. Although Powertech is based in Canada, the main stockholders are Chinese-based. Yellowcake demand has declined except for proposed nuclear reactor construction in China. How about bonding each well (extraction) @ \$40,000 per well and \$10+million for the injection wells? How about payments/royalties for the minerals extracted? What process does Powertech or Arzarga propose to purify the wastewater? 90% vs 100% (Hollenbeck describes water usage but avoids discussion of reclamation). If monitoring wells detect contaminants in the aquifer (which is tilted) how does one stop the migration? The underground water flows in Jewel Cave

			<p>originates somewhere and flows where? The Madison aquifer pressures are much lower at the recharge location in the Black Hills. Are the Minnelusa pressures lower at the recharge level? Lower than the Madison? Well beyond the perimeters indicated in the EPA study and Powertech proposal. A small portion of the Inyan Kara, Madison and Minnelusa area. The Madison aquifer is used in five states, Water flows where it wants to.</p>
26			<p>Don't grant a permit for extracting uranium. I grew up close to the Grand Junction vanadium facility. The tailings there proved to have radon. They had been used under my relative's house. Radon causes lung cancer. The tailings had to be removed &amp; my relatives may get cancer. Our water is at risk. Don't take a chance with the aquifer. Likely bad pollution will result.</p>
27			<p>I am strongly opposed to this.</p>
28			<ol style="list-style-type: none"> <li>1. I heard that uranium contamination has been reported in Angostura. Could you address this question? (Dr. Jim Stone at SDSMT, Dept Civil &amp; Environmental Engineering)</li> <li>2. How critical is our need for uranium.</li> </ol>
29			<p>The EPA is supposed to <u>protect</u> the environment and wild life. In what part of extracting water to get uranium and then putting the contaminated water back into the aquifer safe? Our landscape and wildlife is what makes the Black Hills and surrounding area beautiful. By poisoning our water, you are poisoning our plant life, wildlife, crops, cattle, and the people. Water is our first medicine, and without it there can be no life. It does not take a lot of common sense to say no to this proposed project. Please take into consideration <u>All</u> of the comments opposing this. Money <u>is not</u> more important than our lives.</p>
30			<p>I am opposed to the proposed uranium mining in the Black Hills. We cannot afford to allow this to happen to our land, people, animals. It is common sense to deny this permit. Do the right thing – we must protect the water and the future. This is an issue that crosses all races and boundaries. Please protect us.</p>
31		N/A	<p>After all the hearing, does it even matter to what <u>we think</u>? Are we <u>not</u> going to mine?? Is that is <u>done</u> deal already?? If we all say <u>NO</u>?? will you go away?? Who did the big money people already buy out?? Will you drink the water? After you leave – we will be here after you all go home. Listen to the people. <u>NO MINING!!</u></p>

			You're destroying our earth, water, environment. Listen B-4 it's too late. <u>NO URANIUM MINING.</u>
32		Email blank	Veteran, deployed to Afghanistan & Kyrgyzstan – Kyrgyzstan & the base water (ground & tap) were contaminated with uranium. Azarga's holdings are in Kyrgyzstan & the U.S. Kyrgyzstan does not heavily regulate uranium. Most there don't even know all the water is contaminated → crops, animals, drinking water. World Nuclear Association (world-nuclear.org) discusses this. Business intelligence-wise "Azarga uranium spills" google search brings up Azarga's website 3 times & articles of this hearing/project. That is a controlled search (i.e., Ararga is controlling their media news). Uranium can stay in bodies (bones & kidneys) for years. It doesn't always leave visible signs until it is too late. Why now, ,why expedited by Azarga? Consequences for a quick business deal are always more costly.
33		N/A	Thank you for providing this public form in which to speak. I forgot to mention in my comments that it has been 11 long years of trying to permit the Dewey-Burdock Project by Powertech/Azarga. It took years to secure the NRC license., It is too slow, and I fear America today could not even build the Hoover Dam. With the EPA, multiple state and BLM blessing yet to come to initiate the Dewey-Burdock Project.; this extreme slowness is unacceptable and is a huge deterrent for new projects desiring and probably deserving permission to proceed. Use common sense, conservation, not radical environmentalism in determining worthiness of these projects and future projects. I heartily recommend approval of the Dewey-Burdock mine. It is past time for the green pendulum to swing back toward common sense and let America prosper and advance in the future by mining God-given resources. Thank you for your consideration. [REDACTED]
34			NO MINING! The risk to the water is far too great!
35			Am adamantly opposed to any uranium mining in SD.
36		k	Do Not pollute the water – No uranium? Protect our Lands-Waters-Habitat
37			I live within the proposed area. I am old, I am a landowner. This is all about the <u>money</u> . The land, the water is priceless. Money cannot bring back the clean water or pristine land. Money is useless when the water is not good. The land is no good for

			<p>ranching or growing. The power behind the uranium mining is not even American. It will not create jobs for our people. No one but the mine owners will make money, and they do not live here. Our major income is derived from ranching and tourism. If you approve the permits you will be responsible for destroying our economy and our lives. It is time for all of us to do the right thing &amp; this includes the <u>EPA</u>. You can telephone me, [REDACTED]. Thank you</p>
38	[REDACTED]	[REDACTED]	<p>President Trump has signed an executive order to “ease burdensome regulations,” gutted the EPA’s budget &amp; personnel, &amp; fired the advisory committee of scientists who will most likely be replaced with members of industry, whose interests are not those of the residents who live &amp; work near polluting industries. Given the current political climate, it is high likely that the few protections for clean water &amp; regulations for radioactive waste cleanup will be relaxed or abolished entirely, leaving SD with contaminated land, water, ill citizens &amp; little legal recourse. A further implication of Trump’s dismantling of the EPA is the question of policing &amp; inspecting the uranium mining &amp; water cleanup. If the EPA does not have the funding or staff to inspect, test, &amp; monitor the wells &amp; water quality, it will be up to SD taxpayers to pay for monitoring, &amp; it is also highly likely that inspections will be fewer or less thorough, resulting in contamination not being discovered &amp; arrested quickly. The supposed millions of increased tax revenue to the county &amp; the state resulting from the min will quickly evaporate. If the EPA cannot guarantee thorough oversight of the mine for the next 12 years proposed by Powertech, it really should not in good conscience, approve the permits. Further, the EPA’s 2015 site inspection only sampled surface water &amp; sediments; if the mine source areas have not been inspected, how can we know that t the deep in-situ mining, &amp; previous mining that has already occurred will not further pollute the entire water table? There is a guaranteed bleed of just under 1% with in-situ mining; it may meet the legal threshold of &lt;3x background concentrations, but that does not mean this water is safe for the land, much less potable. Regarding the aquifer exemption, if the Safe Drinking Water Act can be readily set aside with an exemption, what is the point of the Act at all? The entire point the Act is to prevent the types of</p>

			contamination under proposal here. Water in western SD is so precious & scarce that even if some wells are not used for human or animal consumption now, that is not to say they will not be desperately needed in future & should be protected. Especially since if there are unanticipated malfunctions, natural disasters, or simple shoddy workmanship that result in cracks in the aquifers, leaking in the pumping & reclamation process, the entire water table can be irrevocably contaminated for not just our lifetimes, but those of our grandchildren's grandchildren. The only benefits of the Dewey-Burdock project will be realized by Powertech's China-based parent company; the costs, however, will be borne by SD's residents; Please reject the mining permits.
30			The history of mining in the Black Hills includes corporations that have dissolved and left the American taxpayers to foot the bill of cleanup – Brohm caused a superfund site at the Gilt Edge Mine, Susquehanna & its subsidiaries left TVA & the U.S. Dept of Energy to cover the costs of cleanup associated with the mines and mill at Edgemont, There is still cleanup of abandoned mines that have not done because the area are on private land. I would ask that you enter the five series of articles the Rapid City Journal published (available at <a href="http://rapidcityjournal.com/app/pages/uranium">http://rapidcityjournal.com/app/pages/uranium</a> ) into the record for information on the history of uranium mining at Edgemont, including Dewey-Burdock.
40			I am against uranium mining. We need to protect our waters. We cannot stand to lose any of our aquifers. We need to protect our land & environment.
41			As a father & teacher that lives near the Black Hills I am strongly opposed to uranium mining here. I remain unconvinced as to the safety of this project. Additionally I believe the Black Hills are rightfully the land of the Lakota & should be returned. Honor the Treaties.
42			Capitalism will be the death of the environment.
43			I listened to Powertech and their plan to monitor contamination. I do not believe they can do what they say they can. I do not believe that the contamination cab be contained in one area. There are too many porous areas, cracks, fissures, caves. We get our water from a well. The underground water is a treasure and a necessity for our life. The southern part of the Black Hill's water

			needs to be protected. The EPA should be protecting us from the many corporations that would take advantage of our resources and use our area as their toxic waste dump. Do not allow this permit or any others for Powertech. Kendra Wright 5/9/17
44			In 1979, we the people of SD passed an initiative into <u>law</u> that states that anyone who wants to mine uranium in SD has to go to a statewide <u>vote</u> for a license. Has that happened?
45			Do <u>not</u> drill for uranium in <u>SD</u> . It is harmful to the people.
46			EPA-Environmental Protection Agency Please do your job and protect the environment - that means no polluting. This project pollutes! Say No!
47			I am a mother of three and a farmer in Allen, SD on the Pine Ridge Indian Reservation. I am standing in opposition to the proposed Dewey-Burdock uranium mining project. It has been proven through history that uranium mining has disastrous consequences to human health. And it has to be said and cannot be ignored that the United States Government has used control and contamination the water supply to contain and exterminate the Lakota people for generations. If the US Government has a shred of integrity left, it will put a stop to the Dewey-Burdock Uranium Project and any future proposed uranium drilling projects in the Black Hills. Thank you
48			I am against the mining discharge into the water supply. We have so little water out here as it is, and we do not want toxins discharged into our water, especially for those who benefit without having any relationship to western South Dakota. You are dumping your externalities(?) on us.
49			NO URANIUM
50			I would appreciate being kept up to date with the decision that are being made that the potential to affect, not only this generation, but also genetically, many generations to come.
51			No Uranium Mining!!!
52			<ol style="list-style-type: none"> <li>1. Do a complete analysis of abandoned uranium mines, to evaluate potential and current impacts to the environment, to the water, to wildlife, and to humans. Clean up the existing abandoned sites. Prove that it can be restored. Show and share all the process and data.</li> <li>2. Deny the exemption, deny the injection, deny the mining. The water cannot be restored. NRC can draft</li> </ol>



			<p>requirements, but cannot <u>ensure</u> restoration. Do not use any water for extraction.</p> <p>Protect our water. Protect our wildlife. Protect our people...future.</p> <p>Educate all on how harmful this process is to our future.</p> <p>Educate on reusable energies and renewables. Do not use uranium.</p>
53		Email Blank	No uranium mining. No deep disposal of waste. We need clean drinking water please. Thank your.
54			Please listen to the many united voices of all colors & all faiths, who are against the permit to Azarga/Powertech for the Dewey-Burdock uranium mine. The Lakota people cry for the water – Mni Wiconi – water is life. An international company should not come before the wishes of U.S. residents.
55			Just because there are not many people out here – does that mean we have to be a dumping spot for hazardous waste?
56			We're gonna all be walking dead soon enuf, esp. if we drink sick water.
57		none	There haven't been any speakers who support the proposed mining. So why should it be done? If it is approved, it is for money only at the expense of all life? Cleanup is impossible. No mining please/
58		Email blank	I feel that our water needs to be clean. I am not wanting mining. We need clean water. Please don't do any mining. Thank you. Jeff Iron Cloud
59			I am opposed to the UIC Draft Area Permits and the one associated proposed aquifer exemption decision for the Edgemont site. I am also opposed to wells to dispose of waste fluids into the Minnelusa Formation after treatment. I am opposed to any aquifer exemption approval related to the Class III permit application. I oppose the injection of lixiviant into the Inyan Kara aquifers. I want these to continue to be protected against contamination provided under the Safe Drinking Water Act. I oppose Powertech plans to use groundwater to replace the groundwater removed from the Inyan Kara aquifers. Sincerely, Ebun Adelona
60		none	Radon daughter remediation? Security of storage and transport of yellowcake.

61			Big problem with <u>one</u> well in Wasa but no problem with hundreds of wells in Provo area?
62			EPA & other scientific studies can only go so far to predict results. No one knows what shifts in the earth structure might lie ahead. As a country, we are slow to learn from history. Our water is too precious to experiment with.
63			Let me get this straight – For a few temporary jobs we risk losing our most precious resource? Worldwide there are problems due to tracking. Haven't you learned a thing? Follow the money!! Do not force us to move away from the beautiful Black Hills if you contaminate our water.
64			If Powertech owners in China and you give these permits and Powertech granted, then these get sent to China. Then China can sell this uranium to North Korea. Then North Korea can turn this into bomb, send it back over here and blow us up.
65			How much of this uranium stay in the US? If this is a Chinese Co. – do they sell to N. Korea. Japan bought up our scrap steel prior to WWII. Also my well is in the Minnelusa aquifer. I would like to keep it pure.
66			I am here in opposition of the uranium mine & waste disposal wells. My letter with detailed position is coming in the mail.
67			NO! NO! NO! I am a republican and say NO! No risk to water – none. It is too precious here - delicate geology. We the people have a say!
68		N/A	I believe there are plenty of other uranium rich places that would not harm a place as beautiful as the Black Hills.
69		N/A	-NO- We do not need this to happen, believe it will only hurt the land and water & us! –NO-
70			<surface water> no protection
71			NO URANIUM MINING AT DEWEY BURDOCK IN THE BLACK HILLS OF S.D! NOT NOW, NOT EVER.
72			NO uranium mining in the Black Hills! As an indigenous woman, a human being and giver of life, I am completely <u>against</u> uranium mining in the Black Hills. Not only will this poison the water, this does great destruction to my home, my birth place and many of our sacred sites. I want a sustainable and healthy future for my children. Uranium mining hurts everyone's future!
73			As stated in literature & facts – there is <u>NO</u> guarantee of safe potable water. Too many lives & livelihoods are at stake to take a

			chance. No amount of money (for the clean-ups or buy-offs) is worth any of this bull-crap!
74			The potential damage to our aquifers is too great to let this project continue. The worldwide shift should be away from Nuke plants for energy. It is unsafe and potential problems can be disastrous, citing Chernobyl & Three Mile Island.
75			No uranium dumping in our area or anywhere in the mid-west. We have to take care of Mother Earth for use by generations to come. The Lakota medicine wheel has four parts. They are each a different color and represent a race of people and their purpose. The east is yellow, representing Asian and/or Oriental people who are responsible for spirituality. The south is white, representing Caucasian people who are responsible for the physical self or going inward to find self. The west is black for African Americans who are responsible for the emotional or psychological and the water. The north is the color red, for Native Americans who are responsible for the land and the mental aspect of life. Caring for Mother Earth.
76			I am an old guy and I am tired of "experts" saying don't worry we know what we are doing and then 5 – 10 – 15 – 20 – 25 years later woops, this is a problem, what now?
77			Against in situ mining because of water quality and geologic stability issues. Against uranium mining because of pollution issues – dangerous material! Also not needed as alternative energy is developing.
78			NO permit for uranium mining should be granted & certainly not before all previous mines have been cleaned up! Have genuine consultation with the tribes and tribal approved archaeological and cultural surveys!
79			They keep saying this is for economic good, jobs etc. Back in the 40s & 50s they said electricity would be so cheap they wouldn't bother to meter it, that hasn't happened and they have made a mess. Around the world a <b>poaier(?)</b> is dying.
80		Email blank	We want to have pure water no contamination
81			There is no way you can give a 100% guarantee that nothing bad will happen to the water. If this goes through, you will mine, take you money, and then leave. Local residents will be left holding the bag. Will there be seismic events with the pumping like there is with fracking? What will climate change do to the supply of

			water in the future? Population changes will change the need for water. This does not seem like a good business decision so I wonder what else might be in store if this venture doesn't work out. Is this going to be like the Hanford site in WA state, (I know it's not that type of waste) where a generation or so people will look back on now and think "what morons." This will not affect me or any of my family, but I'm concerned for the others who will be affected.
82			Why the use of water? If this proposed area was next to Rapid City would it still get the green light from EPA? There needs to be a cleanup plan for each drilling.
83			Please explain why a mill tailings pile must be sequestered forever to prevent leaching into the groundwater, yet it's acceptable to create the same pile inside the aquifer.
84			100% against uranium mining in the Black Hills. Not worth it! <u>No amount</u> of \$ is!
85			IF groundwater is contaminated – what does the "clean-up" process entail? It's a given that water quality will be "monitored" with what is done to clean up the mess? How long from the time "contamination" is detected till mining is stopped?
86			I am against the permits of any kind and any numbers given to any company that would by any means endanger the land, air and water to contaminate anything in South Dakota, the World, or persons of Fall River County. I moved here from Ohio to improve my health, which has happened, no longer on numerous pain medication or need of a brace. Please do not allow permits for mining uranium in Edgemont, stop and do not permit incoming contaminated products into Edgemont from other states. Thank you!

May 9, 2017

To Whom This May Concern:

I am writing to express my grave concerns in allowing Arzaga to receive a permit to mine in our precious, sacred Black Hills. Water is a precious resource that belongs to all of us and needs our protection.

State regulations do not duplicate federal regulations. Our state regulations are more detailed and tailored to our area. They require ongoing monitoring for safety, notification of state officials in case of an accident (and accidents are common in this industry), insure that in situ mine facilities are built according to strict safety standards, and insure that mine sites are cleaned up properly. Uranium mining pollutes groundwater. While the water in a uranium deposit may have high levels of uranium, the surrounding groundwater may be good quality. In fact, six dozen wells are found directly in the aquifer a company wants to mine in the southern Black Hills -- and within 1-1/4 miles of the planned mine site. Many of these wells are used for livestock and for homes, and they need protection.

The South Dakota Department of Environment and Natural Resources has a responsibility to regulate the local mining permit process. Federal government offices are hundreds of miles away. This is why this uranium company wanted to stop state regulation and push for federal approvals.

Arzaga (formerly Powertech), is an international uranium company and this permit would benefit a foreign corporation at the expense of South Dakota residents. A mistake was previously made to allow uranium mining in our state. We do not want this to happen again. This company is on very shaky financial footing. Do we want this company to dictate the rules for doing business in South Dakota? Will the federal government pay for the cost of cleaning up the areas that will most likely be affected? We do not want to take that chance.

The Black Hills are a special place to all of us. Water is sacred to all of us. The Lakota people say, mni wiconi -- water is life. Water is our first medicine and common sense should prevail in this water protection issue.

Please deny this permit.

Pilamiyaye. Thank you for listening to the people.

Sincerely,

[Redacted Signature]

[Redacted Name], Lakota Grandmother & Educator

[Redacted Address Line 1]

[Redacted Address Line 2]

[Redacted Address Line 3]

①

May 10

[REDACTED], legal resident of S.D., & vote in Lake Co.

I value the rights of the Lakota people who never ceded the Black Hills; I value the land & ecosystems around the area that are risked & in all probability irreversibly damaged in prep ~~before~~ during, & after uranium mining. As we know, everything is connected & uranium mining in this area would affect others, especially at the level of the aquifers.

- 1) NO PERMIT SHOULD BE GRANTED
- 2) NO PERMIT SHOULD BE DISCUSSED UNTIL ALL PREVIOUS MINES ARE CLEANED UP
- 3) GENUINE TRIBAL CONSULTATION SHOULD OCCUR
- 4) TRIBAL APPROVED CULTURAL & ARCHAEOLOGICAL SURVEYS!
- 5) LAKOTA TRANSLATORS NEEDED @ HEARINGS

②

If this water will be so safe after treatment, why is the EPA planning to exempt the Nyan Kara aquifer from the Safe Drinking Act? This seems to me like another example of a private, for-profit, & <sup>in this instance,</sup> global corporation ramming their resource extraction & environment destroying project down the throats of the caretakers of the land. According to the World Nuclear Organization, "The USA legislation requires that the water quality in the affected aquifer be restored so as to enable its pre-mining use. Usually this is potable water or stock water (usually less than 500 ppm total dissolved solids) & while not all

③

Chemical characteristics can be returned to those pre-mining, the water be usable for the same ~~purposes~~ as before. Often it need (sic) to be treated by reverse osmosis, giving rise to a problem in disposing of the concentrated brine stream from this .... After termination of an in-situ leaching operation, the waste slurries produced must be safely disposed, & the aquifer contaminated from the leaching activities, must be restored.

Groundwater restoration is a very tedious process that is not yet fully understood. Even after considerable processes, "various problems remain unresolved & contaminants

④

that are mobile under chemically reducing conditions, such as radium, cannot be controlled; if chemically reducing conditions are later disturbed for any reason, the precipitated contaminants are re-mobilized; the restoration process takes very long periods of time, but all parameters can be lowered appropriately .... The restoration scheme applied included the 1<sup>st</sup> 2 steps mentioned above (in the document). It turned out that a water volume of more than 20x the pore volume of the leaching zone had to be pumped & still several parameters did not reach background areas ...

in  
case

(5)

X Relaxed groundwater restoration standards have been granted at these & other sites, since the restoration criteria could not be met."

Until the abandoned mines are cleaned up, there should be no consideration of new mining. The track record of uranium mining is not good. The Tribal sovereignty & cultural <sup>issues</sup> have not ~~been~~ genuinely addressed. A relaxed standard for contaminated H<sub>2</sub>O is not proper stewardship of our natural resources & turns the EPA into an oxymoron. We all know that Water is the basis of life. Do the right thing & deny the ~~prohibit~~, as the risks are not worth it.



May 10

Hello members of this hearing on the proposed mining and dumping site in the Dewey Burdock area. Thank you for giving me this time to express my concerns with the mining and dumping proposal.

My name is [REDACTED], I hold a Bachelors of Science degree from Black Hills State University. and I am opposed to the EPA granting any license to not only mine uranium but also to permit dumping of toxic waste into the Minilusa aquifer or any place here in the Black Hills or the world for that matter.

Your reports claim that there is no potable water in the Minilusa aquifer is untrue, if what our well driller told us about our well over 20 years ago, here in the outskirts of Hot Springs which was, was water from the Minilusa aquifer and more importantly that our water from the well was deemed the best in the county when tested. then I have a major concern about your proposed license to mine and dump toxic and radioactive waste into any aquifer. We have been living on this water for many years and it taste delicious. Our live stock, plants and anything living on our property benefits from this clean ,nourishing water.

Members of this hearing, we all are living in a symbiotic relationship with all living beings on this planet, be it microscopic or macroscopic. Our actions have an effect on all. it is important that any action made should benefit all. not just the majority or not just the the minority, but all concerned. Any decision to pollute the water, anymore than you claim it already is, will affect the balance of life on this planet. You can not control radioactive material which typically has a half life of 4.5 billion years and there are many such sites that have failed and lead to birth defects and illness in humans and animals alike.

After reading research of hazardous waste water purification treatments and the effect of Heavy metal salts and other hazardous chemicals on biological systems from Linsey McLean, I learned that Heavy metal poisoning affects the the hormonal balance by not only acting as hormone disruptors but also creating xenohormones which can and does lead to cancers and other severe illnesses.

Water is essential to all living organisms and should be protected not polluted. If you allow any dumping of toxic and radioactive waste here int he Black Hills or anywhere you will have to endure the Karma for such actions. The law of karma is exacting and no one has the right to pollute the water in which we all must partake in to survive.

Good Afternoon, Your Honor and Ms. Shea,

Thank you for the opportunity to make a statement here today in support of the draft permits and in support of the Dewey-Burdock Project.

My name is [REDACTED]

I am here to present you with a copy of this Resolution of Support for the Dewey-Burdock Project from Argentine Township.

My bet is that not one of the opponents who spoke at the other hearings this week have even heard of Argentine Township. But I can tell you it is the MOST IMPORTANT name you will hear this week.

You see, much of the Dewey-Burdock ISR project is located on and below Argentine Township.

It is where we live and ranch. We and our families depend on the groundwater for our livelihood and everyday life.

If anyone's livelihood or quality of life were at risk with this project, it would be us.

**There is not a single person who has ever testified who has more at stake than us and WE SUPPORT the licensing, construction and operation of the Dewey-Burdock Project.**

As property owners, we have RIGHTS as well as a vested interest being good stewards of our land and respecting the property rights of others. I've lived my whole life here and taken good care of my property and will continue to do so during ISR operations and long after the project has been completed.

Before I close, there is one more issue I'd like to address and that is regarding Powertech, the company. While opponents have done their best to denigrate them, I'd like you to know that the Powertech folks I've met over the years have been good, honest people.

I especially want you to know about Mark Hollenbeck, the Dewey-Burdock project manager. I grew up with Mark. He's is my neighbor and my friend. He is honest and trustworthy. He's a topnotch engineer, a community leader and a nice guy.

The land, the water and the quality of life here is foremost to him and his family and I have no doubt that his support of the project is based on science and fact. I trust him and I trust that this project will be good for our area.

Thank you.

[REDACTED]

# **ARGENTINE TOWNSHIP, SOUTH DAKOTA**

## **RESOLUTION OF SUPPORT FOR POWERTECH (USA) INC. DEWEY-BURDOCK URANIUM PROJECT**

WHEREAS Powertech desires to extract uranium utilizing the *in situ* recovery method from ore bodies located under the land owned by the residents of Argentine Township; and

WHEREAS this is the land where we ranch and depend on groundwater for our livelihood; and





WHEREAS we, along with our families, live here and depend on groundwater for everyday life; and

WHEREAS our research indicates the Dewey-Burdock Project has been analyzed by knowledgeable independent parties and demonstrates safe and environmentally sound capacity to be mined such that it meets the requirements of South Dakota and Federal oversight agencies; and

WHEREAS mining activities that occur at the Dewey-Burdock Project will be strictly regulated and overseen by the State of South Dakota, the U.S. Nuclear Regulatory Commission and the U.S. Environmental Protection Agency so as to protect our families' health, our livelihoods, the environment and most all, the water resources we use for ranching and our families' personal use.

**NOW THEREFORE BE IT RESOLVED that the Argentine Township supports and encourages the granting of state and federal licenses and permits to Powertech (USA) Inc. to commence in situ uranium recovery activities on our land at the Dewey-Burdock Project in South Dakota.**

### **Argentine Township Board of Directors**

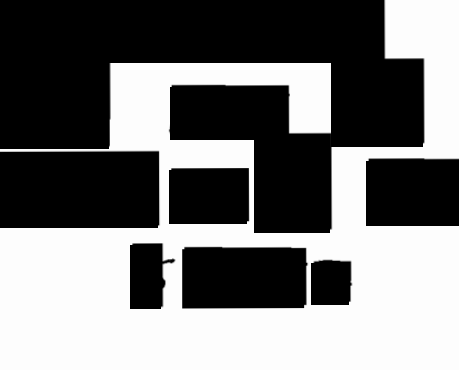
 Chairman	Date: <u>8.29.2013</u>
 n, Supervisor	Date: <u>8.29.2013</u>
 Supervisor	Date: <u>8-29-13</u>
 Clerk/Treasurer	Date: <u>8/29/13</u>

**May 10, 2017**

My name is [REDACTED]. We own and operate a cattle ranch in eastern Fall River County.

**We are against the proposed mining and injection wells in the Dewey-Burdock area.**

The water for our ranch comes from the Madison Aquifer by way of pipeline. We cannot afford to take a chance on polluting the water that sustains our livelihood.





Fall River Conservation District; 341 S Chicago Street; Hot Springs SD 57747;  
605-745-5716 extension 121

May 10, 2017

My name is [REDACTED] I am the Chairman of the board of directors for the Fall River Conservation District. As a conservation organization, we are strongly opposed to the proposed uranium mining and injection wells at the site of the Dewey Burdock project near Edgemont, SD.

Conservation District Boards are mandated to protect the land, air and water quality. Because of this, the Fall River Conservation District board of directors wrote a resolution that went on to become the State of South Dakota's House Concurrent Resolution number 1025. This resolution reaffirms the value of South Dakota's groundwater resources and recognizes the need for ongoing evaluation of our groundwater management. This resolution in its entirety is attached to this statement.

This uranium and injection well project could have disastrous effects on the lives and economy of all the people of Fall River County. There are too many unanswered questions about this project; such as possible earthquakes and contamination of the Minnelusa and Inyan Kara aquifers. These two major aquifers supply water to at least 125 private wells, providing essential water to families and livestock. Chemical waste contamination would prove devastating to the many people who rely on the Minnelusa and Inyan Kara aquifers.

In addition, the heavy truck traffic that is essential for a mining project will be very damaging to the road system of the county. This would cost the county and taxpayers extra dollars that it simply does not have for road repairs and maintenance.

The population of this county cannot afford the mistakes that could come with this project. The lack of clean, usable water could easily turn our towns in to ghost towns and productive range land into waste lands. We need to protect our water sources for the well-being of all livestock, wild life and human life.

Sincerely,

[REDACTED]

[REDACTED] Fall River Conservation District Chair

# State of South Dakota

EIGHTY-NINTH SESSION  
LEGISLATIVE ASSEMBLY, 2014

543V0824

## HOUSE CONCURRENT RESOLUTION NO. 1025

Introduced by: Representatives [REDACTED]

[REDACTED] Senators [REDACTED]

1 A CONCURRENT RESOLUTION, Reaffirming the value of South Dakota's groundwater  
2 resources and recognizing the need for ongoing evaluation of our groundwater management.

3 WHEREAS, groundwater is a resource of immeasurable value to public health and welfare;  
4 and

5 WHEREAS, it is the public policy of this state to conserve the waters of the state and to  
6 protect, maintain, and improve the quality thereof for water supplies; for the propagation of  
7 wildlife, fish, and aquatic life; and for domestic, agricultural, industrial, recreational, and other  
8 legitimate uses; and

9 WHEREAS, it is the public policy of this state to provide that no waste be discharged into  
10 any waters of the state without first receiving the necessary treatment or other corrective action  
11 to protect the legitimate and beneficial uses of such waters; and

12 WHEREAS, it is the public policy of this state to provide for the prevention, abatement, and  
13 control of new and existing water pollution; and


14 WHEREAS, the State of South Dakota has limited groundwater resources, and any impact  
15 to such resources may be detrimental and permanent; and



1 WHEREAS, technology changes rapidly and technological development in all of South  
2 Dakota's industries changes the way in which our groundwater is used:

3 NOW, THEREFORE, BE IT RESOLVED, by the House of Representatives of the Eighty-  
4 Ninth Legislature of the State of South Dakota, the Senate concurring therein, that the value of  
5 our groundwater resources is reaffirmed; and

6 BE IT FURTHER RESOLVED, that this Legislature recognizes the need for ongoing  
7 evaluation of our groundwater management based on rapidly changing technology and the  
8 impacts of technological advances on our groundwater resources.

  
Valois Shea  
U.S. EPA Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO. 80202-1129

Recent history has made it clear that our government does not have adequate systems in place to keep uranium mining companies accountable for how their projects negatively impact the public.

Why should we approve a project that is going to benefit a few financially in exchange for irreparable damage to water supplies, untold suffering from the health impacts of radioactive contamination, and the resulting expensive healthcare costs shouldered by both individuals and by the community?

There are still old uranium mines in the Dewey-Burdock area that haven't been fully reclaimed. We need to see that old mines in our community will be cleaned up before we permit new ones.

There are many other reasons to not allow this permit, but for me the most compelling is the fact that the mine and deep disposal wells cannot be completely contained and will very likely impact our water supplies. The proposed area is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged.

Thank you for considering the needs of the whole community. I have two children I am raising in this community and I am concerned about their future and the future of all of my neighbors and all of the surrounding communities in the Black Hills. This project will not benefit us, and it will do irreparable damage.

Sincerely,





RECEIVED MAY 19 2017



May 9, 2017

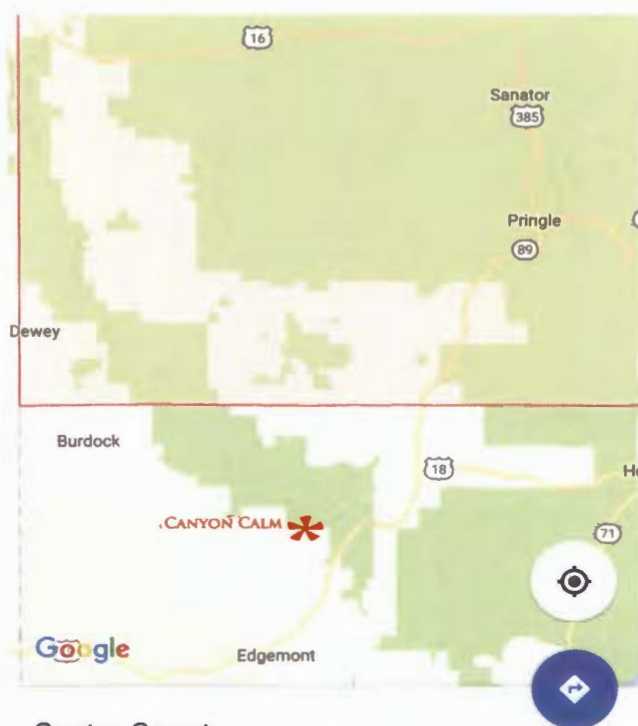
To: U.S. EPA Region 8  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

Re: Permits for uranium mining and deposit of mining waste liquids in the southern Black Hills

Hello,

This letter is from a concerned resident of this area. I live at the home of my sister on Lariat Road, situated in Custer County, as shown on the map below. I've attended public information presentations and investigated the history of the uranium mining operations. Given the mining industry's past infractions of environmental safeguards, it appears that our well is at risk of contamination if the company is granted the permits to proceed. For instance, according to one report, between 2008-2010 there were 60,467 wells with violations. Uranium leakage poses a serious irreparable hazard to our health. Water is essential to life and needs to be protected.

Here is the location of our Canyon Calm home, where the health of livestock, children and adults is at risk if the mining is allowed to proceed.



Custer County

South Dakota, USA

Thank you for respecting this educated request,

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

EPA Scheduled Public Meetings, 05/08/10 and 05/09/17 Rapid City SD, 05/10/17 Hot Springs SD, and 05/11/17 Edgemont SD.

RE: Two Underground Injection Control (UIC) Draft Area Permits, and one associated Proposed Aquifer Exemption Decision for the Dewey-Burdock Uranium In-Situ Recovery (ISR) Site located near Edgemont, South Dakota under the Authority of the Safe Drinking Water Act and UIC Program Regulations in connection with the Class III Area Permit to exempt the uranium bearing portions of the Inyan Kara Group Aquifers.

Note – Powertech is now owned by AZARGA. I have used Powertech and/or AZARGA-Powertech in my document.

Fellow Public Attendees and EPA representatives,

I, [REDACTED] from Englewood Colorado, stand here today to loudly and clearly oppose the proposed Aquifer Exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota under the Authority of the Safe Drinking Water Act and UIC program regulations in connection with the Class III area permit to exempt the uranium bearing portions of the Inyan Kara Group Aquifers.

The EPA has proven itself to have devolved into nothing more than an 8 billion dollar agency dedicated to supporting and promoting EXEMPTIONS for the very industries that continue to cause massive environmental contamination - the legacy of which is left to the local residents for generations.

**AT ISSUE - The portions of the Inyan Kara Group aquifers the EPA proposes to exempt have historically been used as a source of drinking water, are currently used as a source of drinking water, and can be a future source of drinking water.**

**EPA's current Title 40 146.4 declares "The proposed aquifer exemption area must not be a current or future source of drinking water using the criteria at 40 CFR146.4".**

This latest grotesque and alarming action by the EPA to propose exemption of these portions of the Inyan Kara Group aquifers blatantly ignores the existing original EPA aquifer exemption criteria found in Title 40 146.4, and sets a disastrous new precedence for opening up our ever more scarce and precious life sustaining clean water Aquifers that can be used as sources for drinking water to permanent contamination from oil/gas hydraulic fracturing used for UIC recovery and disposal wells, and uranium and other ISR mining activities that also utilize hydraulic fracturing for UIC recovery and disposal well activities, and any other In-Situ Solution Mining.

The evidence of the convoluted joint efforts between the EPA and AZARGA-Powertech to set this precedent in order to change the current Aquifer Exemption criteria is spelled out in the EPA's 11/17/16 Aquifer Exemption Technical Memorandum.

As recorded in the 11/17/16 Memorandum, EPA and Powertech worked cooperatively to manipulate (as evidenced by actions regarding the resident using well 16) the status of current drinking water use of water from the targeted portions of the Inyan Kara group in order to eliminate the "current use" protection from exemption under the current 40 146.4 Criteria, and then attempt to illuminate the "or future source of drinking water" criteria by simply not considering 'future source of drinking water' with this Aquifer Exemption Proposal. If this this proposed Aquifer Exemption were to be Allowed, the

"future source of drinking water" protection will be eliminated by this precedent setting Aquifer Exemption.

Currently there are multiple wells drawn from the targeted portions of the Inyan Kara Group Aquifers that were historically and currently used for both human and livestock consumption. Many of these residences are currently abandoned and therefore the EPA and AZARGA-Powerteck can say are not currently using the water for drinking water. But at least one residence continues to use well water (well 16) from this targeted portion of the Aquifer. To create a "no current use status" from which the EPA and AZARGA-Powerteck are trying to base this AE Proposal, Powerteck promised to permanently provide the resident with bottled water for drinking if they agreed to let Powerteck sever and seal off the water line from the well to the home. The resident agreed and the water line from the well to the house was severed and sealed. However, well 16 water continues to be used for this resident's livestock - Which under SD laws is still considered the same as well water used for human consumption - A fact that the EPA is also willing to ignore!

But this was sufficient for the EPA to approve consideration for the proposed Aquifer Exemption concluding their 11/17/16 Memorandum;

**"Based on the CZA calculations, the EPA has concluded that the portions of the Inyan Kara aquifers proposed for exemption 'do not currently serve' as a source of drinking water."**

*Per Valois on 3/06/17 2 well fields were removed in regards to well 16.*  
I publicly denounce this current effort by the EPA, and I demand that the EPA follow its own laws and Environmental Protection mandate and not approve this Inyan Kara Aquifer group for exemption, because in fact this Inyan Kara Aquifer Group is indeed a "current and future source of drinking water" that requires an mandates protection!

I wish to state two additional alarming facts:

What the EPA also won't tell you is that uranium in-situ recovery mining has consistently resulted in contamination. And per the US Geological Survey (USGS), to date there has been no successful mitigation of the contamination resulting from uranium in-situ recovery mining. So your current status of future source of drinking water will be permanently lost if this exemption is approved.

What the EPA has also not disclosed to local residents is that once approved, the class III underground injection disposal wells approved for uranium mining waste water disposal will also be made available for injection disposal of other radioactive waste fluids from other sources such as Municipal water treatment plants well past when uranium mining activities stop.

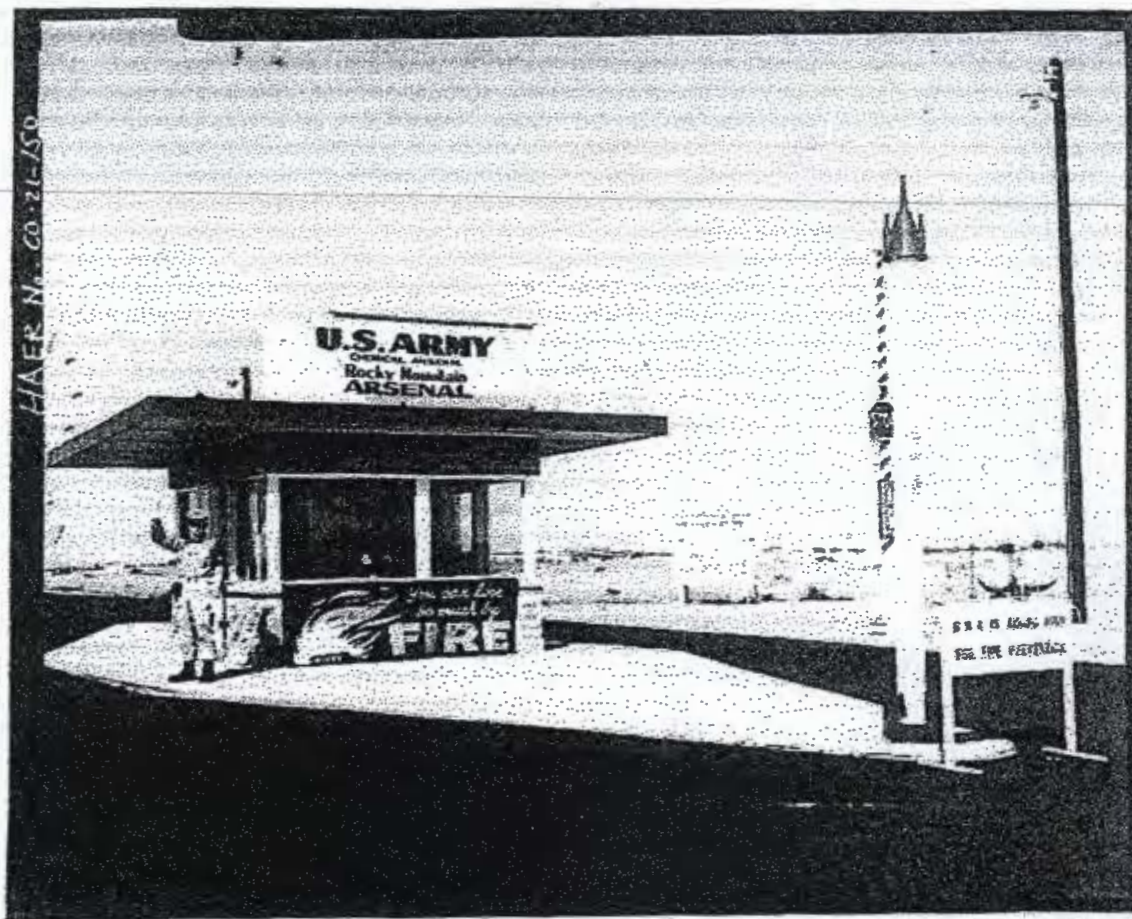
Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

# Denver earthquakes 40 years ago were caused by Uncle Sam, not Mother Nature

BY PATRICIA CALHOUN

WEDNESDAY, AUGUST 24, 2011 AT 6:54 A.M.





start  
1961 Mar

1st quake  
Apr 24

63-67  
1300 quakes

stop pumping  
Mar 1966

Aug  
1967 5.3  
last quake

1967 5.2

In 1961, a 12,000-foot well was drilled at the Rocky Mountain Arsenal, northeast of Denver, for disposing of waste fluids from Arsenal operations. Injection was commenced March 1962, and an unusual series of earthquakes erupted in the area shortly after.

It was 32 minutes after 4 a.m. on April 24 when the first shock of the Denver series was recorded at the Cecil H. Green Geophysical Observatory at Bergen Park, Colorado. Rated magnitude 1.5, it was not strong enough to be felt by area residents. By the end of December 1962, 190 earthquakes had occurred. Several were felt, but none caused damage until the window breaker that surprised Dupont and Irondale on the night of December 4. The shock shuffled furniture around in homes, and left electrical wall outlets hanging by their wires at Irondale.

Over 1,300 earthquakes were recorded at Bergen Park between January 1963 and August 9, 1967. Three shocks in 1965 -- February 16, September 29, and November 20 -- caused intensity VI damage in Commerce City and environs.

The Denver series was forgotten, however temporarily, in October 1966, when a southeast Colorado tremor rocked a 15,000 square-mile area of that State and bordering New Mexico. Minor damage, in the form of broken windows and dishes and cracked walls and plaster, occurred at Aguilar, Segundo, Trinchera, and Trinidad.

Another strong shock rumbled through the Denver area on November 14, 1966, causing some damage at Commerce City and Eastlake. Slighter rumblings (below magnitude 3.0) occurred throughout the remainder of 1966, and through the first week of April 1967.

Then, on April 10, the largest since the series began in 1962 occurred; 118 windowpanes were broken in buildings at the Rocky Mountain Arsenal, a crack in an asphalt parking lot was noted in the Derby area, and schools were dismissed in Boulder, where walls sustained cracks. Legislators quickly moved from beneath chandeliers in the Denver Capitol Building, fearing they might fall. The Colorado School of Mines rated this shock magnitude 5.0.

Boulder sustained minor damage to walls and acoustical tile ceilings on April 27, 1967, as result of a magnitude 4.4 earthquake. Then a year and half after the Rocky Mountain Arsenal waste dumping practice stopped, the strongest and most widely felt shock in Denver's history struck that area on August 9, 1967, at 6:25 in the morning. The magnitude 5.3 tremor caused the most serious damage at Northglenn, where concrete pillar supports to a church roof were weakened, and 20 windows were broken. An acoustical ceiling and light fixtures fell at one school. Many homeowners reported wall, ceiling, floor, patio, sidewalk, and foundation cracks. Several reported basement floors separated from walls. Extremely loud, explosivelike earth noises were heard. Damage on a lesser scale occurred throughout the area.

During November 1967, the Denver region was shaken by five moderate earthquakes. Two early morning shocks occurred November 14. They awakened many residents, but were not widely felt. A similar shock, magnitude 4.1, centered in the Denver area November 15. Residents were generally shaken, but no damage was sustained. A local shock awakened a few persons in Commerce City November 25. Houses creaked and objects rattled during this magnitude 2.1 earthquake.

The second largest earthquake in the Denver series occurred on November 26, 1967. The magnitude 5.2 event caused widespread minor damage in the suburban areas of northeast Denver. Many residents reported it was the strongest earthquake they had ever experienced. It was felt at Laramie, Wyoming, to the northwest, east to Goodland, Kansas, and south to Pueblo, Colorado. At Commerce City merchandise fell in several supermarkets and walls cracked in larger buildings. Several persons scurried into the streets when buildings started shaking back and forth.

During 1968, ten slight shocks were felt in Colorado. Only one, on July 15, caused minor damage at Commerce City. In September of that year, the Army began removing fluid from the Arsenal well at a very slow rate, in hope that earthquake activity would lessen. The program consisted of four tests between September 3 and October 26. Many slight shocks occurred near the well during this period.

In its own account of the cleanup at the Rocky Mountain Arsenal, the Army web site offers this explanation:

advertisement

Deep well injection for liquid waste has been safely used for many years at sites throughout the United States without

\* → documented damage to human health or the environment. After an extensive study of deep injection wells across the country by the U.S. Environmental Protection Agency (EPA), it was concluded that this procedure is effective and protective of the environment.

The Rocky Mountain Arsenal deep injection well was constructed in 1961, and was drilled to a depth of 12,045 feet. The well was cased and sealed to a depth of 11,975 feet, with the remaining 70 feet left as an open hole for the injection of Basin F liquids. For testing purposes, the well was injected with approximately 568,000 gallons of city water prior to injecting any waste. However, when the Basin F liquids were actually introduced, the process required more time than anticipated to complete because of the impermeability of the rock. The end result was approximately 165 million gallons of Basin F liquid waste being injected into the well during the period from 1962 through 1966.

The waste fluid chemistry is not known precisely. However, the Army estimates that the waste was a more dilute version of the Basin F liquid which is now being incinerated. Current Basin F liquid consists of very salty water that includes some metals, chlorides, wastewater and toxic organics. From 1962 -- 1963, the fluids were pumped from Basin F into the well. From 1964 -- 1966, waste was removed from an isolated section of Basin F and was combined with waste from a pre-treatment plant, located near Basin F, and then pumped into the well. The waste from the pre-treatment plant was generally a solution containing 13,000 parts per million sodium chloride (salt), with a pH ranging from 3.5 to 11.5. The organic content of the solution was high but is largely unknown.

The injected fluids had very little potential for reaching the surface or useable groundwater supply since the injection point had 11,900 feet of rock above it and was sealed at the opening. The Army discontinued use of the well in Feb. 1966 because of the possibility that the fluid injection was triggering earthquakes in the area. The well remained unused for nearly 20 years.

In 1985 the Army permanently sealed the disposal well in stages. First, the well casing was tested to evaluate its integrity. Any detected voids behind the casing were cemented to prevent possible contamination of other formations. Next, the injection zone at the bottom 70 feet of the well was closed by plugging with cement. Additional cement barriers were placed inside the casing across zones that could access water-bearing formations (aquifers). The final step was adding Bentonite, a heavy clay mud that later solidified, to close the rest of the hole up to the ground surface.

oil wells

• Stanton

• cascade

• Michama

• Homestead  
core drilling

Drilled  
1961

end  
1966

sealed 1985

Ground came 42 miles in '60's

today 429



Saygu → Brullov's

Baffle → B.S.

If EPA has any influence  
note of all S.D.'s

I don't believe that ISL uranium mining is a beneficial use of our groundwater or that disposal of wastewater via land application or in Class V disposal wells is in the public interest. I am not a hydrogeologist or geochemist. However I can and do read scientific research and three areas of the proposed project concern me:

- The fate of contaminated mine waste materials.
- Aquifer restoration following ISL uranium mining.
- Our choice of uranium as an energy source.

My first concern is the fate of the toxic waste produced by ISL uranium mining.

According to the Powertech Ground Water Discharge Permit Application, (section 3.7.1.2), the proposed perimeter of operational pollution lies at the base of the Beaver Creek Basin and the Pass Creek sub-basin, watersheds that drain approx. 1,400 square miles. Three miles downstream, these basins empty into the Cheyenne River. I believe that what happens in one part of a watershed can affect everyone who lives within the basin.

In the description of "land application water properties" (section 5.8) wastewater will be treated with ion exchange for uranium removal followed by radium removal through co-precipitation with barium sulfate in radium settling ponds. There is mention of leak detection systems in these ponds, but no plan for repairing these leaks. Radium is a dangerous waste material and little information is provided about how it will be handled.

The proposed well fields are located approx. 2 miles southeast of a large fault. I've witnessed the consequences of an excursion of contaminated groundwater along a fault near Nemo, SD, where I live. This excursion event was only discovered some 20 years after the contaminant was disposed of. Costs for water transport and water treatment were considered to be too high and the community has relied on a single, remote well for the past 15 years.

(Contaminant Survey and Site Characterization Report; Executive Report, USDA Forest Service Nemo Work Center, Nemo, SD September 3, 1997.)



I believe that Powertech is overconfident in stating that they will simply "pump back" any excursions of *lixiviant* that occur.

The contaminated mine wastewater disposal method has not been finalized. Powertech's preferred disposal method is injection of treated wastewater into 4 to 8 Class V deep disposal wells drilled into the Minnelusa and/or Deadwood formations. They have stated they will perform the necessary feasibility tests for this method only AFTER the EPA has issued the permit for the Class V deep disposal wells.

(Powertech report on the Inyan Kara and Madison Water Rights Permit applications.)

I am concerned that even if a monitoring plan seems adequate, there is significant potential for surface leaks, accidental spills, well casing failures and excursions of production and wastewater. Government responsibility for permitting and oversight is fragmented. The high cost of reclamation has often fallen on the taxpayer in the long run. This project cannot be in the public interest.

(According to the 2002 USGS Atlas of Water Resources in the Black Hills Area: "Human influences have the potential to degrade water quality for both ground water and surface water. For ground water, the potential for contamination can be large. For surface water, various land-use practices can affect water quality. Two Superfund sites have been listed in the BH area primarily related to concentrations of various trace elements resulting from mining activities".)

My second concern has to do with the aquifer restoration plan.

According to the Powertech report on both the Inyan Kara and Madison Water Rights Permit applications:

Powertech proposes to restore the contaminated aquifers by treating water pumped from production wells using reverse osmosis membranes under high pressure, thus removing 90% of dissolved constituents. Restored water will then be returned to injection wells and the RO reject (brine) will be disposed of in Class V wells.

Powertech has concluded that minimal benefit, if any, is derived from the groundwater sweep prior to deep well injection and suggests eliminating groundwater sweep as an unnecessary, ineffective and consumptive step in the restoration process.

(Section 6.2.2.2 of the Powertech Large Scale Mine permit application)

According to the EPA "High pressure reverse osmosis can only be employed after groundwater sweeping, because the high concentration of contaminants during the initial stages of the restoration process tend to disrupt the RO membranes".

(Appendix III. Occupational and Public Health Risks Associated with In-Situ Leaching, in: Technical Report on Technologically Enhanced Naturally Occurring Radioactive Materials from Uranium Mining Volume 2; EPA 402-R-08-005; 2008)

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My third concern is the assumption that ISL uranium mining will contribute to clean energy and a reduction in greenhouse gas emissions.

According to the Powertech website, Powertech Uranium is "well-positioned for rapid growth in the burgeoning US nuclear power industry".

In 2002 the Bush/Cheney administration's "Nuclear Power 2010 Program" provided large subsidies for a handful of Generation III+ demonstration plants. The expectation that these plants would be built and come online by 2010 has not been met.

There has been no ground-breaking on new nuclear plants in the United States since 1974. Until 2013, there had been no ground-breaking on new nuclear reactors at existing power plants since 1977. As of 2012, nuclear industry officials say they expect five new reactors to enter service by 2020; these are all at existing plants. As of August 2013, there are construction delays at two new reactor projects. In 2013, four aging reactors were permanently closed before their licenses expired because of high maintenance and repair costs at a time when natural gas prices have fallen. The state of Vermont is trying to close Vermont Yankee. New York State is seeking to close Indian Point, 30 miles from New York City. As of the present date, there appears to be a net loss of nuclear reactor numbers in the US, rather than a so-called "burgeoning industry".

(New York Times, June, 2013)

Powertech has also stated that the company would like to sell uranium oxide on the world market, especially to the BRIC nations; Brazil, Russia, India and China. Nearly all of the reactors that have been built or are under construction in these countries are light water reactors. (International Atomic Energy Agency website, October, 2013)

The hope that breeder reactors would replace light water reactors and that more economic means of reprocessing spent fuel would be developed has not been realized. At present, it is generally found to be cheaper to mine new uranium, which is then used in a "once-through" process that creates spent fuel, the radioactive waste that is considered to be the "Achilles heel" of nuclear energy.

The nuclear industry seeks the cheapest ore, for use in the least efficient way, by an energy industry energy that is fraught with dangerous waste and high costs associated with construction, operation, repair, decommissioning and clean-up after accidents.

Various agencies have tried to estimate how long all of these primary sources of uranium will last, assuming a once-through cycle. The European Commission said in 2001 that at the current level of uranium consumption, known uranium resources would last 42 years.

(The Times: London "Uranium Shortage Poses Threat" August, 2005).

Thus, in order to provide nuclear power for a period ending during the lifetimes of many living today, we leave permanent, potential increased contamination of soils, river systems and aquifers.

The problems of global warming that the nuclear industry hopes to alleviate have also driven the development of renewable energy. The Intergovernmental Panel on Climate Change has said that there are few fundamental technological limits to integrating a portfolio of renewable energy technologies to meet most of total global energy demand.

In a 2009 Scientific American article entitled "A Path to Sustainable Energy", researchers write that producing all new energy with wind power, solar power, and hydropower by 2030 is feasible and that existing energy supply arrangements could be replaced by 2050. Barriers to implementing the renewable energy plan are seen to be "primarily social and political, not technological or economic". The authors say that energy costs with a wind, solar, water system should be similar to today's energy costs. The authors only consider technologies that have near-zero emissions of greenhouse

gases and other pollutants over their entire life cycle, including construction, operation and decommissioning. Similarly, they only consider technologies that do not present significant waste disposal or terrorism threats.

An intriguing result of their plan would be a decline in global power demand. That would occur because, in most cases, electrification is a more efficient way to use energy. For example, only 17 to 20 percent of the energy in gasoline is used to move a vehicle (the rest is wasted as heat), whereas 75 to 86 percent of the electricity delivered to an electric vehicle goes into motion. They note that the world manufactures approx. 73 million cars and light trucks every year. (Scientific American; November, 2009; Mark Jacobson and Mark Delucchi)

The International Energy Agency has stated that the deployment of renewable technologies usually increases the diversity of electricity sources and, through local generation, contributes to the flexibility of the system and its resistance to central shocks. Bringing these possibilities into present perspective, my husband and I have lived affordably and comfortably in a house exclusively powered by solar electricity for the past 5 years.

If we run out of oil, coal, natural gas or uranium, we can make use of many other energy sources. There are no alternatives to water.

For these reasons, I do not believe that employing large quantities of water to mine uranium is a beneficial use of water. The risk of degrading large quantities of water, for the private gain of a few, is not in the public interest.

Respectfully submitted,  


# **CONTAMINANT SURVEY AND SITE CHARACTERIZATION REPORT**

## **EXECUTIVE REPORT**

**USDA FOREST SERVICE  
NEMO WORK CENTER**

**Nemo, South Dakota**

**September 3, 1997**

**Submitted to:**

Bill Schleining  
On-Site Coordinator  
U. S. Department of Agriculture, Nemo Forest Service  
RR 2 Box 200  
Highway 385 North  
Custer, South Dakota 57730-9501

**Prepared by:**

EnviroSearch International  
2319 South Foothill Drive, Suite 180  
Salt Lake City, Utah 84109  
Ph. (801) 461-0888  
Fx. (801) 461-0008

## **INTRODUCTION**

EnviroSearch International was contracted by the U. S. Department of Agriculture / Forest Service (USDA-FS), Rocky Mountain Region, to conduct a contaminant survey and hydrogeologic characterization at the USDA-FS Nemo, South Dakota Work Center. This work was initiated after pesticides were detected in the local domestic water supply aquifer. All work was performed from January 1997 through June 1997.

A three volume Contaminant Survey and Site Characterization Report was submitted to the USDA-FS on September 3, 1997. The purpose of the three volume report was to: (1) summarize previous work relevant to the pesticide investigation; (2) acquire data needed to delineate contaminated groundwater, identify contaminant migration pathways and evaluate potential sources or source areas of pesticide contamination; and (3) provide information that would aid the design and construction of a domestic water supply system for impacted residents in the town of Nemo, South Dakota. This Executive Report provides a summary of the three volume Contaminant Survey and Site Characterization Report. Tables and figures that summarize pertinent information referenced to in this report are attached.

## **BACKGROUND**

In the mid 1970s Forest Service personnel reportedly mixed and applied pesticides to trees in the Black Hills National Forest to fend off a bark beetle infestation in the area. Reported information indicated that containers and left over pesticides (EDB and Lindane mixed with diesel fuel and water) were disposed of behind the USDA-FS Nemo Work Center. Initial sampling of drinking water supply wells in the Nemo area was conducted by USDA-FS personnel. Initial analytical results indicated the pesticide EDB was detected in nine domestic supply wells in the area. Sixteen additional water supply wells were identified in the vicinity of Nemo (within two miles of town) and sampled by

USDA-FS personnel. Analytical results indicate EDB was not detected in any of the additional 16 wells.

In addition to EDB, other volatile organic compounds were detected in the Langley, Post Office, and Spleiss wells but were below maximum contaminant levels (MCLs) for safe drinking water. The source of these compounds is unknown; however, possible sources include a byproduct of chemical disinfection of drinking water in the Spleiss well or degradation of other chemicals. The solvent trichloroethene (TCE) was also detected in the Post Office well at low concentrations below MCLs. TCE is commonly used as a parts cleaner/degreaser. Due to the low concentrations of these organic compounds, initial groundwater sampling and analysis efforts by the USDA-FS focused on EDB; however, these compounds continued to be monitored.

#### **SOURCE INVESTIGATION**

EnviroSearch conducted excavation activities in October 1996, to locate and remove the containers reported to have been buried behind the work center. Twelve areas were excavated. Buried debris was encountered at several locations, however, no pesticide containers or contaminated soils were identified. Excavation efforts were subsequently halted to assist the Forest Service with the installation of an alternative community water distribution system. Further efforts to identify potential pesticide container burial locations employed geophysical methods to measure subsurface electrical conductivity within selected locations. However, upon excavating those locations no containers of pesticides or evidence of residual soil contamination were observed.

#### **MONITORING WELL INSTALLATION AND SAMPLING**

During March 1997, EnviroSearch International supervised the drilling and construction of eight monitoring wells in the Nemo area. After reviewing the analytical results and the initial drilling data, an additional five monitoring wells were installed in May 1997. The five additional wells were sampled and

analyzed to better delineate the contaminant plume. Some of these wells were also evaluated as potential domestic water supply wells for affected residents. The location of each monitoring well is identified on Figure 1. In addition to monitoring wells, spring seeps identified adjacent to the Flak property, near MW-12 and a tree stump located southwest of Troxell (northwest of MW-1) on the south side of the road were also sampled. The results of monitoring well sample analyses are summarized in Table 1.

Analytical results indicate the presence of EDB in groundwater samples collected from six of the thirteen monitoring wells and in the seep sample collected from the Flak property. The highest concentration (18.5 ug/l) was detected in the sample collected from MW-10. This concentration is at least 10 times higher than concentrations detected in any other monitoring well. EDB concentrations ranging from 0.13 ug/l to 1.0 ug/l were detected in groundwater samples collected from MW-1, MW-3, MW-4, and MW-12. These wells are all located adjacent to what has been interpreted as a northwest-southeast trending fault located to the southwest of the banded iron formation which forms a prominent ridge in the project area. The fault appears to extend from at least Boxelder Creek north of MW-1, to the open valley near MW-12. To the southeast (see Figure 2) Lower concentrations of EDB were detected in samples collected from the Flak seep (0.069 ug/l) and MW-11 (0.057 ug/l). EDB was not detected in samples collected from MW-2, MW-5, MW-6, MW-7, MW-8, MW-9 or MW-13. These observations indicate that: (1) there is a likely source area upgradient (northwest) of MW-10; (2) EDB concentrations in groundwater decrease to the east and west of the fault; and (3) the fault appears to control EDB migration in the project area.

Toluene concentrations ranging from 0.7 ug/l to 5.1 ug/l were detected in groundwater samples collected from four wells. Two of these wells (MW-8 and MW-9) are located to the southwest of the inferred fault line and are not impacted by EDB. Toluene is a common degreaser and a relatively volatile



compound that could have been inadvertently introduced into the samples during drilling and/or introduced due to the presence of petroleum fuels in field vehicles and generators. Toluene is not considered a chemical of concern because of the low concentrations and sporadic presence.

## **DOMESTIC SUPPLY WELL SAMPLING AND ANALYSIS**

Domestic water supply well sampling was initiated by the USDA-FS in October, 1996. Subsequent sampling activities conducted by EnviroSearch included the sampling of six domestic supply wells in March 1997 (Langely, Kaberna, Flak, 4T Old well, an unnamed well south of the Hooper well and the Pete Lien & Sons Mine) and nine domestic supply wells in May 1997 (Adams, Deverman #1, Deverman #2, Flak, Kaberna, Nemo Church, Post Office/Fire Department, Troxell/Keogh, and Weston). The May 1997 sampling reflected peak flow conditions and was conducted to evaluate seasonal trends in concentrations. The analytical results for domestic supply well samples collected by the USDA-FS and EnviroSearch are summarized on Table 2.

The results of domestic supply well analyses are discussed in order of decreasing magnitude. The highest EDB concentrations were detected in groundwater samples from the Kaberna well (9.4 ug/l to 12 ug/l) and the Troxel/Keough well (3.5 ug/l to 5.4 ug/l). These concentrations are consistent with those previously detected by the USDA-FS in October 1996. Groundwater samples collected by EnviroSearch from the Adams, Weston and Nemo Church wells contained EDB concentrations of 0.73 ug/l, 0.28 ug/l and 0.29 ug/l, respectively. A groundwater sample collected from the Post Office/Fire Department well contained 0.023 ug/l EDB. Groundwater samples collected from the Deverman and Flak wells were below laboratory detection limits with respect to EDB. The EDB concentrations in groundwater samples collected from Weston, Church and Krahn are an order of magnitude less than those previously detected by the USDA-FS likely due to dilution and flushing caused by increased precipitation. The Kaberna and Weston wells, and possibly the

Troxell/Keough wells, are hydraulically connected to the linear fault southwest of the ridge. However, Troxell/Keough is farther from the fault than MW-1 and exhibits EDB impact that is an order of magnitude higher. The presence of EDB in samples from the Adams, Church and Post Office wells and previous samples collected by USDA-FS personnel from the Spleiss, Krahm, and School wells suggests the presence of a separate source area to the east of the northwest-southeast fault line. The Troxell/Keough well is likely hydraulically connected to this separate source.

### **DISTRIBUTION OF EDB IN GROUNDWATER**

Based on the observations presented thus far, it is likely that two EDB plumes are present within the project area (Figure 2). One plume is related to and controlled by the northwest-southeast trending fault previously discussed. Impacted wells associated with this plume include Weston, Kaberna, MW-4, MW-10, MW-3 and possibly MW-1 and Troxell/Keough. The second plume is likely controlled by local topography, bedrock structure, an east-west trending fault to the north of Troxell and structural contact that may cross Nemo Road in between MW-11 and the Fire Department.

The property owned by Homestake Mining does not appear to be impacted, based on the absence of EDB in wells MW-5, MW-8 and MW-13. The valley to the east and south of Nemo does not appear to be impacted by migration of EDB from the community of Nemo, based on the absence of this chemical in wells MW-6 and MW-7.

Groundwater appears to be in direct communication with Boxelder Creek where the northwest-southeast trending fault intersects the Creek, to the south of Kaberna. Contaminated groundwater has been identified flowing from a seep (Flak Seep) near MW-12 in this area.

EDB concentrations in groundwater appear to be relatively stable for samples collected from water supply wells between October 1996 and July 1997, with the

exception of samples collected from three wells (Church, Krahn and Weston). Analytical results for groundwater samples collected from the Church and Weston wells in May 1997 and the Krahn well in July 1997 show an order of magnitude decrease in EDB concentrations. The decrease of EDB concentrations in these wells is likely due to increased precipitation and flushing of shallow groundwater resulting in EDB dilution at these locations.

Continued detection of EDB in impacted supply wells is anticipated due to the low analytical method detection limits, the inability to locate and abate the source(s), and the probability of continued contaminant presence in groundwater.

### **AQUIFER TESTING AND WATER LEVEL ANALYSIS**

Aquifer tests and water level analysis were conducted to evaluate local groundwater flow patterns, fracture connectivity, and preferred contaminant migration. These activities also provided data to evaluate the degree of isolation of potential water supply development areas from those areas known to be impacted by EDB. Additional short-term aquifer tests were performed to evaluate the pumping capacity of specific wells.

Water levels in groundwater monitoring wells were gauged in March, May and June 1997 to determine baseline water level conditions and evaluate local groundwater gradients. The resulting piezometric surface contour and groundwater flow direction map for water levels collected on May 29, 1997 is presented as Figure 3.

Some of the pertinent conclusions resulting from the aquifer tests include:

- Some wells in the shallow bedrock aquifer responds rapidly to aerial recharge while others do not. This phenomenon could possibly be used to further distinguish wells into separate systems.
- The primary water bearing zones in the vicinity of Nemo are located within structural and lithological geologic features.

- The Spleiss well, Church well and possible the Adams well, are completed in a similar hydrogeologic regime.
- The Deverman wells appear to be hydraulically isolated from the EDB impacted groundwater within the community of Nemo.
- MW-13 is not currently impacted and does not appear to affect water levels in wells within the EDB plume when pumped. However, continued pumping of MW-13 may result in the appearance of EDB in this well due to: 1) the close proximity to the EDB plume; 2) groundwater recharge to this well from the highly permeable fault zone; and 3) the quantity of water that is produced.
- The rate of groundwater movement is estimated as 0.5 to 1.0 feet/day.

### CONCEPTUAL HYDROGEOLOGIC MODEL

The primary mechanisms which control groundwater movement in the Nemo area include preferential flow paths created by structural and lithological geologic features, groundwater recharge from precipitation on higher slopes surrounding the site and from Boxelder Creek, and groundwater discharge at lower elevations where structural features converge and intersect Boxelder Creek.

The primary water bearing zones and groundwater transmission zones in the vicinity of Nemo are located within structurally and lithologically controlled geologic features including: 1) a northwest-southeast trending fault west and south of Nemo, 2) a northwest-southeast trending lithologic contact in Nemo and east of the bedrock ridge; and 3) east-west trending normal faults south of the town site.

Recharge to the shallow bedrock aquifer west of the iron rich bedrock ridge is provided by precipitation on the higher slopes west of Nemo. Groundwater west of the iron rich bedrock ridge generally flows from the northwest to the southeast following the strike-slip fault and southeast from MW-3 towards the Kaberna and Weston residences where geologic structures converge and groundwater discharges to Boxelder Creek at their intersection. Groundwater contaminated

with EDB was observed flowing to the surface (Flak seep) at this location, therefore Boxelder Creek is in direct communication with the shallow bedrock aquifer.

The bedrock aquifer north and east of the bedrock ridge and beneath Nemo, exhibits sufficient permeability to promote infiltration of surface water from Boxelder Creek and transmission of groundwater to the southeast towards the Church well. The groundwater east of the bedrock ridge is interpreted to exhibit limited communication with the groundwater west of the ridge due to the presence of the fault and steeply dipping lower permeability strata which hydraulically separate the two flow regimes.

Within the town of Nemo, adjacent to the Troxell residence, Boxelder Creek is interpreted to exhibit a losing section where surface water discharges into the shallow bedrock aquifer and is transmitted southeast through preferential flow paths created by northwest–southeast trending fault and steeply dipping lithologic contacts. Water levels in wells located in the northern portion of Nemo (Troxell, Adams, Spleiss) appear lower than the elevation of Boxelder Creek throughout this reach and generally follow areas of high conductivity. The direction of groundwater flow from the Church would be influenced by northwest–southeast oriented lithologic contacts directing flow to the southeast and by drainage to Boxelder Creek to the east. Significant flow to the east would be limited by low permeability lithologic units present between Nemo Road and Boxelder Creek.

Boxelder Creek is interpreted to be a gaining stream as it enters the valley west of Nemo where recharge is largely controlled by local topography and the creek drains the topographically confined valley. East of Nemo, Boxelder Creek again becomes a gaining stream in the open valley towards the Kaberna residence. Groundwater conditions and the predominant gradient in the valley would be controlled by recharge from areas of elevated topography to the east and groundwater discharge into Boxelder Creek.

Based on the water quality data from groundwater monitoring wells, two independent sources of EDB appear to create two separate plumes which follow preferential flow paths created by regional geologic features. One source area is suspected to be located on the bedrock ridge between MW-3 and MW-10 with groundwater and contaminant migration controlled by the northwest-southeast trending fault and recharge from the higher slopes to the west. A second source area is likely located west of Troxell and MW-1 with groundwater movement controlled by discharge from Boxelder Creek to the northwest-southeast trending lithologic contact creating preferential flow paths towards the southeast. The EDB plume in the area east of the bedrock ridge would continue to migrate southeast in the direction of primary permeability. Migration of EDB east of the Church to Boxelder Creek could occur but is expected to be limited by steeply dipping lower permeability units in this area.

## CONCLUSIONS

Key issues that affect the shallow bedrock aquifer system and the distribution of EDB in groundwater are discussed as follows:

- The open valley east and southeast of Nemo does not currently appear to be impacted by migration of EDB from the community of Nemo; the orientation of permeable geologic structures and primary gradient in the open valley is towards the east-southeast with some groundwater discharge occurring into Boxelder Creek throughout this reach; water supply wells directly east of Nemo do not appear impacted by migration of EDB; however, continued migration of EDB south and southeast of the Nemo Church is expected.
- The EDB contamination observed in the Kaberna and Weston residences is primarily due to contaminant migration in the strike-slip fault west of their properties; groundwater is in direct communication with Boxelder Creek where the northwest-southeast trending fault intersects the creek south of Kaberna; the distribution of EDB in the shallow bedrock aquifer south of Boxelder Creek and downgradient from MW-12 is unknown and this area does appear to be a groundwater discharge zone.

- Based on the water level and water quality data observed to date, the Deverman wells supplying the Nemo Guest Ranch appears to be upgradient and hydraulically isolated from the EDB impacted groundwater within the community of Nemo.
- The property owned by the iron mine is hydraulically cross gradient from the EDB plume and therefore is not impacted by EDB in groundwater as defined by the absence of EDB in wells MW-5, MW-8 and MW-13.
- Limited groundwater development potential for a moderate capacity alternative water supply well exists outside of the regional structural and lithologic features discussed above; most wells completed outside structural geologic features produce less than 5 gallons per minute (gpm) whereas wells completed near structural contacts produce up to 20 gpm. Well MW-3, adjacent to the northwest-southeast trending fault, has proven to be the best producer at 20 gpm.
- The rate of groundwater movement is estimated as 0.5 to 1.0 feet/day.

## **ALTERNATE WATER SUPPLY**

Detailed discussions concerning the feasibility of various water supply options were presented in the Alternative Water Supply analysis (EnviroSearch, 1997a) provided to the Forest Service January 23, 1997. Results of the water supply alternatives analysis indicate development of a suitable alternative groundwater supply for the impacted residents of Nemo is feasible. The analysis also indicates several alternatives are more promising than others from a cost, reliability and public/regulatory acceptance point of view. Following completion of the subsurface investigation, the options for alternative water supply were reevaluated considering the revised hydrogeologic model, the contaminant distribution, and available groundwater yield data from the groundwater monitoring and pilot water supply wells.

Viable options for replacement of Nemo's drinking water revolve around installation of replacement wells near private users. Specific options for alternative replacement wells for the residents of Nemo include developing and

treating groundwater from one or more monitoring wells including MW-3, MW-7, or MW-8, developing the Hooper well or an alternate water supply well north of Boxelder Creek and west of Nemo or treatment of an existing impacted water supply well. Specific options for alternative wells for the Weston residence include developing and likely treating MW-13, developing MW-8 or treatment of the original Weston well or other nearby impacted water supply well. Specific options for alternative wells for the Kaberna residence include developing MW-8, developing MW-7, installation of a new water supply well in the Kaberna valley, or treatment of the Kaberna well or other nearby impacted water supply well.

The criteria for selecting interim and final water supply options includes the following:

- Presence and availability of developable groundwater.
- Water usage needs/demands.
- Need to treat groundwater for EDB and possibly coliform.
- Reliability of a single alternative to provide a long term source of clean drinking water.
- Location of the developable groundwater; private vs. public land.
- Cost to transport the water to the distribution location.
- Requirements of the individual impacted residents.
- Risk and liability of any single alternative.

Key factors limiting the ability to provide local replacement wells for each residence includes: the presence of EDB beneath the town site, availability of developable groundwater in the immediate vicinity, costs associated with constructing conveyance systems over large distances or across Boxelder Creek, and the need to treat contaminated groundwater developed close to the existing EDB plume. Installation of replacement wells within property boundaries for residents within Nemo is not viable due to the distribution of EDB beneath the



town. Installation of replacement wells on individual properties within Nemo is not cost effective or technically feasible without anticipating treatment of each individual well. Treatment of numerous wells is not cost effective or operationally desirable.

Sufficient developable groundwater supplies are not present in the Nemo area to provide individual replacement wells for each impacted resident within Nemo. In addition, construction of multiple conveyance systems to each individual impacted residence from replacement wells located in more remote areas is not cost effective. For these reasons, multiple users are anticipated to be required to share replacement wells at areas that can be developed safely and cost effectively. Sufficient groundwater (greater than 3 gpm) available for development is present southwest of Nemo near MW-3, MW-9, south of Nemo near MW-8, East of Nemo near MW-7 and across Boxelder Creek near the Hooper well which is interpreted to be completed in the east-west trending fault north of the creek. Development of MW-3 as a water supply well will require treatment to remove EDB and chlorination to remove bacteria. Development of a well near Hooper would require access to private property, piping of drinking water over considerable distances (3000-4000 ft), and crossing Boxelder Creek. Treatment of one or several water supply wells may be more cost effective than conveying groundwater over considerable distances. Development of shallow groundwater or surface water from Boxelder Creek is likely not cost effective and undesirable due to excess operation, maintenance, and treatment costs.

Installation of replacement wells for the Kaberna and Weston residence is also considered a viable alternative. Similarly, placing a well as close as possible to affected users is desirable, however developing water at distances from the EDB plume will minimize future risk of contaminating drinking water supplies. Installation of a community water supply well or wells as close to affected users as practical to minimize conveyance costs yet far enough away from the EDB plume to minimize future risk of contaminating drinking water supplies is

preferred. Developing MW-13 as a replacement water supply well without treatment is not believed to be a reliable alternative due to the close proximity of MW-13 to the EDB plume and high permeability associated with the fault zone. Less risk of impacting future water supplies would occur with increasing lateral distance from the fault zone.

Conceptually, the lowest cost alternatives are for providing an alternative groundwater source from an area hydraulically isolated from the zone of contamination or treating an existing well capable of providing ample drinking water. The initial capital costs of treating a single water supply well are comparable to constructing a pipeline to convey water approximately 1000 to 1500 feet from a source outside the impacted area. Reliability of the various alternatives needs to be carefully considered. A water supply well (or wells) confidently located in an area hydraulically isolated from contamination or treatment of groundwater from a non-isolated source is the most reliable water supply option. Removal of EDB from groundwater via carbon adsorption is also considered reliable although the number of treatment units considered affects the financial viability of this alternative.

## **RECOMMENDATIONS**

Given that limited options are available for developing an alternative drinking water system and there is a recognized desire to terminate continued trucking of potable water as soon as possible, EnviroSearch recommends implementation of an interim water supply system while identifying long term options for impacted residences. The interim measures would develop the identified water supplies with the highest probability of successfully supplying the residents with drinking water.

Based on the information available to date, EnviroSearch recommends developing MW-8 as an interim water supply the Weston residence while exploring the presence of developable groundwater in the Kaberna valley with an additional pilot well. In addition, development of MW-3, MW-7, or MW-8 as

an interim water supply well for the community of Nemo should be considered and compared to developing groundwater supplies north of Boxelder Creek. The community and USDA–FS reactions to or positions regarding a treated water supply should be considered. In addition, the cost of treatment vs. piping of water and associated risk management aspects of specific alternatives should be evaluated. EnviroSearch also recommends that the USDA–FS:

- Propose a design for an interim water supply system to the residents of Nemo as a basis for further discussion of the existing limitations, conditions, and decision factors. A public meeting is proposed to convey the results of the site characterization program to the residents of Nemo with an interim water supply proposal to initiate the public participation process.
- Determine the fate of EDB impacted groundwater below, adjacent to (Flak property), and downgradient of Boxelder Creek.
- Determine the alternative water supply options and requirements.
- Determine the final water supply requirements for the impacted residents.
- Develop a standard policy, in conjunction with the State of South Dakota and EPA, on usage of EDB impacted water supply wells by residents of Nemo.
- Develop an approach to continued monitoring of groundwater wells, water supply wells, and if necessary, surface water.
- Consider a limited soil gas survey along the roads near the suspected sources of groundwater contamination and conduct limited soil sampling at selected locations (i.e. suspected former mixing/staging locations).
- Identify long term remedial requirements, options and limitations for impacted groundwater.

**Table 1**  
**Summary of Laboratory Analysis for Nemo**  
**Monitoring Well and Seep Samples**  
**(ug/l\*)**

Sampling Location	Date of Laboratory Submittal	EDB	Benzene	Ethyl-benzene	Naphthalene	Toluene	Total Xylenes	Isopropyl-benzene (Cumene)
MW-1	3/27/97	0.13	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
MW-2	3/31/97	<0.020	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
	3/25/97	0.025	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
MW-3	5/14/97	<0.020	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
	6/20/97	0.16	<0.50	<0.50	<0.50	1.10	<1.00	<0.50
	7/1/97	0.091	<0.50	<0.50	<0.50	<0.50	<1.00	0.69
MW-4	3/17/97	1.0	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
MW-5	3/15/97	0.021	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
	3/28/97	<0.020	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
MW-6	3/31/97	<0.020	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
MW-7	3/31/97	<0.020	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
MW-8	3/14/97	<0.020	<0.50	<0.50	<0.50	0.74	<0.50	<0.50
MW-9	5/12/97	<0.020	<0.50	<0.50	<0.50	5.10	<1.00	<0.50
MW-10	5/12/97	18.5	<0.50	<0.50	<0.50	tr	<1.00	<0.50
MW-11	5/14/97	0.057	<0.50	<0.50	<0.50	1.20	<1.00	<0.50
MW-12	5/14/97	0.55	<0.50	<0.50	<0.50	tr	<1.00	<0.50
MW-13	6/20/97	<0.020	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
MW-13 post pump	6/25/97	<0.020	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
Seep Flak	5/12/97	0.069	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
Stump Seep	5/14/97	<0.020	<0.50	<0.50	<0.50	<0.50	<1.00	<0.50
MCL		0.05	5	700	NA	1000	10000	NA
RBC		0.00075	0.36	1300	1500	750.00	1400	1500

**NOTES:**

NA – Not Analyzed or Not applicable

tr – trace; detected below the quantification limit

RBC – Risk Based Concentrations from EPA Region III Table.

Concentrations assume residential exposure by tap water ingestion.

\*1 ug/l is approximately equal to 1 ppb

MCL – Federal Drinking Water Maximum Contaminant Level

**Table 2**  
**Summary of Laboratory Analyses**  
**For Nemo Well Water Samples (ug/l\*)**

Sampling Location	Date of Laboratory Submittal	EDB	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naphthalene	1,2,3-Trichlorobenzene	Isopropylbenzene (Cumene)	Trichloroethene	Bromo-dichloromethane	Bromoform	Chloroform	Dibromo-chloromethane
Adams Elton	10/08/96	<b>0.92-0.93</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/96	<b>0.86</b>	<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	05/27/97	<b>0.73</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Atkinson	10/22/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Church	10/08/96	<b>1.3-1.8</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/96	<b>1.4</b>	<0.20	<0.20	<0.20	<0.40	<0.50	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	05/27/97	<b>0.29</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cooper Derrall	10/08/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Deverman #1	10/08/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	05/27/97	<0.020	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Deverman #2	10/08/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	05/27/97	<0.020	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Eggers	07/01/97	<0.020	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fieron	10/22/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fieron 2nd House	10/22/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flak	03/28/97	<0.020	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/19/97	<b>0.018</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Flak Seep	05/19/97	<b>0.069</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ford	10/16/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ford Shirley	10/22/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hageman KC	10/08/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kaberna	10/22/96	<b>13</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/29/96	<b>10</b>	<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	03/25/97	<b>9.4</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/19/97	<b>12</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Krahn	10/08/96	<b>0.17</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/96	<b>0.13</b>	<0.20	<0.20	<0.20	<0.40	<0.50	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	07/01/97	<b>0.045</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<b>0.52</b>	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Langley	10/16/96	<0.010	<0.20	<0.20	<0.20	<0.40	<0.50	<0.50	<0.20	<0.20	<0.20	<0.20	<b>0.69</b>	<0.20
	03/31/97	<0.020	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Martin	10/22/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Federal Drinking Water MCL		0.05	5	1,000	700	10,000	NA	NA	NA	5.0	NA	NA	NA	NA
RBC		0.00075	0.36	750	1300	1400	1500	NA	1500	1.6	0.17	2.4	0.15	NA

**NOTES:**

NA – Not Analyzed or Not Applicable

TS – INF/Spleiss – Treatment System Influent

MCL – Maximum Contaminant Level

tr – trace; detected below the quantification limit

TS – EFF/Spleiss – Treatment System Effluent

RBC – Risk Based Concentrations from EPA Region III Table. Concentrations assume residential exposure by tap water ingestion.

\*1 ug/l is approximately equal to 1 ppb

**Table 2**  
**(continued)**  
**(ug/l\*)**

Sampling Location	Date of Laboratory Submittal	EDB	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Naphtha- lene	1,2,3- Trichloro- benzene	Isopropyl- benzene (Cumene)	Trichloro- ethene	Bromo- dichloro- methane	Bromo- form	Chloro- form	Dibromo- chloro- methane
Post Office/Fire Dept	10/08/96	<b>0.062</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/96	<b>0.045</b>	<0.20	<0.20	<0.20	<0.40	<0.50	<0.50	<0.20	<b>0.27</b>	<0.20	<0.20	<0.20	<0.20
	10/29/96	<b>0.053</b>	<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	<0.20	<b>0.22</b>	<0.20	<0.20	<0.20	<0.20
	05/27/97	<b>0.023</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
School	10/08/96	<b>1.12</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/96	<b>0.82</b>	<0.20	<0.20	<0.20	<0.40	<0.50	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	06/25/97	<b>1.1</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Smith	07/01/97	<0.020	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Spleiss House	10/08/96	<b>0.47</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/97	<b>1.0</b>	<0.20	<0.20	<0.20	<0.40	<0.50	<0.50	<0.20	<0.20	<b>0.28</b>	<b>2.8</b>	<b>0.85</b>	<b>0.96</b>
	10/22/96	<b>1.0</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TS-INF/Spleiss	05/22/97	<b>3.6</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<b>1.20</b>	<0.50	<0.50	<0.50	<0.50	<0.50
TS-EFF/Spleiss	05/22/97	<0.020	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Troxell / Keough	10/08/96	<b>4.7-5.4</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/96	<b>3.6</b>	<0.20	<0.20	<0.20	<0.40	<0.50	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	05/27/97	<b>5.4</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Troxell Lilian	10/22/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Troxell Buck	10/29/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tungland	10/22/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Weston	10/22/96	<b>2.2</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/29/96	<b>1.7</b>	<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	<0.50	<0.20	<0.20	<0.20	<0.20	<0.20
	05/19/97	<b>0.28</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Witcap	10/22/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zopp Donna	10/22/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Creek E & W of Nemo	10/08/96	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4 T Old	03/19/97	<b>0.053</b>	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Mine	03/19/97	<0.020	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Unknown well south of Hooper	03/19/97	<0.02	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Federal Drinking Water MCL		0.05	5	1,000	700	10,000	NA	NA	NA	5.0	NA	NA	NA	NA
RBC		0.00075	0.36	750	1300	1400	1500	NA	1500	1.6	0.17	2.4	0.15	NA

**NOTES:**

NA – Not Analyzed or Not Applicable

TS – INF/Spleiss – Treatment System Influent

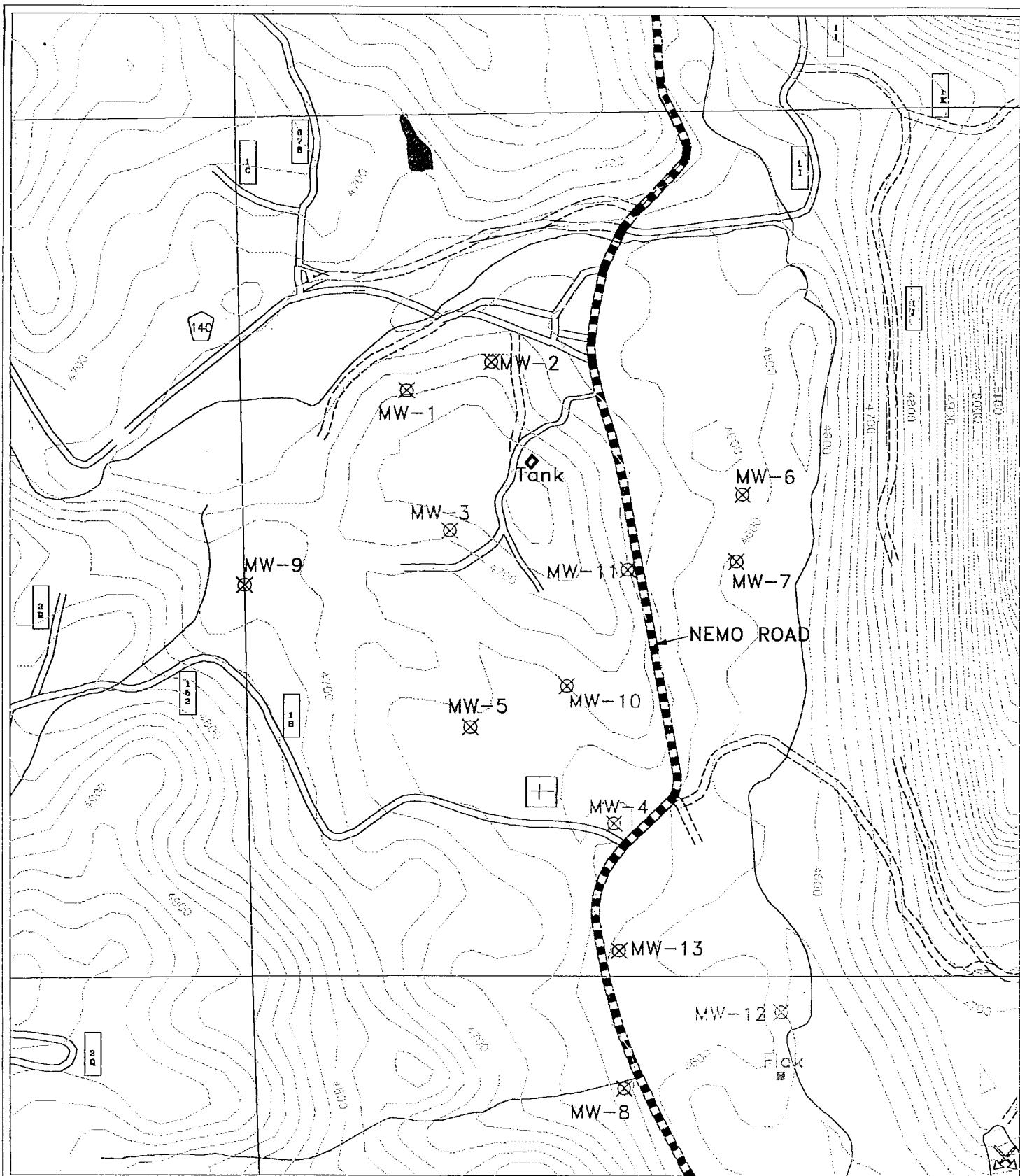
MCL – Maximum Contaminant Level

tr – trace; detected below the quantification limit

TS – EFF/Spleiss – Treatment System Effluent

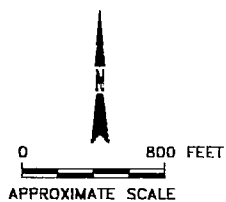
RBC – Risk Based Concentrations from EPA Region III Table. Concentrations assume residential exposure by tap water ingestion.

\*1 ug/l is approximately equal to 1 ppb



# LEGEND

 MW-10 MONITORING WELL (IMPACTED IN RED, NON-IMPACTED IN BLUE)



 **EnviroSearch**  
INTERNATIONAL

FIGURE 1

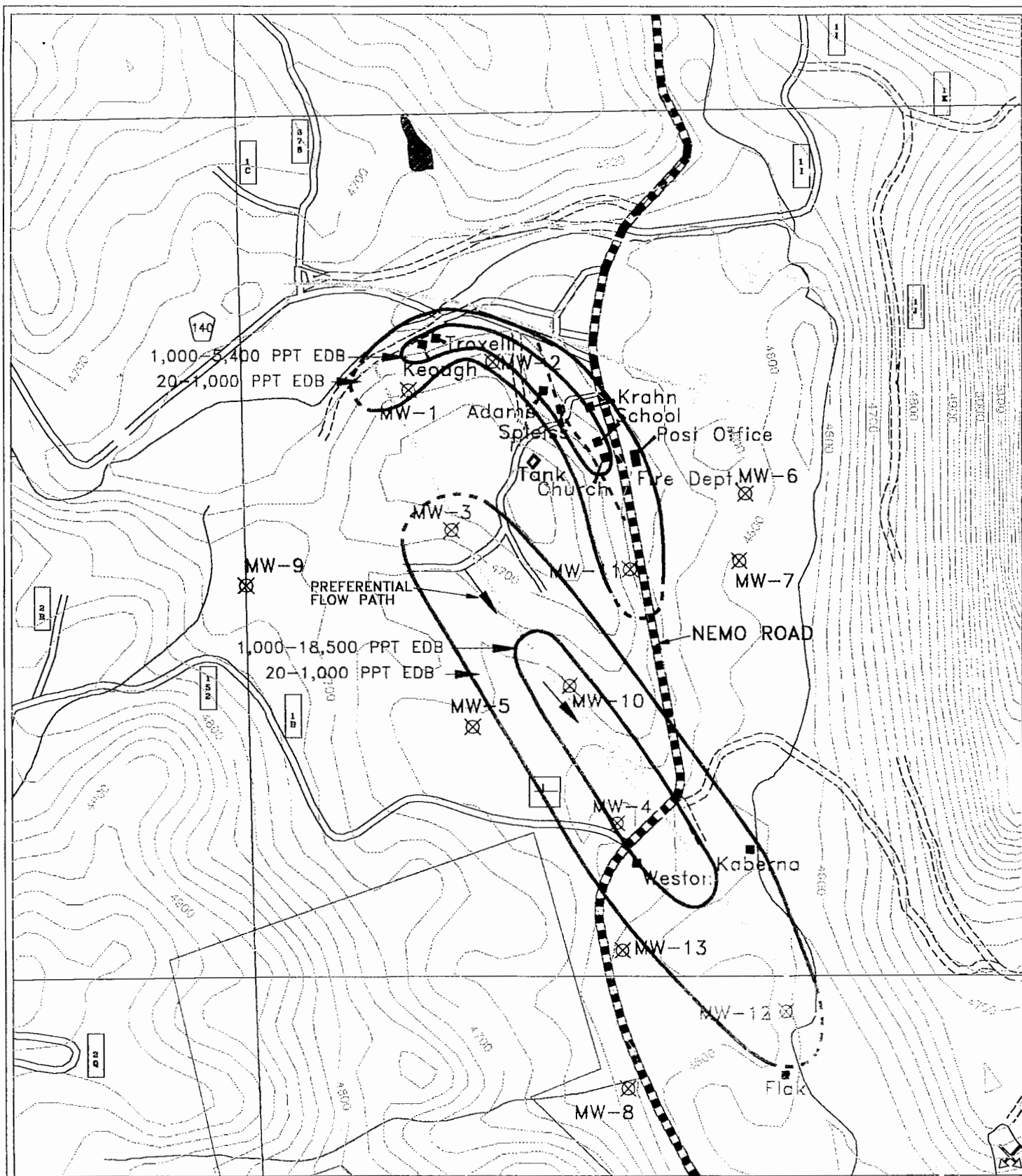
MONITORING WELL LOCATION MAP

NEMO, SOUTH DAKOTA

8/12/97

P# 1752

(11VQ12A)



**EnviroSearch**  
INTERNATIONAL

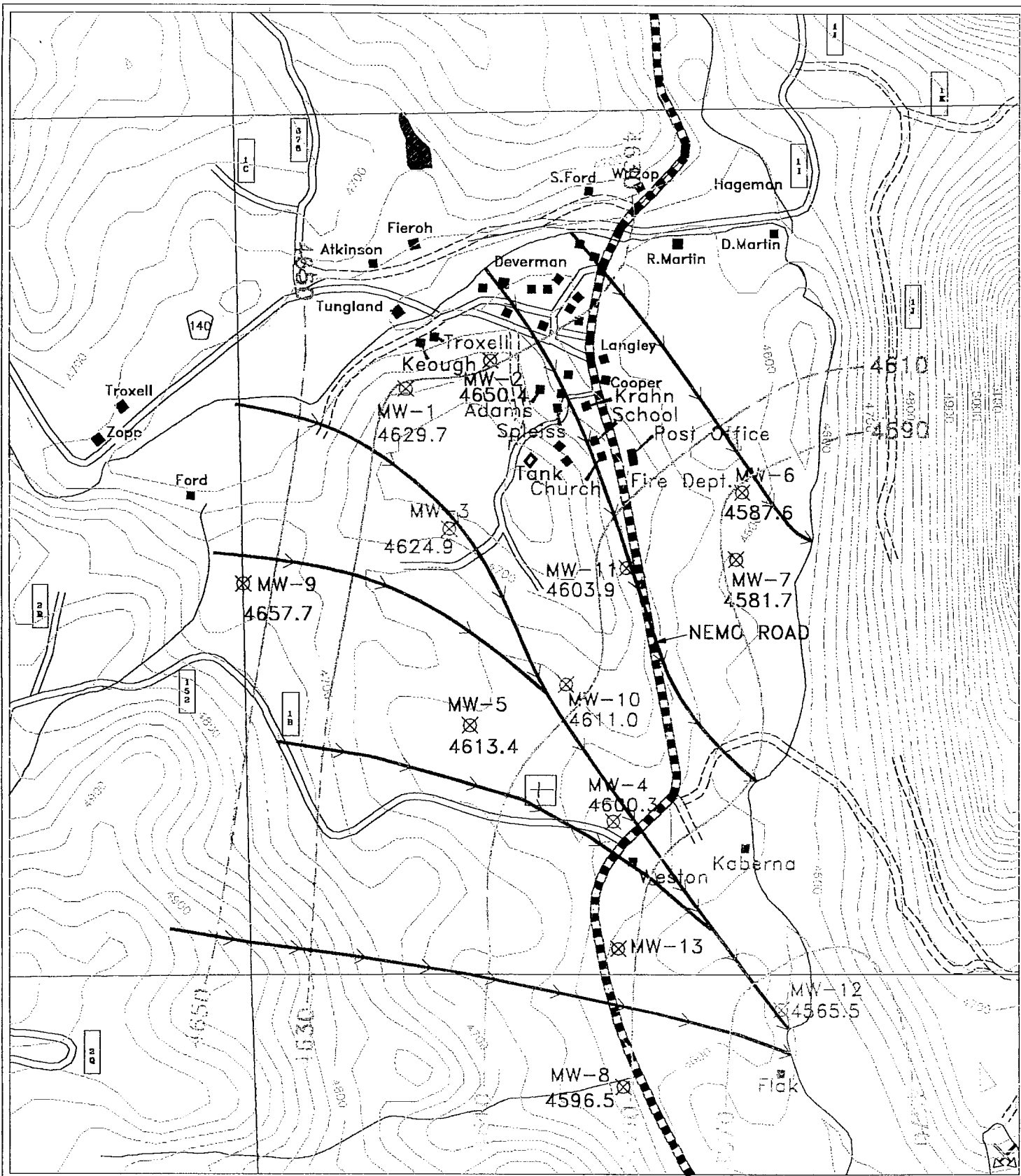
FIGURE 2  
DISTRIBUTION OF EDB IN GROUNDWATER  
NEMO, SOUTH DAKOTA

8/12/97

P# 1752

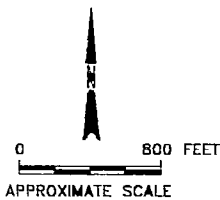
(11VR12A)





#### LEGEND

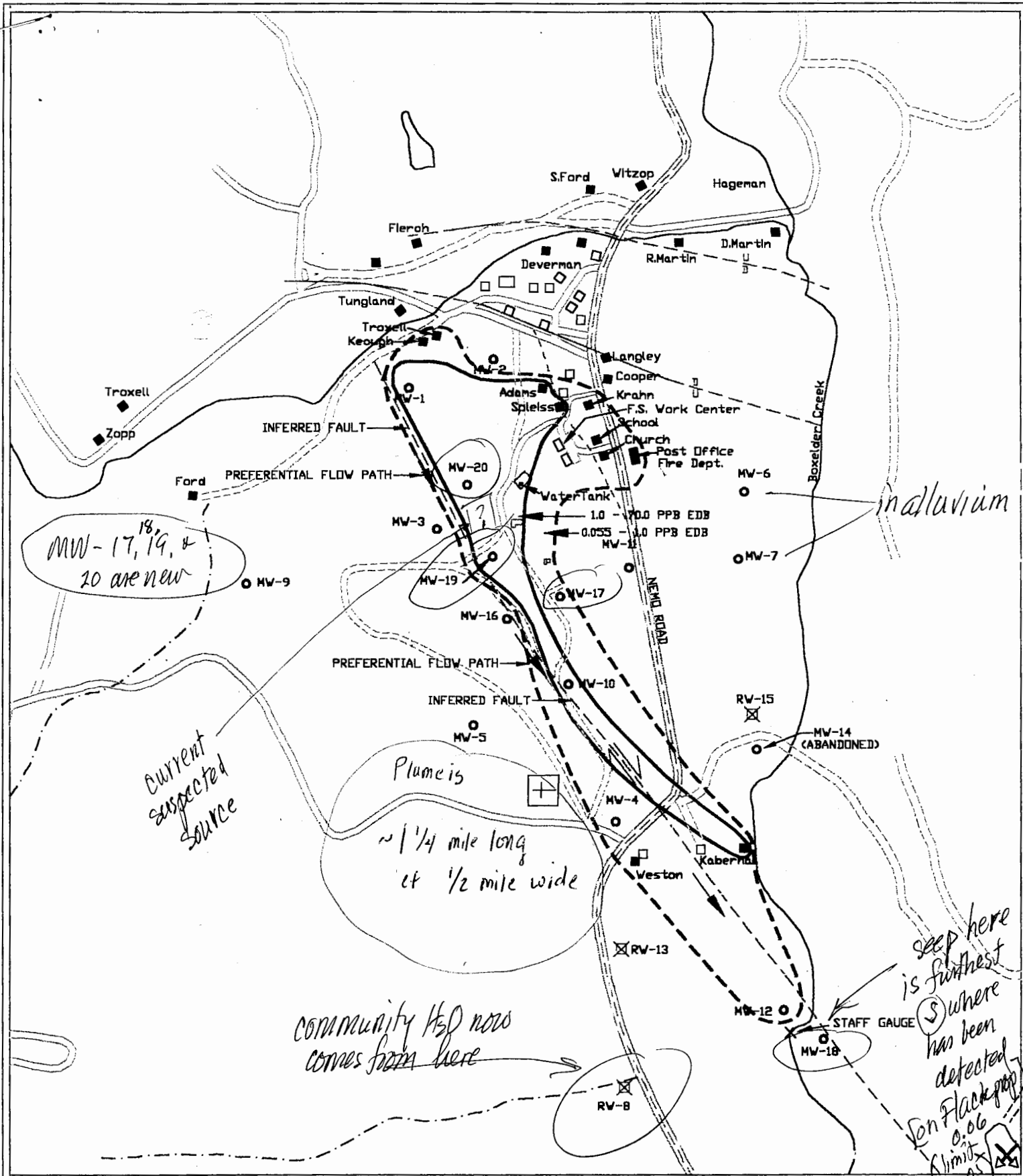
- ⊗ MW-10 MONITORING WELL (IMPACTED IN RED, NON-IMPACTED IN BLUE)
- 4610 GROUNDWATER ELEVATION IN FEET
- ⊗ School IMPACTED DOMESTIC WELL (IMPACTED IN RED, NON-IMPACTED IN BLACK)
- EQUIPOTENTIAL LINE IN FEET (DASHED WHERE INFERRED)
- FLOW LINE



**EnviroSearch**  
INTERNATIONAL

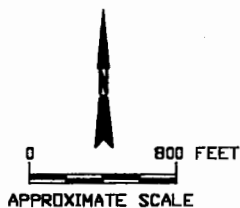
FIGURE 3  
PIEZOMETRIC SURFACE CONTOUR AND  
GROUNDWATER FLOW DIRECTION MAP  
NEMO, SOUTH DAKOTA

8/12/97 P# 1752 (11VQC12)



# LEGEND

- MW-6 MONITORING WELL (IMPACTED IN RED  
NON-IMPACTED IN BLUE)
- School DOMESTIC WELL (IMPACTED IN RED)  
NON-IMPACTED IN BLACK)
- EDB CONTAMINANT PLUME



**EnviroSearch**  
INTERNATIONAL

DISTRIBUTION OF EDB IN GROUNDWATER  
NEMO, SOUTH DAKOTA  
JANUARY 29, 1999

2/25/99

P# 1752 E

(12JQ)

EPA Region 8 panel,

I am a resident of the Hot Springs area in Fall River county. I am very concerned about the proposed draft permits to Powertech/Azarga for the Dewey-Burdock Uranium Mine and Deep Disposal Wells. The area for the permits is in itself a very sensitive area. It is in proximity and downstream from major recharge areas for all three aquifers, the Madison, Minnelusa and Inyan Kara. The Black Hills, in general, are also geologically unstable as there is already on going seismic activity. This is important as waste water deep injection wells have been linked to increased earthquake activity in Oklahoma.

Injection wells putting hazardous waste into the Minnelusa and Inyan Kara could have other far reaching and serious effects. Many ranchers and other residents of Custer and Fall River counties use the Minnelusa water for drinking, watering livestock and irrigation. The Inyan Kara water is also used extensively for livestock and irrigation in many areas. This was reported in a US Dept. of Interior, US Geological Survey study "Hydrology of the Black Hills Area, South Dakota" by Daniel G. Driscoll, Janet M. Carter, Joyce E. Williamson and Larry D. Putnum, Water-Resources Investigations Report 02-4094. This information is in contrast to what Powertech/Azarga reports.

The USGS report states the extent of the aquifers describing the vast area of distribution of the water and the varying water qualities. In most areas the water is usable and meets quality standards for most uses. The Powertech excuse that these aquifers are already contaminated is not a valid reason to dump wastewater into them. This report also describes that the amount of transmission between the aquifers can vary from undetermined to significant. One can make the assumption that heavy contamination of one aquifer could therefore contaminate other aquifers and have a wider effect not only in damage but in cleanup efforts.

The geology of the strata formations include numerous breccia pipes, fractures and caverns (ex. Jewel Cave and Wind Cave formations) which no one knows of their extent. These are the pipelines of water transmission by these aquifers and the extent to which they communicate with each other is unknown. One should also include the 7650 abandoned boreholes that leak and transfer water.

The artesian springs from these three aquifers are important water supplies for recreation, livestock use, wildlife and irrigation. They add water to all the streams and rivers in the surrounding area. The whole region relies on this supply of clean water. It is a major factor in our economies. If the clean water supplies fail then the economies that depend upon them fail. Our tourism, ranch, retail, and hospitality businesses and livelihoods would all be affected.

I live here. This is my community. I depend upon a rural well water source. What happens if that water source gets contaminated and is condemned? Where do I turn to? Will a government agency be available to help out? Will they supply us with clean water and at what cost? This is the gamble; allowing permits to inject hazardous wastewater into the Minnelusa

and Inyan Kara and risk the possibility of massive contamination or refusing Powertech/Azarga the permits to do this. I would not take that risk. I lived in Milwaukee, WI as a child when lake Michigan was so contaminated with industrial waste all recreation, fishing and use were restricted. I know what can happen. I hope we don't follow the path that caused that pollution because that mistake will not be as easy if not impossible to remediate. It will affect generations.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Encl: Title page of the USGS report with the abstract and introduction.

**U.S. Department of the Interior  
U.S. Geological Survey**

# **Hydrology of the Black Hills Area, South Dakota**

By Daniel G. Driscoll, Janet M. Carter, Joyce E. Williamson, and Larry D. Putnam

Water-Resources Investigations Report 02-4094

Prepared in cooperation with the  
South Dakota Department of Environment and Natural Resources  
and the West Dakota Water Development District

**U.S. Department of the Interior**

GALE A. NORTON, Secretary

**U.S. Geological Survey**

Charles G. Groat, Director

The use of firm, trade, and brand names in this report is for identification purposes only and does not constitute endorsement by the U.S. Government.

Rapid City, South Dakota: 2002

**For additional information write to:**

**District Chief  
U.S. Geological Survey  
1608 Mt. View Road  
Rapid City, SD 57702**

**Copies of this report can be purchased from:**

**U.S. Geological Survey  
Information Services  
Building 810  
Box 25286, Federal Center  
Denver, CO 80225-0286**

# Hydrology of the Black Hills Area, South Dakota

By Daniel G. Driscoll, Janet M. Carter, Joyce E. Williamson, and Larry D. Putnam

## ABSTRACT

The Black Hills Hydrology Study was initiated in 1990 to assess the quantity, quality, and distribution of surface water and ground water in the Black Hills area of South Dakota. This report summarizes the hydrology of the Black Hills area and the results of this long-term study.

The Black Hills area of South Dakota and Wyoming is an important recharge area for several regional, bedrock aquifer systems and various local aquifers; thus, the study focused on describing the hydrologic significance of selected bedrock aquifers. The major aquifers in the Black Hills area are the Deadwood, Madison, Minnelusa, Minnekahta, and Inyan Kara aquifers. The highest priority was placed on the Madison and Minnelusa aquifers, which are used extensively and heavily influence the surface-water resources of the area.

Within this report, the hydrogeologic framework of the area, including climate, geology, ground water, and surface water, is discussed. Hydrologic processes and characteristics for ground water and surface water are presented. For ground water, water-level trends and comparisons and water-quality characteristics are presented. For surface water, streamflow characteristics, responses to precipitation, annual yields and yield efficiencies, and water-quality characteristics are presented. Hydrologic budgets are presented for ground water, surface water, and the combined ground-water/surface-water system. A summary of study findings regarding the complex flow

systems within the Madison and Minnelusa aquifers also is presented.

## INTRODUCTION

The Black Hills area is an important resource center that provides an economic base for western South Dakota through tourism, agriculture, the timber industry, and mineral resources. In addition, water originating from the area is used for municipal, industrial, agricultural, and recreational purposes throughout much of western South Dakota. The Black Hills area also is an important recharge area for aquifers in the northern Great Plains.

Population growth, resource development, and periodic droughts have the potential to affect the quantity, quality, and availability of water within the Black Hills area. Because of this concern, the Black Hills Hydrology Study was initiated in 1990 to assess the quantity, quality, and distribution of surface water and ground water in the Black Hills area of South Dakota (Driscoll, 1992). This long-term study has been a cooperative effort between the U.S. Geological Survey (USGS), the South Dakota Department of Environment and Natural Resources, and the West Dakota Water Development District, which represents various local and county cooperators.

The specific objectives of the Black Hills Hydrology Study included:

1. Inventorying and describing precipitation amounts, streamflow rates, ground-water levels of selected aquifer units, and selected water-quality characteristics for the Black Hills area.

2. Developing hydrologic budgets to define relations among precipitation, streamflow, and aquifer response for selected Black Hills watersheds.
3. Describing the significance of the bedrock aquifers in the Black Hills area hydrologic system, with an emphasis on the Madison and Minnelusa aquifers, through determination of:
  - a. aquifer properties (depth, thickness, structure, storage coefficient, hydraulic conductivity, etc.);
  - b. the hydraulic connection between the aquifers;
  - c. the source aquifer(s) of springs;
  - d. recharge and discharge rates, and gross volumetric budgets; and
  - e. regional flow paths.
4. Developing conceptual models of the hydrogeologic system for the Black Hills area.

## Purpose and Scope

The purpose of this report is to summarize the hydrology of the Black Hills area and present major findings pertinent to the objectives of the Black Hills Hydrology Study. The information summarized in this report has been presented in more detail in previous reports prepared as part of the study. Because the Black Hills area of South Dakota and Wyoming is an important recharge area for several regional, bedrock aquifers and various local aquifers, the study concentrated on describing the hydrogeology and hydrologic significance of selected bedrock aquifers. The highest priority was placed on the Madison and Minnelusa aquifers because: (1) these aquifers are heavily used and could be developed further; (2) these aquifers are connected to surface-water resources through streamflow loss zones and large springs; and (3) hydraulic connection between these aquifers is extremely variable. The Deadwood and Minnekahta aquifers had a lower priority because they are used less and have less influence on the hydrologic system. The fractured Precambrian rocks, Inyan Kara Group, and various local aquifers, including minor bedrock aquifers and unconsolidated aquifers, had the lowest priorities because: (1) the Precambrian and local aquifers are not regional aquifers with regional flowpaths; and (2) the Inyan Kara Group is not used as extensively in the Black Hills area as the other priority units.

Hydrologic analyses within this report generally are by water year, which represents the period from

October 1 through September 30. Discussions of time-frames refer to water years, rather than calendar years, unless specifically noted otherwise.

## Description of Study Area

The study area for the Black Hills Hydrology Study consists of the topographically defined Black Hills and adjacent areas located in western South Dakota (fig. 1). Outcrops of the Madison Limestone and Minnelusa Formation, as well as the generalized outer extent of the Inyan Kara Group, which approximates the outer extent of the Black Hills area, also are shown in figure 1. The Black Hills are situated between the Cheyenne and Belle Fourche Rivers. The Belle Fourche River is the largest tributary to the Cheyenne River. The study area includes most of the larger communities in western South Dakota and contains about one-fifth of the State's population.

The Black Hills uplift formed as an elongated dome about 60 to 65 million years ago during the Laramide orogeny (Darton and Paige, 1925). The dome trends north-northwest and is about 120 mi long and 60 mi wide. Land-surface altitudes range from 7,242 ft above sea level at Harney Peak to about 3,000 ft in the adjacent plains. Most of the higher altitudes are heavily forested with ponderosa pine, which is the primary product of an active timber industry. White spruce, quaking aspen, paper birch, and other native trees and shrubs are found in cooler, wetter areas (Orr, 1959). The lower altitude areas surrounding the Black Hills primarily are urban, suburban, and agricultural. Numerous deciduous species such as cottonwood, ash, elm, oak, and willow are common along streams in the lower altitudes. Rangeland, hayland, and winter wheat farming are the principal agricultural uses for dryland areas. Alfalfa, corn, and vegetables are produced in bottom lands and in irrigated areas. Various other crops, primarily for cattle fodder, are produced in both dryland areas and in bottom lands.

Beginning in the 1870's, the Black Hills have been explored and mined for many commodities including gold, silver, tin, tungsten, mica, feldspar, bentonite, beryl, lead, zinc, uranium, lithium, sand, gravel, and oil (U.S. Department of Interior, 1967). Mines within the study area have used various techniques including placer mining, underground mining, and open-pit mining.



I have email address

To: U.S. EPA Region 8  
Mail Code: 8WP-SU1  
1595 Wynkoop Street  
Denver, Colorado  
80202-1129

RECEIVED MAY 15 2017

From: [REDACTED]

May 8, 2017

Dear U.S. EPA,

I would like to submit a comment regarding the Black Hills. Please, no uranium in treaty territory. Please, no to the Dewey Burdock Uranium Aquifer Mining.

Most Sincerely [REDACTED]

5/8/2017

RECEIVED JUN 19 2017

June 10, 2017

Dear Mr. Shen,

At this time I would like to share with you some of my thoughts and comments on the Dewey Sandrock mining project currently pending in Edgemont, S.D.

I am a 75 year old retired teacher living in Hot Springs, S.D. I have 40 years of experience teaching junior high school, 14 years in New Jersey, and 26 years in S.D. I moved here to South Dakota from New Jersey in 1976. I lived in Pine Ridge for 20 years, and in Hot Springs now for 21 years.

When I left New Jersey, it had already become a toxic waste dump, years in the making. This even included a superfund clean-up site a mere three miles down the road from our family farm. Because of the abnormally high rates of every kind of cancer in the state, it was already being called the Cancer Capital of the Nation; also nicknamed "Cancer Alley", referring to its status as the thruway connecting Philadelphia and New York City. I know without a doubt that this will happen here in Fall River County, S.D.

What amazes me is that there are a few people here who believe that they have knowledge superior to the natural law, and expect us to follow along. They feel that this

knowledge entitles them to "mess around" with the earth and pay no consequences for it. I have read all the facts and data, and I believe this is a disaster waiting to be unleashed on the public.

I am also appalled at the underlying greed behind all of this. No one in this area will get rich, except maybe August Ayaraga, who will then spend their profits in paying fines for violations and clean-up. Or try to get away with it! Lawyers!

It is painful to realize that some people will not be satisfied until they have turned this area of Fall River County into a wasteland with poisoned water. Future generations will not be grateful, nor will tourists, and the flow of tourism will dry up. And - there goes the local economy.

"And the last state shall be worse than the first."

Thank you very much for taking the time to read my comments. They may not be much, but they come from a very concerned heart that has seen so much of life.

Very sincerely,



May 10

Our water must be Protected at all Cost. Those who are for the mining of Uranium are For the money. Those against are for our Protection of water for Now and future generations. The possibility of dumping toxic waste into these bore holes is ludicrous!! We are in the Minnelusa aquifer (our water) and it is pure and wonderful.

Having Just Come on board to Save our water, I will in the next few week be going to Doctor's

- Offices, as well as contacting as many people as I can to help you see how important this case is. I am having my water tested at \$750.00 to prove it is good and not unpalatable at those in favor of Powertech/AZARGA.

You will be sent the results of these tests plus any other information

Also it will be sent to: President Trump  
Vice President Mike Pence - Rick Perry,  
Tom Price, our Senators and Congress  
people and anyone else I can think

of. It will be sent by both email  
and snail mail.

Protect our environment!!!

This is all we have. Our water and air is only so much. Once gone it is gone forever.



It is our responsibility to protect it.



Only way to prevent this is to not let it happen in the 1st place. And this is our

From: [REDACTED]  
Subject: Tunnel collapses at Hanford nuclear waste site in Washington state - The Washington Post  
Date: May 10, 2017 at 7:01 AM  
To: [REDACTED]

Government. PowerTech aka  
AZARGA is  
China owned

## Tunnel collapses at Hanford nuclear waste site in Washington state

The clean-up operation of Hanford's nine nuclear reactors has been underway since 1989. (Gillian Brockell/The Washington Post)

Hundreds of workers at the Department of Energy's Hanford nuclear site in Washington state had to "take cover" Tuesday morning after the collapse of 20-foot-long portion of a tunnel used to store materials.

The Energy Department said it activated its emergency operations protocol after reports of a "cave-in" at the 200 East Area in Hanford, a sprawling complex about 200 miles from Seattle where clean up radioactive materials left over from the country's nuclear weapons program.

The agency [said in a statement](#) that the 20-foot section is part of a tunnel that is hundreds of feet long and is "used to store contaminated materials." The tunnel is one of two that run into the 1 also known as PUREX. The section that collapsed was "in an area where the two tunnels join together," the department said.

The PUREX facility, once used to extract plutonium from spent nuclear fuel, has been idle for years but remains "highly contaminated," the agency said.

Energy Department officials said there was "no indication of a release of contamination at this point" but that crews were still testing the area. Responders also were using a robot to take video said that Energy Secretary Rick Perry had been briefed, adding that "everyone has been accounted for and there is no initial indication of any worker exposure or an airborne radiological release."

But Edwin Lyman, a senior scientist at the Union of Concerned Scientists, said there is still cause for concern. "It appears that this is a potentially serious event," he said. "Collapse of the earth could cause a considerable radiological release."

An August 2015 report by Vanderbilt University's civil and environmental engineering department said the PUREX facility and the two tunnels had "the potential for significant on-site consequences if dangerous debris and equipment containing or contaminated with dangerous/mixed waste" had been placed inside the tunnels.





The portion of the 20-foot-long portion of a tunnel that collapsed at the 200 East Area in Hanford, Wash. (Hanford Site)

Cleaning up radioactive materials at the Hanford site, which is a federal facility, has been one of the Energy Department's priorities for years. Reactors at Hanford produced plutonium for the Plutonium production there ended in 1980, and the cleanup program began in 1989.

Former Energy Department official Robert Alvarez said that remotely controlled rail cars once carried spent fuel from a reactor to the PUREX chemical processing facility, which then extracts lies near the middle of the sprawling 580-square mile Hanford site and was "a very high-hazard operation."

Many contaminated pieces of equipment, including the rail cars, have simply been left in the tunnels, he said. The Vanderbilt report said that there were eight rail cars in the older tunnel and :

The cave-in was discovered during "routine surveillance," according to the Energy Department. Photographs showed a gaping hole, plainly evident because the tunnels are largely above ground

Workers near the PUREX facility were told to shelter in place, and access to the area was restricted, according to the Energy Department statement. Officials requested that the Federal Aviation restriction in place, according to the FAA.

The two tunnels are covered with about eight feet of soil, according to the Energy Department, which added that "the depth of the subsidence of soil appears to be into the tunnel."

Alvarez, the former Energy Department official, cited a 1997 report that said the older tunnel was about 360 feet long, 22 feet high and 19 feet wide. Constructed decades ago, the walls of the o up by pressure-treated Douglas fir timbers, the report said. They rest on reinforced concrete footings. The newer tunnel was built with reinforced concrete.

In an email, Alvarez added that "the tunnels now store contaminated train cars and a considerable amount of highly radioactive, ignitable wastes including possible organic vapors." And while timber, Alvarez said, "according to a 1997 DOE report, inspection of the tunnels 'is not feasible because of radiation levels in excess of five roentgens per hour.'" A roentgen, or rad, is a measur is the annual limit for a U.S. nuclear worker.

Fixing the damaged tunnel could prove difficult. The Energy Department said on its Web site that officials are looking at options that would provide a barrier between the contaminated equipr that would not cause the hole in the tunnel's roof to widen further.



Sources: GoogleEarth and Landsat

THE WA

Although the Trump administration has vowed to slash the budgets of most Energy Department programs, the administration does not plan to skip on the one [charged with the Hanford clean](#) requested \$6.5 billion for the agency's environmental management program for 2018.

The budget for Hanford alone is about \$2.3 billion in the current fiscal year, about \$1.5 billion of that going to the management and treatment of approximately 56 million gallons of radioactive storage tanks.

Trump has been slow to fill [science-related positions](#), and he has not yet named a new assistant secretary for environmental management; a career department employee is serving in an acting

During his recent confirmation hearing, Perry was asked by Washington Sen. Maria Cantwell (D) about the Hanford site. "So are you committed to funding Hanford cleanup and what it takes .



finished?" Cantwell asked.

"Senator, I'm committed to working with you and prioritizing what is one of the most dangerous, most polluted sites that we have in this country," Perry replied. He vowed to visit Hanford and the site with you."

On Tuesday, Cantwell issued a statement praising first responders and saying that she was monitoring reports. She said that "worker safety must be our number one priority, and we need to understand the extent of environmental contamination resulting from the subsidence at these tunnels."

Gov. Jay Inslee (D) said in a statement he was aware that "a tunnel was breached that was used to bury radioactive waste from the production of plutonium at the Hanford Nuclear Reservation."

"This is a serious situation, and ensuring the safety of the workers and the community is the top priority," Inslee said.

*Chris Mooney contributed to this report.*

**EPA Hearings**

**10 May, 2017**

**I object to the two draft permits for the proposed Dewey-Burdock uranium mine in Custer and Fall River Counties because of the following concerns.**

**We need to protect our water, economy, health and way of life. Let's stop this bad idea.**

**This is a very dry area of the country, even of western South Dakota. We can't lose 8,000 gallons of water per minute for the next ten years. It would not only affect the Inyan Kara aquifer, but the Minnelusa and Madison aquifers. These are all used in this area. We can't afford to lose that much water or have them pollute any of these aquifers. These aquifers are known to communicate.**

**If these permits' are given to Powertech/Arsargo, then there are 10 more companies that will file for the same permits' all around the Black Hills. Also the companies that are approaching from the plains for deep hole disposable wells. Are we trying to make South Dakota the next uranium dumping area?**

**This kind of stuff would also disturb cultural and historic sites, wild life and our ranching and tourism economy. Handling uranium in any form produces radioactive and toxic wastes that threaten people's health and our food chains.**

**Hannan LuGerry is a geologist that had worked this area and knows that this whole area has many faults. That's what happened to Chadron Creek in 2007, it just disappeared one day into a fault in the earth.**

**He and some helpers went over 10,000 pages of the permit. He looked at the Driller's notes and found artesian wells popping out of some of the holes which show fault in the aquifers. And all the holes dug over there have not been plugged like the NRC told them to. Some of the holes went into caves [like Wind Cave?]. Lots of things he found in the driller's notes was things like.....Don't tell the land owners and don't report Indian relics. This was just all about the 760 well holes that wasn't plugged from the TVA.**

**Hannan LuGerry also mapped the aquifers, they are flowing from west to east. The most jobs that would be at start up, 80 versus 350,000 people losing**

**their water. Is the government going to send in contaminated bottled water for us?**

**Go to uranium cowboy on u-tube to see a lot of information on this subject.**

**Crawford, Nebraska is the only area that now has a very high rate of pancreatic cancer in Nebraska and the USA.**

**Dennis Yellow Thunder has filed a petition for a review of Crow Buttes' permits.**

**According to Lindsay McLain a known bio-chemist and NRC expert witness, there have been one and a half million chemicals introduced to the body since WW II. Also the Tennessee Valley Authority after 10 years of looking for uranium to mine in the Dewey-Burdock area left because they found too much gypsum and cave ins, in the area.**

**It has already been proved that injecting materials under high Pressures' deep under ground causes earth quakes. This area is already having numerous earthquakes as the whole Black Hills is in uplift stage. More and harder earthquakes are apt to break those deadly gasses stored over there under**

**Igloo. It could kill every living thing in the area.**

**These permits would allow this company to pollute our underground water, which we all rely on.**

**Just across our western border in Wyoming Cameco Resources has been hit with nine apparent violations on how they are shipping uranium products. <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html> We also have that concern with [Arzargo/Powertech. http://www.gov/docs/ML061240509.pdf](http://www.gov/docs/ML061240509.pdf) <http://www.nrc.gov/reading-rm/adams.html>**

**New information in yesterday, All of the wells north of Hot Springs are in the Minnelusa. According to Ken Buhler of the South Dakota Department of Environment and Natural Resources (or DENR), said there are hundreds to thousands of domestic wells using water from the Minnelusa aquifer. 196 appropriated water rights permits in the Minnelusa which include municipal, commercial, and industrial use.**

**I don't consider living a lifetime anywhere starting in my teens.**

Please add these comments to  
 Gmail the record [REDACTED]

## Information on your article

Tue, May 9, 2017 at 9:38 AM

Draft To: "journal.com" [REDACTED]

Hi Seth, I spoke with you briefly before the hearing started yesterday. Your line is today's report is not necessarily true "The uranium would be sold, processed and used elsewhere to produce nuclear energy." Once the uranium leaves the US border, there is no control over what, where, to whom it goes. Azarga is a huge international company who's purpose is to sell uranium to the highest bidder. Some country may buy it for a nuclear power plant; some group may buy it for bombs and even Azarga may not know; it just is a money transaction.

I also have concerns about the process part too. As the yellow cake is obtained, processed and stored...and then eventually shipped to the border, what security is there that some whacko doesn't blow it up. It would be devastating.

In addition, as trucks come in the dark of night and dump toxic waste into the deep holes, who oversees what is being dumped and where did it come from? Is there going to be a 24 hour security guard (in pepriuity sp?) and how would he be even able to know what awful stuff is in those containers?

As one lady said yesterday, if something bad happens at that site, it could take several hours for law enforcement to get out there. [REDACTED]

Thanks. [REDACTED] [REDACTED] [REDACTED]

More Important Information!

1. That the Minnelusa aquifer has over 125 holes that have Minnelusa wells in the souther hills that would be impacted by haz waste contaminated water
2. that ll the water in the Minnelusa flows east and south, contaminating those households and farms above and ultimately ends up in the great Oglala aquifer that services the entire central US
3. That Dewey Burdock has two geologic anomalies that preclude use as an ISL mining site...the proximity of Igloo, with 367,000 tons of various nerve gasses stored in known unstable containers in over 200 miles of tunnels. And the 7650 open old bore holes that other sites do not have, that mix the waters of the aquifers already, making containment impossible, for mining or deposition of toxic wastes.

specifically address the subject of the class 3 mining injection wells and the class 5 haz waste deep injection wells. You really need to be specific here...and those old boreholes were never closed, or if so, closed improperly by TVA...7650 of them are still open and some have fenceposts in them, which the rotting wood further contaminates the aquifers it touches, inoculating them with fungi and bacteria that organify the metals, making them unavailable chemically from being extracted by the ion exchange method, including uranium, which will continue to increase in the wastewater.

We are protesting the use of the minnelusa aquifer for dumping of haz waste...and we are questioning the ability of Powertech/azarga to be able to detoxify the radioactive metals of vanadium, thorium, strontium, uranium, thallium and lead (which has radioactive forms) down to the levels of purity of stormwater that is required to be injected into a class 5 well that sits between and in two drinking water aquifers. ( the Minnelusa is used for good quality drinking water in the area and the Madison). No such plan has been demonstrated by Powertech/Azarga. And if such was even possible, that water would be worth gold in a high dry area of the country, and used for irrigation of crops and farm animal use, and treated with conventional water softener and RO at the sink for household drinking water, as the minnelusa is now in that area for TDS. It is the radioactive metals that are of concern. If that water was going to be so pure, then it would not have to be disposed of in a deep injection well int h e first place. And those 7650 open boreholes, existing in an uplift area of numerous cracks, fissures, fractures, breccia pipes and sinkholes that exist there, that are already allowing for the mixing of aquifers, does not allow for the containment of anything you put down in the ground, no matter what level. This includes the class 3 mining wells.





Safeguards

Need more <sup>consultation</sup> dialogu with tribal  
nation.

Or FBI  
EPA funds  
Troubled times.

delay

## Declaration of the World Nuclear Victims Forum in Hiroshima (Draft Elements of a Charter of World Nuclear Victims' Rights)

November 23, 2015

1. We, participants in the World Nuclear Victims Forum, gathered in Hiroshima from November 21 to 23 in 2015, 70 years after the atomic bombings by the US government.
2. We define the nuclear victims in the narrow sense of not distinguishing between victims of military and industrial nuclear use, including victims of the atomic bombings in Hiroshima and Nagasaki and of nuclear testing, as well as victims of exposure to radiation and radioactive contamination created by the entire process including uranium mining and milling, and nuclear development, use and waste. In the broad sense, we confirm that until we end the nuclear age, any person anywhere could at any time become a victim—a potential *Hibakusha*, and that nuclear weapons, nuclear power and humanity cannot coexist.
3. We recall that the radiation, heat and blast of the atomic bombings of Hiroshima and Nagasaki sacrificed not only Japanese but also Koreans, Chinese, Taiwanese and people from other countries there as a result of Japan's colonization and invasion, and Allied prisoners of war. Those who survived "tasted the tortures of hell." We pay tribute to the fact that the *Hibakusha* question the responsibility of the Japanese government which conducted a war of aggression; call for recognition of the right to health and a decent livelihood; have achieved some legal redress and continue to call for state redress to be clearly incorporated within the Atom Bomb Victims Relief Law; struggle to guarantee the rights of those who experienced the atomic bombings yet are not recognized as *Hibakusha*; and call not only for nuclear weapons abolition but also oppose nuclear power restarts and exports, and demand adequate assistance for nuclear power plant disaster victims.
4. We noted that through the international conferences on the humanitarian impact of nuclear weapons held in Oslo in 2013 and in Nayarit and Vienna in 2014, the understanding is widely shared internationally that the detonation of nuclear weapons would cause catastrophic harm to the environment, human health, welfare and society; would jeopardize the survival of the human family; and adequate response is impossible. We warmly welcome the Humanitarian Pledge endorsed by 121 states, pledging to fill the legal gap for the prohibition and elimination of nuclear weapons. We support the adoption in early November 2015 at the UN General Assembly First Committee, by an overwhelming majority of 135 in favor with only 12 opposed, of a resolution convening an open-ended working group "to substantively address concrete effective legal measures... and norms that will need to be concluded to attain and maintain a world without nuclear weapons."



5. We acknowledge that the mining and refining of uranium, nuclear testing, and the disposal of nuclear waste are being carried out based on ongoing colonization, discriminatory oppression, and infringement of indigenous peoples' rights, including their rights to relationships with their ancestral land. These activities impose involuntary exposure to radiation and contaminate the local environment. Thus, the local populations are continually and increasingly deprived of the basic necessities for human life with ever more of them becoming nuclear victims.
6. We also reconfirmed that every stage of the nuclear chain contaminates the environment and damages the ecosystem, causing a wide array of radiation-related disorders in people and other living beings. Through the experience of the nuclear disasters at Chernobyl and Fukushima, we see that nuclear accidents inevitably expose entire populations living near the power plants and the workers assigned to cope with the accident to harmful levels of radiation, and that adequate response to such a disaster is impossible. We further see that radioactive contamination is inevitably a global phenomenon. We know that "military" and "industrial" nuclear power are intimately connected within a unified nuclear industry, and that every stage of the nuclear chain, including the use of depleted uranium weapons, creates large numbers of new nuclear victims.
7. Complete prevention of nuclear chain related disasters is impossible. No safe method exists for disposing of ever-increasing volumes of nuclear waste. Nuclear contamination is forever, making it utterly impossible to return the environment to its original state. Thus, we stress that the human family must abandon its use of nuclear energy.
8. We acknowledge that the Atomic Bomb Trial against the State of Japan (the Shimoda Case; December 1963) found that the US military violated international law in dropping the atomic bombs, and that the advisory opinion issued by the International Court of Justice stated that "there exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control" (July 1996). We support the Marshall Islands, whose people have suffered the effects of intensive nuclear testing, in bringing this issue back to the Court in April 2014 through filing cases against nine nuclear armed states. Furthermore, we recall the World Conference of Nuclear Victims which pursued criminal liability on the part of the nuclear weapon states and the nuclear industry (New York Resolution, 1987), and that the military industrial complex was found to have the responsibility of providing damages compensation (Berlin Resolution, 1992). In addition, we confirm that the International People's Tribunal on the Dropping of Atomic Bombs on Hiroshima and Nagasaki found all 15 defendants guilty, including President Truman (July 2007).
9. We emphasize that all states that promote nuclear energy, the operators that cause radioactive contamination, and the manufacturers of nuclear facilities including nuclear power plants must bear

liability for damages done, as do their shareholders and creditors. We are gravely concerned that the export of nuclear power plants is extremely likely to result in severe human rights abuses and environmental damage.

10. We accuse the International Atomic Energy Agency (IAEA) and the International Commission on Radiological Protection (ICRP) of underestimating the harm done by radiation exposure and hiding the true effects of nuclear power accidents. We demand the abolition of the IAEA's mandate to "promote the peaceful use of nuclear power".
11. We have identified that the military-industrial-government-academic complex and states that support it have, through the use of nuclear energy, degraded the foundations of human life, and violated the right to life of all living beings. We assert that the acts of members of this complex violate fundamental principles of international humanitarian, environmental and human rights law.
12. We condemn the Japanese government for failing to learn from the Fukushima disaster, without carrying out adequate investigations into the facts and impacts, hiding and trivializing the damage, and cutting off assistance to the victims, while investing in the restart and export of nuclear power plants. We oppose the building, operating or exporting of nuclear power plants or any industrial nuclear facility in Japan or any other country.
13. We call for the termination of uranium mining, milling, nuclear fuel production, nuclear power generation and reprocessing, and for the abolition of the entire nuclear chain.
14. We call for the urgent conclusion of a legally binding international instrument which prohibits and provides for the elimination of nuclear weapons.
15. We call for the prohibition of manufacture, possession and use of depleted uranium weapons.
16. With the momentum of this World Nuclear Victims Forum, we confirm our desire to continue to cooperate in solidarity and share information regarding nuclear victims, and disseminate our message through various methods including art and media.
17. Thus, as a result of this World Nuclear Victims Forum and in order to convey to the world the draft elements of a World Charter of the Rights of Nuclear Victims, we adopt this Hiroshima Declaration.

## **Draft Elements of a World Charter of the Rights of Nuclear Victims**

### **[I] The Basis of Rights of Nuclear Victims**

1. The natural world is the foundation of all life, and each human being is an integral member of the human family innately endowed with the right to partake in human civilization with equal rights to life, physical and emotional wellbeing, and a decent livelihood.
2. All peoples have the right to be free from fear and want, and to live in an environment of peace, health and security.
3. Each generation has the right to enjoy a sustainable society and the responsibility of effective stewardship for the benefit of the future generations of all living beings.
4. There exists the inherent dignity of the human person and the right of all peoples to self-determination as enshrined in the Charter of the United Nations, the rights to life, health and survival as stipulated in international positive law including the Universal Declaration of Human Rights, International Covenants on Human Rights, and the Declaration of the Rights of Indigenous Peoples, as well as exists the principle of international customary law which helps to shape the emerging "law of humanity".

### **[II] Rights**

(1) To alleviate current and prevent future nuclear catastrophes, all persons living in the nuclear age have the right to demand the following:

1. Not to be exposed to ionizing radiation other than that which occurs in nature or is for medical purposes,
2. Prohibition of coerced labor involving potential exposure to ionizing radiation, and when labor involving such potential exposure cannot be avoided, for exposure to be minimized,
3. Minimization of medical exposure to ionizing radiation, and
4. Full, accurate information regarding the dangers of ionizing radiation exposure through school and community education; this information to include the facts that no level of radiation exposure is without risk and that children, women and girls are especially sensitive to radiation.

(2) Additionally, nuclear victims have the right to demand the following:

5. Nuclear victims have rights under domestic law derived from human rights and basic freedoms, including personal rights and the right to health.
6. To receive free of charge the best possible medical care and regular examinations for effects related to past, present and future exposure; this right to extend to the 2<sup>nd</sup>, 3<sup>rd</sup> and future generations.

7. An apology and compensation from the offending party for all damage to life, health, finance, suffering, and culture related to the use of nuclear energy.
8. The remediation of radiation contaminated land and domicile, and the renewal of community and local culture.
9. Thorough scientific investigation of the victim's exposure by competent scientists independent of the offending party, with all findings and information completely open to the public, and the victims themselves involved in the investigation and control of information.
10. To not be forced to return to radiation contaminated land, and for the freedom to choose whether to evacuate from or remain in a radiation affected area. And, no matter this choice, to receive support to minimize exposure to radiation, protect health, and maintain and rebuild a way of life.
11. To refuse to work in an environment where radioactive contamination could constitute a health threat, said refusal having no negative ramifications for the victim.

**WATCH LIVE:** Sean Spicer takes questions on Yates testimony, Afghanistan troops at White House  
Associated Press  
2 hrs ago

★★★★★ 4.9/5.0 Stars

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FBI to clarify Comey's testimony on Clinton...

GOP town halls go viral

Jimmy Carter reveals he didn't vote for...

Tunnel with nuclear waste collapses in...

New dino identified

## Tunnel with nuclear waste collapses in Washington state




© Ted S. Warre An emergency has been declared at the Hanford Nuclear Reservation after a portion of a tunnel that contained rail cars full of nuclear waste collapsed.

SPOKANE, Wash. (AP) — A portion of a storage tunnel that contains rail cars full of radioactive waste collapsed Tuesday morning, forcing an emergency declaration at the Hanford Nuclear Reservation in southeastern Washington state.

Associated Press

2 hrs ago

Officials detected no release of radiation and no workers were injured, said Randy Bradbury, a spokesman for the Washington state Department of Ecology.  EMAIL

```

*/ var oapartners = angular.module
('oapartners', ['common', 'OAFactory',
'LocationsFactory', 'ngDialog']) .controller('Ctrl',
function ($scope, $filter, $q, $http, $window,
LocationsData, OADData, ngDialog) { //load
environment config -- this file is used to load the
configuration object: /Affiliate
Center/Avalon/widgets.bankrate.com-
dev/js/services/envconfig.js $scope.$watch
(function(){return $window.bankrateEnvConfig;},
function(){ $scope.bankrateEnvConfig =
$window.bankrateEnvConfig; }); $scope.$watch

```

There were no workers inside the tunnel when it collapsed. But nearby Hanford workers were evacuated and others who were farther away were told to remain indoors, the U.S. Department of Energy said.

The accident occurred at a facility known as PUREX, located in the middle of the sprawling Hanford site, which is half the size of Rhode Island, Bradbury said.

Hanford is located near Richland, about 200 miles southeast of Seattle.

The closed PUREX plant was part of the nation's nuclear weapons production complex.

Hanford for decades made plutonium for nuclear weapons and is now the largest depository of radioactive defense waste that must be cleaned.

It contains about 56 million gallons of radioactive waste, most of it in 177 underground tanks.

Bradbury said the collapse occurred at one of two rail tunnels under the PUREX site.

In the past, rail cars full of radioactive waste were driven into the tunnels and then buried there, he said.

Hanford has more than 9,000 employees.

The site was built during World War II and made the plutonium for most of the U.S. nuclear arsenal, including the bomb dropped on Nagasaki, Japan, at the end of the war.

# Montana authorities learning how to respond to nuclear theft

9/18/16  
ASSOCIATED PRESS

GREAT FALLS, Mont. — Montana law enforcement agencies are learning how to respond to an attack on a nuclear weapons convoy, a scenario that nuclear weapons officials say gives them nightmares.

To date, there have been no attacks on convoys, but the agencies say they are prepared.

Local authorities have been put on notice they could be the first to respond to any incident that occurs

off base at Malmstrom Air Force Base or away from guarded nuclear sites, and federal officials want to be sure they are ready.

About 15 local, state, tribal and federal agencies joined Malmstrom federal agencies recently for an exercise and a demonstration of how security forces airmen would respond to a simulated attack on a convoy. The exercise involved a simulated attack on the transfer of nuclear weapons to a missile launch site.

Stan Moody, Malmstrom's security plans and programs manager, said a presidential order requires an integrated force of federal and local agencies for any nuclear incident response plan to "handle our worst day."

Col. Jay Folds, Malmstrom's vice commander, said the partnerships are working well.

"We've got confidence in what we do," he said.

Col. Ron Allen, 341st Missile

Wing commander, told the participants that if there was a situation where the Air Force units were trying to stop an armed attacker, local agencies may be called on to control crowds and handle civilians.

Capt. Jeff Newton of the Great Falls Police Department said his agency has had a good working relationship with federal agencies for the last five years, the Great Falls Tribune reported.

Each agency has a role to play, on us."

and building the relationships ahead of time is critical, officials said.

Senior Airman Patrick Currie, a member of the 741st Missile Security Forces Squadron Convoy Response Force, said all agencies are learning how to respond and their responsibilities.

"It's important to all be on the same page," Currie said. "We rely on them just as much as they rely on us."

## ASSOCIATED PRESS

OMAHA, Neb. — The head of a Nebraska utility recommended shutting down the nation's smallest nuclear power plant by the end of the year, saying Thursday that it ~~doesn't~~ make economic sense to keep it open.

Tim Burke, the president and CEO of the Omaha Public Power District, told the utility's board that Fort Calhoun Nuclear Station isn't financially sustainable.

Shutting the plant would represent a major shift for the utility, which serves more than 310,000 customers in 13 counties in southeastern Nebraska. Utility officials previously maintained that Fort Calhoun would be a valuable part of its plans because of its ability to generate power without adding to carbon dioxide emissions.

The board is expected to vote on the recommendations at its June 16 meeting.

The district spends about \$650 million a year on generating power, which includes about \$250 million on Fort Calhoun. Burke said closing the nuclear plant will help keep the utility's rates low compared to the average power cost in the region.

The utility also has to make sure its mix of power plants can comply with environmental rules and restrictions on carbon dioxide emissions. The district typically gets about 34 percent

of its power from the Fort Calhoun plant, but utility officials said Thursday that other carbon-free options, such as wind power, now make better financial sense.

The economics of the utility business have changed significantly in recent years because of new environmental regulations and cheaper natural gas prices due to hydraulic fracturing. Fort Calhoun's small size and single reactor contributed to the recommendation to close it.

"It's just not viable. It's just not economically viable," board member John Green said.

Smaller nuclear plants, like Fort Calhoun, have the most difficult time competing on the price of power, especially if they have had serious safety problems, said Mark Cooper, a senior fellow for economic analysis with the Institute for Energy and the Environment at Vermont Law School.

"The older, smaller reactors are really uneconomic," Cooper said.

That description fits several reactors that closed in recent years, such as the Vermont Yankee in Vermont plant that was shut down in 2014 or the Kewaunee Power Station in Wisconsin that shut down in 2013.

New Orleans-based Entergy Corp. has announced plans to close two more of its smaller, older plants by the end of the decade — Fitzpatrick nuclear plant

near Syracuse, N.Y., and Pilgrim nuclear plant near Boston. Entergy also owns Vermont Yankee.

It's relatively rare for utilities to close a nuclear power plant unless there are major mechanical problems, but all nuclear plants face economic pressure because of the cheap natural gas and affordable power that can be purchased wholesale from other utilities.

"The industry is having trouble competing with costs," said David Lochbaum, director of the Nuclear Safety Project for the nonprofit group Union of Concerned Scientists.

Adding to Fort Calhoun's problems is a series of setbacks it has had in recent years. The utility spent more than \$140 million on repairs after flooding and a small fire damaged the plant in 2011.

Among the violations cited by regulators was the failure of a key electrical part during a 2010 test, a small electrical fire in June 2011, several security issues and deficiencies in flood planning that were discovered a year before the river spilled its banks.

It resumed operations in December 2013 after the utility hired Chicago-based Exelon, the largest U.S. operator of nuclear power plants, to run Fort Calhoun.

OPPD estimates that it will cost \$884 million to decommission Fort Calhoun over at least a decade.



# RAPID CITY JOURNAL



## Prairie grouse hunting

More birds than past years OUTDOORS, PAGE B1

## Man arrested in shooting

Spearfish man, 32, charged in Belle Fourche incident LOCAL NEWS, PAGE A3



**MOSTLY CLOUDY 63 • 51** FORECAST, C1

**THURSDAY, SEPTEMBER 22, 2016**

| rapidcityjournal.com

# Study raises uranium concerns

Environmentalists:

Angostura has elevated levels

### JOURNAL STAFF

Members of three activist groups say recent research shows that abandoned uranium mines are contributing to elevated uranium levels in Angostura Reservoir in the southern Black Hills.

The research was recently published in the Journal Environmental Earth Sciences by authors that included two South Dakota School of Mines & Technology scientists, Rohit Sharma and James Stone. The article is titled "Stream sediment geochemistry of the upper Cheyenne River watershed within the

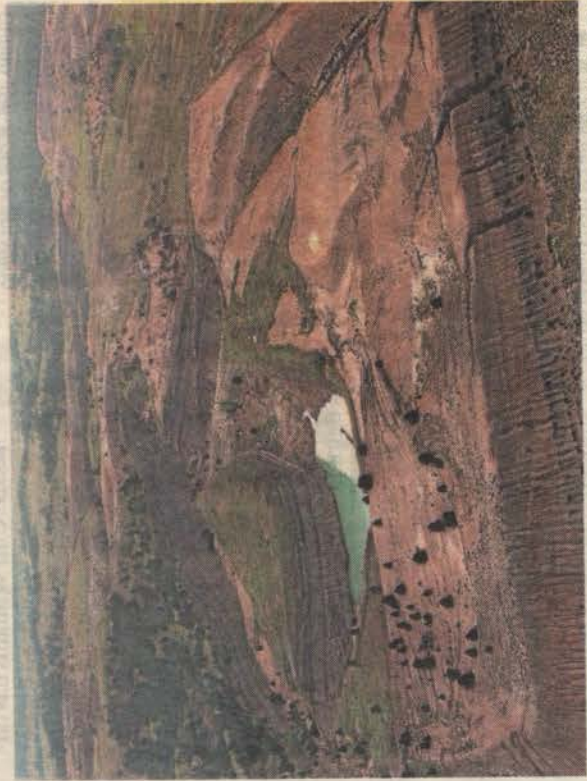
abandoned uranium mining region of the southern Black Hills." According to the Clean Water Alliance, Dakota Rural Action and It's All About the Water, the research shows that elevated uranium levels at Angostura are partly caused by human activity, including abandoned uranium mines and a former mill at Edgemont. Elevated uranium levels at Angostura Reservoir are comparable to the elevated uranium levels upstream in the Cheyenne River watershed at abandoned mines, the groups said.

"This impacts people throughout western South Dakota," Genia Parkhurst, president of the Black Hills Chapter of Dakota Rural Action, said in a news release. "The Cheyenne River runs along or through two reservations and

five counties. It impacts agriculture and tourism. We need to clean it up."

The groups cited U.S. Environmental Protection Agency reports that list 169 old uranium mines and prospects in the southern Black Hills, which was mined for uranium from 1951 to 1972. Few of the old mines have been cleaned up. Additionally, the groups said there was a 1962 dam break that released uranium mill wastes into the Cheyenne River, and some of the wastes reached Angostura, a popular recreation spot.

The groups are using the research to call upon state and federal regulators to clean up old mine sites. The EPA studied several abandoned mine sites north



JOURNAL FILE

Three activists groups say abandoned uranium mines, like this one near Edgemont, are contributing to elevated uranium levels in Angostura Reservoir.

Please see **URANIUM**, Page A2



# Uranium

From A1

of Edgemont last year and determined that although the sites contained pollutants, there had not been a release of the material that was sizable enough to necessitate a cleanup.

Lillas Jarding, of the Clean Water Alliance, said the recent research by the Mines scientists shows otherwise.

"These radioactive mines have been sitting open for as much as 65 years," Jarding said in the news release. "These test results make it clear there is a problem that threatens public health and demands immediate action."

Aside from the concerns about abandoned historical mines in the Edgemont area, a proposal to conduct a new kind of uranium mining in the same area is pending from Azarga Uranium Corp. Instead of digging tunnels and open pits as past mining operations did, Azarga wants to conduct in situ mining, which involves injecting a solution of water, oxygen and carbon dioxide to leach uranium from underground ore before pumping it to the surface.

Uranium is a naturally occurring radioactive element that was mined historically for use in nuclear weaponry and is now mined for nuclear power generation. Naturally occurring uranium in rock form is not typically hazardous, because the skin blocks uranium's alpha-particle radiation.

But if uranium particles are ingested in high concentrations via air or water, they can cause cancer.

9/2/16  
RAPID CITY JOURNAL

## Uranium miner agrees to fix sludge leaks

ASSOCIATED PRESS

CHEYENNE, Wyo. — A uranium mining company has agreed to corrective measures after two spills of radioactive sludge, the most recent on March 29 when some of the material from a Wyoming mine leaked from a truck onto a highway, the Nuclear Regulatory Commission said Wednesday.

The low-level radioactive sludge leaked onto U.S. 191 outside a radioactive waste disposal facility in Utah, the NRC said in a letter Tuesday to Brent Berg, the president of mine owner Cameco.

The company isn't aware of any danger to the environment or people, Cameco spokesman Kenneth Vaughn said Wednesday.

Besides failing to prevent the spill, Saskatchewan-based Cameco failed to accurately determine the amount of radioactive material in the sludge and adequately document the material in shipping papers, according to the NRC.

Cameco said it has agreed to halt shipping barium sulfate sludge without NRC approval, identify specifically what caused the two spills, report on all sludge shipments to the disposal facility in Blanding, Utah, over the past three years and develop a plan to correct the problem.

A similar leak happened last summer. The white, paste-like sludge is a normal by-product of in-situ uranium mining, a process that involves pumping water mixed with oxygen and baking soda into uranium-bearing sandstone deposits underground and pumping a solution containing uranium to the surface.

The solution is processed into yellowcake, which can be processed further into nuclear fuel.

Cameco has suspended sludge shipments from its mine while investigating how to prevent another leak, Vaughn said.

The company ships the material by truck for disposal every six months. Last year's leak happened at the bottom of the 15.5-foot-long shipment container and this year's happened at a lid at the top, Vaughn said.

"We are investigating all ways we can ensure this does not happen again," Vaughn said.

Ryan Johnson with the Utah Department of Environmental Quality said where along the truck's route through Wyoming, Colorado and Utah the leak began is unknown.

Testing with radiation monitors at places where the truck likely stopped or turned showed no sign of leakage less than a week after this year's spill, Vaughn said.

Workers washed the white, paste-like material that spilled onto U.S. 191 off the pavement and removed 5 yards to 6 yards of potentially contaminated soil, according to a report by Colorado-based Energy Fuels Resources, owner of the White Mesa Mill.

Wyoming is home to four of the nation's six operational in-situ uranium mines and is the top uranium-producing state. Smith Ranch-Highland, capable of producing up to 5.5 million pounds of uranium hexafluoride annually, is the biggest in-situ uranium mine by production volume in the U.S.

# Ripples from nuclear plant closings overwhelm towns

## ASSOCIATED PRESS

OAK HARBOR, Ohio — Living in the shadows of the Davis-Besse nuclear power plant's cooling tower, which soars above Lake Erie in Ohio like an oversized lighthouse, brings with it some give-and-take.

On the plus side, it generates tax money that once paid for a high school swimming pool and auditorium. Then there are the stockpiles of radiation pills and emergency drills for students in case of a disaster.

For the small, mostly rural towns that are home to 61 U.S. nuclear plants that produce one-fifth of the nation's electricity, each one has been like the golden goose supplying high-paying jobs and money for roads, police and libraries.

But those same places and their residents are bracing for what may come next due to the soaring costs of running aging reactors that have speeded up the closings of a handful of sites and are threatening at least a dozen more. That's because once the power stops flowing, so does the money.

Towns that already have seen nuclear plants shuttered are now dealing with higher property taxes, cuts

in services and less school funding — a new reality that may linger for decades.

In Wisconsin, the tiny town of Carlton saw the source of roughly 70 percent of its yearly budget disappear when the Kewaunee nuclear power plant closed four years ago. That resulted in the first town tax in its history.

"Financially, we benefited, but now we're going to pay the price for the next 40 years," said David Hardtke, the town chairman.

When operations ceased at the Crystal River Nuclear Plant along Florida's Gulf Coast, "it was like something going through and wiping out a third of your county," said Citrus County Administrator Randy Oliver.

To make up the difference, property tax rates went up by 31 percent and 100 county workers were let go — so many that Oliver worries there won't be enough to evacuate residents and clear roads if a major tropical storm hits.

While the nation's fleet of nuclear power plants wasn't designed to last forever, closures are happening earlier than expected because repair costs are astronomical and it's harder to compete with cheaper natural gas-fired plants and renewable energy sources.

The former head of the nuclear industry's trade group said last year that economic pressures have put 15 to 20 plants at risk of a premature shutdown.

FirstEnergy Corp. will decide by next year whether to close or sell its plant in Pennsylvania and two in Ohio, including Davis-Besse, unless the states change regulations to make them more competitive.

The uncertainty around Davis-Besse and a plan to lower its value caused the local school board to shelve plans to build a new elemen-

tary building for the district, which stands to lose \$8 million a year without the plant.

New Orleans-based Entergy Corp., owner of the Palisades nuclear plant in Michigan, announced plans late last year to close in 2018 even though it has a license to keep operating another 14 years.

How much the losses will add up to isn't clear yet, said Dennis Palgen, a township supervisor where the plant has operated since 1971.

"We're just in a state of limbo right now," he said, adding that plans to buy a new fire truck are on hold.

The plant and its 600 workers have been good neighbors, he said, buying backpacks for school children and emergency generators for the township. "The list goes on and on," Palgen said.

In some cases, utilities are paying communities and schools during the first few years to help ease the sudden loss of their largest employer and taxpayer.

But what makes recovering tough is that almost all nuclear plants are in out-of-the-way places that have become heavily reliant on them. And they employ

specialized workers who are quick to leave for still-operating locations.

To make matters worse, many closed sites can't be redeveloped for new uses because they're still storing radioactive waste.

Some hope the Trump administration's new budget proposal to revive the mothballed disposal site at Nevada's Yucca Mountain will eventually allow for new development at the former plants.

"We have become a defunct nuclear waste dump. It just sits there, and sits there forever," said Al Hill, the mayor in Zion, Ill., where spent nuclear fuel remains stored on prime property along Lake Michigan even though the plant shut down 20 years ago.

On top of that, the closing took away half of the city's tax base and pushed property taxes to the highest in the state, making it difficult to lure new businesses, Hill said.

Left behind are empty storefronts and little foot traffic, said Chris Daisy, who runs a downtown bicycle shop.

"It's had a devastating effect on this town," he said.

*The recycled water would be "returned to a quality as close to pre-mining conditions as can practically be achieved," according to Powertech.*

*Hollenbeck said uranium is only released in an oxygen-rich environment, such as during in-situ mining. He said uranium that isn't extracted would remain trapped below ground by surrounding bedrock, which is oxygen deficient.*

*Other toxic metals, like radium, and other by-products would be removed and shipped offsite for proper disposal, according to Powertech. The company also said leaching chemicals wouldn't be used in the mining process; only water, oxygen and carbon dioxide.*

*As for the economy, Hollenbeck said there would only be a positive impact.*

*"Projects that produce \$40 million worth of economic development in western South Dakota don't come along every day," he said. "Most of that would be funneled through Rapid City."*

*He said Powertech has already invested heavily in Rapid City on contractors and equipment, and that the mine's piping would come from the city's WL Plastics when it opens.*

*Hollenbeck pointed to regional in-situ mining operation in the light of success.*

*"This isn't a new technology," he said. "This isn't a new idea. This has been going on for an extended amount of time."*

**I know this is a lot of information. Thank you for taking the time. In closing, here are some violations in a neighboring ISL mine:**

**License Violations at Crow Butte ISL uranium mine (Nebraska)**

*59 violations*

- 20*
- Aug 6, 2013: Well fails 15-year mechanical integrity test*
  - Jun. 5, 2013: Radiation dose in unrestricted area exceeds 0.02 mSv/h standard
  - Mar. 14, 2013: Evaporation Pond 1 liner leak
  - Jan. 18, 2013: Well fails mechanical integrity test
  - Oct. 24, 2012: Well fails 20-year mechanical integrity test
  - Aug. 20, 2012: Well fails 5-year mechanical integrity test
  - June 4, 2012: Well fails 5-year mechanical integrity test
  - May 25, 2012: Monitor well fails 15-year mechanical integrity test
  - Oct. 7, 2011: Monitor well excursion
  - Aug. 9, 2011: Exceedance of Well Head Manifold Pressure Limitations
  - July 18, 2011: two wells fail 5-year mechanical integrity test
  - June 1, 2011: Evaporation Pond 1 liner leak
  - May 27, 2011: two Monitor well excursions
  - May 24, 2011: Monitor well excursion
  - Mar. 16, 2011: Monitor well excursion
  - Jan. 13, 2011: Monitor well excursion
  - July 8, 2010: Monitor well excursion
  - July 6, 2010: Well fails 5-year mechanical integrity test
  - June 22, 2010: Excursions at two monitor wells "due to increased groundwater levels"
  - June 22, 2010: Monitor well excursion
  - June 16, 2010: Excursions at three monitor wells "due to increased groundwater levels"

- June 11, 2010: Evaporation Pond 3 liner leak detected
- May 10, 2010: Well fails 5-year mechanical integrity test
- Apr. 13, 2010: Excursion at monitor well due to "natural conditions"
- Dec. 31, 2009: Evaporation Pond 4 Liner Leak
- Nov. 19, 2009: Well fails 15-year mechanical integrity test
- Oct. 15, 2009: Mechanical integrity test missed for two wells
- June 18, 2009: Evaporation Pond 4 liner leak detected
- June 11, 2009: Monitor well excursion
- June 5, 2009: Evaporation Pond 1 liner leak detected
- April 27, 2009: Monitor well placed on excursion status
- April 17, 2009: Production well fails 5-year mechanical integrity test
- June 4, 2008: Exceedance of Well Head Manifold Pressure Limitations
- May 31, 2008: Monitor well placed on excursion status
- May 23, 2008: \$50,000 penalty imposed for violations
- May 19, 2008: Monitor well placed on excursion status
- April 29, 2008: Five-year mechanical integrity test missed for 42 wells
- September 26, 2006: Monitor well placed on excursion status
- May 5, 2006: leak detected at Pond 4
- January 19, 2006: Monitor well placed on excursion status
- October 27, 2005: Injection well leak detected
- August 4, 2005: Monitor well placed on excursion status
- June 28, 2005: Monitor well placed on excursion status
- June 17, 2005: Monitor well placed on excursion status
- May 2, 2005: Monitor well placed on excursion status
- May 14, 2004: leak detected at Pond 1
- December 23, 2003: Monitor well placed on excursion status
- December 26, 2002: Monitor well placed on excursion status
- September 10, 2002: Monitor well placed on excursion status
- April 4, 2002: Monitor well placed on excursion status
- December 4, 2001: Monitor well placed on excursion status
- March 2, 2001: Monitor well placed on excursion status
- September 10, 2000: Monitor well placed on excursion status
- May 26, 2000: Monitor well placed on excursion status
- April 27, 2000: Monitor well placed on excursion status
- March 6, 2000: Monitor well placed on excursion status
- July 2, 1999: Monitor well placed on excursion status
- August 7, 1998: Spill of 10,260 gallons of injection fluid
- March 21, 1998: Monitor well placed on excursion status
- August 12, 1997: Discovery of Pinhole Leaks in Upper Liner of Process Water Evaporation Pond

59 violations

Source: <http://www.wise-uranium.org/umopusa.html#CROWB>

**Remember, if the permits are granted, due to state legislation removed in 2011, the DENR will no longer have the authority to do anything regarding ISL mining - no bonds, oversight, or penalties for license violations.**

Be well,




**Injection Wells**  
The Hidden Risks of Pumping Waste Underground

## Poisoning the Well: How the Feds Let Industry Pollute the Nation's Underground Water Supply



*A view of the dry bed of the E.V. Spence Reservoir in Robert Lee, Texas, in October 2011. Records show that environmental officials have granted more than 50 aquifer exemptions for waste disposal and uranium mining in the drought-stricken state. (Calle Richmond/Reuters)*

by **Abraham Lustgarten**  
ProPublica, Dec. 11, 2012, 1:01 a.m.

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Federal officials have given energy and mining companies permission to pollute aquifers in more than 1,500 places across the country, releasing toxic material into underground reservoirs that help supply more than half of the nation's drinking water.

In many cases, the Environmental Protection Agency has granted these so-called aquifer exemptions in Western states now stricken by drought and increasingly desperate for water.

EPA records show that portions of at least 100 drinking water aquifers have been written off because exemptions have allowed them to be used as dumping grounds.

"You are sacrificing these aquifers," said Mark Williams, a hydrologist at the University of Colorado and a member of a National Science Foundation team studying the effects of energy development on the environment. "By definition, you are putting pollution into them. ... If you are looking 50 to 100 years down the road, this is not a good way to go."

As part of an investigation into the threat to water supplies from underground injection of waste, ProPublica set out to identify which aquifers have been polluted.

✓ We found the EPA has not even kept track of exactly how many exemptions it has issued, where they are, or whom they might affect.

✓ What records the agency was able to supply under the Freedom of Information Act show that exemptions are often issued in apparent conflict with the EPA's mandate to protect waters that may be used for drinking.

✓ Though hundreds of exemptions are for lower-quality water of questionable use, many allow grantees to contaminate water so pure it would barely need filtration, or that is treatable using modern technology.

The EPA is only supposed to issue exemptions if aquifers are too remote, too dirty, or too deep to supply affordable drinking water. Applicants must persuade the government that the water is not being used as drinking water and that it never will be.

Sometimes, however, the agency has issued permits for portions of reservoirs that are in use, assuming contaminants will stay within the finite area exempted.

In Wyoming, people are drawing on the same water source for drinking, irrigation and livestock that, about a mile away, is being fouled with federal permission. In Texas, EPA officials are evaluating an exemption for a uranium mine — already approved by the state — even though numerous homes draw water from just outside the underground boundaries outlined in the mining company's application.

The EPA declined repeated requests for interviews for this story, but sent a written response saying exemptions have been issued responsibly, under a process that ensures contaminants remain confined.

"Aquifer Exemptions identify those waters that do not currently serve as a source of drinking water and will not serve as a source of drinking water in the future and, thus, do not need to be protected," an EPA spokesperson wrote in an email statement. "The process of exempting aquifers includes steps that minimize the possibility that future drinking water supplies are endangered."

Yet EPA officials say the agency has quietly assembled an unofficial internal task force to re-evaluate its aquifer exemption policies. The agency's spokesperson declined to give details on the group's work, but insiders say it is attempting to inventory exemptions and to determine whether aquifers should go unprotected in the future, with the value of water rising along with demand for exemptions closer to areas where people live.

Advances in geological sciences have deepened regulators' concerns about exemptions, challenging the notion that waste injected underground will stay inside the tightly drawn boundaries of the exempted areas.

"What they don't often consider is whether that waste will flow outside that zone of influence over time, and there is no doubt that it will," said Mike Wireman, a senior hydrologist with the EPA who has worked with the World Bank on global water supply issues. "Over decades, that water could discharge into a stream. It could seep into a well. If you are a rancher out there and you want to put a well in, it's difficult to find out if there is an exempted aquifer underneath your property."

Aquifer exemptions are a little-known aspect of the government's Underground Injection Control program, which is designed to protect water supplies from the underground disposal of waste.

The Safe Drinking Water Act explicitly prohibits injection into a source of drinking water, and requires precautions to ensure that oil and gas and disposal wells that run through them are carefully engineered not to leak.

Areas covered by exemptions are stripped of some of these protections, however. Waste can be discarded into them freely, and wells that run through them need not meet all standards used to prevent pollution. In many cases, no water monitoring or long-term study is required.

The recent surge in domestic drilling and rush for uranium has brought a spike in exemption applications, as well as political pressure not to block or delay them, EPA officials told ProPublica.

"The energy policy in the U.S is keeping this from happening because right now nobody — *nobody* — wants to interfere with the development of oil and gas or uranium," said a senior EPA employee who declined to be identified because of the sensitivity of the subject. "The political pressure is huge not to slow that down."

Many of the exemption permits, records show, have been issued in regions where water is needed most and where intense political debates are underway to decide how to fairly allocate limited water resources.

In drought-stricken Texas, communities are looking to treat brackish aquifers beneath the surface because they have run out of better options and several cities, including San Antonio and El Paso, are considering whether to build new desalinization plants for as much as \$100 million apiece.

And yet environmental officials have granted more than 50 exemptions for waste disposal and uranium mining in Texas, records show. The most recent was issued in September.

The Texas Railroad Commission, the state agency that regulates oil and gas drilling, said it issued additional exemptions, covering large swaths of aquifers underlying the state, when it brought its rules into compliance with the federal Safe Drinking Water Act in 1982. This was in large part because officials viewed them as oil reservoirs and thought they were already contaminated. But it is unclear where, and how extensive, those exemptions are.

EPA "Region VI received a road map — yes, the kind they used to give free at gas stations — with the aquifers delineated, with no detail on depth," said Mario Salazar, a former EPA project engineer who worked with the underground injection program for 25 years and oversaw the approval of Texas' program, in an email.

In California, where nearly half of the nation's fruits and vegetables are grown with water from as far away as the Colorado River, the perennially cash-strapped state's governor is proposing to spend \$14 billion to divert more of the Sacramento River from the north to the south. Near Bakersfield, a private project is underway to build a water bank, essentially an artificial aquifer.

Still, more than 100 exemptions for natural aquifers have been granted in California, some to dispose of drilling and fracking waste in the state's driest parts. Though most date back to the 1980s, the most recent exemption was approved in 2009 in Kern County, an agricultural heartland that is the epicenter of some of the state's most volatile rivalries over water.

The balance is even more delicate in Colorado. Growth in the Denver metro area has been stubbornly restrained not by available land, but by the limits of aquifers that have been drawn down by as much as 300 vertical feet. Much of Eastern Colorado's water has long been piped underneath the Continental Divide and, until recently, the region was mulling a \$3 billion plan to build a pipeline to bring water hundreds of miles from western Wyoming.

Along with Wyoming, Montana and Utah, however, Colorado has sacrificed more of its aquifer resources than any other part of the country.

More than 1,100 aquifer exemptions have been approved by the EPA's Rocky Mountain regional office, according to a list the agency provided to ProPublica. Many of them are relatively shallow and some are in the same geologic formations containing aquifers relied on by Denver metro residents, though the boundaries are several hundred miles away. More than a dozen exemptions are in waters that might not even need to be treated in order to drink.

"It's short-sighted," said Tom Curtis, the deputy executive director of the American Water Works Association, an international non-governmental drinking water organization. "It's something that future generations may question."

To the resource industries, aquifer exemptions are essential. Oil and gas drilling waste has to go somewhere and in certain parts of the country, there are few alternatives to injecting it into porous rock that also contains water, drilling companies say. In many places, the same layers of rock that contain oil or gas also contain water, and that water is likely to already contain pollutants such as benzene from the natural hydrocarbons within it.

Similarly, the uranium mining industry works by prompting chemical reactions that separate out minerals within the aquifers themselves; the mining can't happen without the pollution.

When regulations governing waste injection were written in the 1980s to protect underground water reserves, industry sought the exemptions as a compromise. The intent was to acknowledge that many deep waters might not be worth protecting even though they technically met the definition of drinking water.

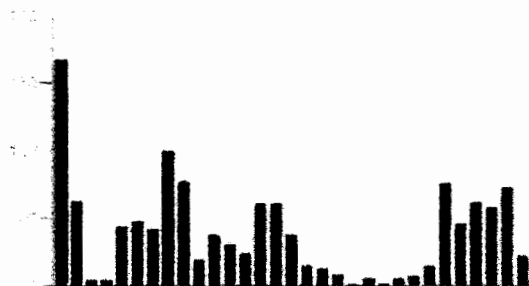
"The concept of aquifer exemptions was something that we 'invented' to address comments when the regulations were first proposed," Salazar, the former EPA official, said. "There was never the intention to exempt aquifers just because they could contain, or would obviate, the development of a resource. Water was the resource that would be protected above all."

Since then, however, approving exemptions has become the norm. In an email, the EPA said that some exemption applications had been denied, but provided no details about how many or which ones. State regulators in Texas and Wyoming could not recall a single application that had been turned down and industry representatives said they had come to expect swift approval.

"Historically they have been fairly routinely granting aquifer exemptions," said Richard Clement, the chief executive of Powertech Uranium, which is currently seeking permits for new mining in South Dakota. "There has never been a case that I'm aware of that it has not been done."

#### Aquifer Exemptions Granted

The aquifer exemptions approved by the EPA each year are according to a partial list of approvals provided to ProPublica by the agency in response to a FOIA request.



Source: Environmental Protection Agency

In 1981, shortly after the first exemption rules were set, the EPA lowered the bar for exemptions as part of settling a lawsuit filed by the American Petroleum Institute. Since then, the agency has issued permits for water not "reasonably expected" to be used for drinking. The original language allowed exemptions only for water that could never be used.

Oil companies have been the biggest users of aquifer exemptions by far. Most are held by smaller, independent companies, but Chevron, America's second-largest oil company, holds at least 28 aquifer exemptions. Exxon holds at least 14. In Wyoming, the Canadian oil giant EnCana, currently embroiled in an investigation of water contamination related to fracking in the town of Pavillion, has been allowed to inject into aquifers at 38 sites.

Once an exemption is issued, it's all but permanent; none have ever been reversed. Permits dictate how much material companies can inject and where, but impose little or no obligations to protect the surrounding water if it has been exempted. The EPA and state environmental agencies require



applicants to assess the quality of reservoirs and to do some basic modeling to show where contaminants should end up. But in most cases there is no obligation, for example, to track what has been put into the earth or — except in the case of the uranium mines — to monitor where it does end up.

The biggest problem now, experts say, is that the EPA's criteria for evaluating applications are outdated. The rules — last revised nearly three decades ago — haven't adapted to improving water treatment technology and don't reflect the changing value and scarcity of fresh water.

Aquifers once considered unusable can now be processed for drinking water at a reasonable price.

The law defines an underground source of drinking water as any water that has less than 10,000 parts per million of what are called Total Dissolved Solids, a standard measure of water quality, but historically, water with more than 3,000 TDS has been dismissed as too poor for drinking. It also has been taken for granted that, in most places, the deeper the aquifer — say, below about 2,000 feet — the higher the TDS and the less salvageable the water.

Yet today, Texas towns are treating water that has as high as 4,000 TDS and a Wyoming town is pumping from 8,500 feet deep, thousands of feet below aquifers that the EPA has determined were too far underground to ever produce useable water.

"You can just about treat anything nowadays," said Jorge Arroyo, an engineer and director of innovative water technologies at the Texas Water Development Board, which advises the state on groundwater management. Arroyo said he was unaware that so many Texas aquifers had been exempted, and that it would be feasible to treat many of them. Regarding the exemptions, he said, "With the advent of technology to treat some of this water, I think this is a prudent time to reconsider whether we allow them."

Now, as commercial crops wilt in the dry heat and winds rip the dust loose from American prairies, questions are mounting about whether the EPA should continue to grant exemptions going forward.

"Unless someone can build a clear case that this water cannot be used — we need to keep our groundwater clean," said Al Armendariz, a former regional administrator for the EPA's South Central region who now works with the Sierra Club. "We shouldn't be exempting aquifers unless we have no other choice. We should only exempt the aquifer if we are sure we are never going to use the water again."

Still, skeptics say fewer exemptions are unlikely, despite rising concern about them within the EPA, as the demand for space underground continues to grow. Long-term plans to slow climate change and clean up coal by sequestering carbon dioxide underground, for example, could further endanger aquifers, causing chemical reactions that lead to water contamination.

"Everyone wants clean water and everyone wants clean energy," said Richard Healy, a geologist with the U.S. Geological Survey whose work is focused on the nexus of energy production and water. "Energy development can occur very quickly because there is a lot of money involved. Environmental studies take longer."

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May 22, 2014

RE: Comments to EPA on permits for in-situ uranium mining

I attended two days of hearings in Rapid City on May 8 and 9<sup>th</sup>. As I listened to various people speak, there were various grave concerns including:

1. The *science* of actual and potential harm to the water, land and sky. Our scientists have proved that in-situ uranium mining is dangerous and changes the water and environment. The proximity of the Igloo waste site depot has potential devastating consequences. We need to let sleeping dogs lay. <sup>lie?</sup> We already have too many holes that were never closed by other companies. **LEAVE OUR LAND ALONE!**
2. The *economics* of the project (a few temporary jobs, a huge profit for a few people versus probable environmental devastation and clean up costs). Western South Dakota has a long history of outside companies coming in and making profits and gone before the damage is evident. None of them put up the huge sums of money for clean up insurance.  
**LEAVE OUR LANDS ALONE!**
3. The *morality* of giving permits to companies without Native American, farmers and ranchers, and other citizens living in the area, without their consent or benefit. The white Europeans have done their best to abuse and steal the lands in the 1868 treaty. But there is now a coalition of people who will try to legally fight these permits because there are 10 other companies standing in line, licking their chops to do mining projects.  
**WE DO NOT WANT THEM!**
4. The *political* reality that the EPA may become weakened and gutted by leadership who is supporting businesses versus protection of clear air, water and lands. A report today indicates that President Trump's March proposal would have the EPA absorb a 31% funding cut; part of that would be less monitoring and efforts related to climate change. This is going to make it even harder for environmentalists within the agency to stop unnecessary projects. **STAY STRONG.** You know how to delay unwanted projects.
5. The *shadiness and uncertainties*. Does Arzaga really want our uranium? Or is it our water? Or our holes for toxic dump sites? Who controls what they do? Who pays for their mistakes? Why are we even considering doing such an unneeded project?

**HELP STOP THIS!!** Thank you. [REDACTED]

[REDACTED]

*It looks to me that EPA is in for a fight. Get the environmentalists on your side to put pressure on Congress. Don't leave us.*

## Week ahead: EPA braces for Tr budget

BY DEVIN HENRY - 05/22/17 06:00 AM EDT

9 SHARES

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© Getty Images

The Trump White House is due to release its 2018 budget proposal on Tuesday, a document expected to contain deep cuts for the Environmental Protection Agency (EPA) and other programs.

The EPA saw one of the largest cuts in the White House's "skinny budget" in March, a precursor to the formal proposal that Office of Management and Budget Director Mick Mulvaney says is coming out on Tuesday.

While the White House could have changed its budget targets between then and now, the March proposal hints at the type of cuts the EPA and other agencies should expect to see on Tuesday.

Under the March proposal, the EPA was due to absorb a 31 percent funding cut. If enacted, that plan would discontinue funding for programming, research and diplomatic efforts related to climate change, end more than 50 EPA programs and cut 3,200 of the agency's 15,000 jobs.

Trump's budget proposal is just that: a proposal. Congress will have a say over federal spending, and while deep EPA spending cuts have divided some Republicans, the party has looked to cut the EPA's budget for years, and is likely to try doing so again this year.

Dear EPA

I re-opened my envelope today to include 3 articles in our local paper. you can see why we don't want any more mining efforts. We must move on to energy sources like wind, ~~water~~<sup>solar</sup> geo-thermal. NO more water, cyanide, spills, etc. Please find a way to not allow Azarga permits. Thank you

**UGLY:** Just as mining operations continue to proceed and may perhaps expand in the Black Hills, the ugly truth surrounding the former Gilt Edge Mine near Lead should serve as a cautionary tale.

The Brohm mining company that ran the mine walked away from it in 1999, leaving interminable mess behind. The state was able to take possession of a \$6 million cleanup bond fund, but it isn't nearly enough to reclaim the site and return it to nature. Before the state can even take possession of the site, the federal Environmental Protection Agency expects to spend another \$20 million on cleaning it up, beyond the millions already spent.

South Dakota officials who oversee mining should keep Gilt Edge in their thoughts when determining the level of cleanup bonds mining companies are forced to turn over. For in the end, whether it is state or federal money being spent to clean things up, it's mostly the taxpayers' money in the end that is responsible for the cleanup.

Leaks found on Dakota



# Leaks found on Dakota Access pipeline system

BLAKE NICHOLSON  
Associated Press

BISMARCK, N.D. — The Dakota Access pipeline and a feeder line leaked more than 100 gallons of oil in North Dakota in separate incidents in March as crews prepared the disputed \$3.8 billion pipeline for operation.

Two barrels, or 84 gallons, spilled due to a leaky flange at a pipeline terminal in Watford City on March 3, according to the state Health Department. A flange is the section connecting two sections of pipeline. Oil flow was immediately cut off and the spill was contained on site. Contaminated snow and soil were removed.

No people, wildlife or waterways were affected, according to the department's environmental health database.

The leak was on a line operated by a connecting shipper on the Dakota Access pipeline, said Vicki Granado, spokeswoman for Texas-based Dakota Access developer Energy Transfer Partners.

"They are responsible for the operations, maintenance, etc.," she said.

A leak of half a barrel, or 20 gallons, occurred March 5 in rural Mercer County, data from the federal Pipeline and Hazardous Materials Safety Administration show. Contaminated soil was

removed, and no waterways were affected. There were no reported injuries to people or wildlife. The administration is part of the Department of Transportation.

The online report says an above-ground valve failed due to a manufacturing defect, causing the leak. Upstream and downstream valves were closed to isolate the leak. Later, all other such valves in the Dakota Access system were inspected and found to be OK.

The federal database shows no leaks along the pipeline in Iowa or Illinois.

ETP maintains the pipeline is safe, but several tribes in the Dakotas — including the Cheyenne

River, Standing Rock, Yankton and Oglala Sioux — fear environmental harm and are fighting in federal court, hoping to convince a judge to shut down the line.

North Dakota Environmental Health Chief Dave Glatt said the Health Department lists such incidents in its online database but typically doesn't otherwise notify the public of oil spills smaller than 150 barrels unless the oil contaminates water.

The pipeline leaked 84 gallons of oil in South Dakota on April 4. That spill, at a rural pump station, also was quickly cleaned up and didn't threaten any waterways.



## Wharf sells \$136.7M in metals from mine

SETH TUPPER AND BOB MERCER  
Journal staff

PIERRE — Coeur Mining sold \$136.7 million worth of precious metals in 2016 from its Wharf Resources mine near Terry Peak in the Black Hills, according to recent reports filed by the company.

But to do so, the company used about 150 million gallons of water and about a million pounds of cyanide along the way.

The Wharf mine is one of five mines that Coeur, which is based in Chicago, operates in the Americas. The other mines are in Nevada, Alaska, Mexico and Bolivia. The company reported total revenue of \$665.8 million last year.

At the Wharf mine in 2016, gold production was 109,175 ounces and silver production was 105,144 ounces. Both numbers were increases compared with 2015, when the Wharf mine yielded 89,496 ounces of gold and 70,276 ounces of silver.

Matt Zietlow, environmental manager for Wharf Resources, spoke about the production numbers Thursday during a public meeting of the South Dakota Board of Minerals and Environment in Pierre.

"It was a strong year for us



A mining truck hauls ore up a steep road at the Wharf Resources mine outside Lead, near Terry Peak, last week.

overall," Zietlow said.

The company paid severance taxes of \$7.3 million to the state, he said.

There are other gold-mining permits and exploratory permits in the Black Hills, but the Wharf mine is South Dakota's only operating large-scale gold mine.

The report of \$136.7 million in metal sales from the Wharf mine is from year-end results reported by Coeur Mining to investors. Additional company reports say the Wharf mine employs 214 people and covers eight square

miles. The mine is several miles west of Lead, just north of Terry Peak and visible from the top of the ski area near the summit.

In a separate annual report filed with the state of South Dakota, Wharf reported that its 2016 mining activities included the withdrawal of 75.63 million gallons of groundwater and 77.47 million gallons of surface water; the mining of 4.75 million tons of ore and the processing of 4.27 million tons of ore; the mining of

## Wharf Resources

Wharf Resources near Terry Peak mined more than 100,000 ounces of gold and 100,000 ounces of silver in 2016.



Please see WHARF, Page A4

maps4news.com/CHERE, Lee Enterprises graphic





# Black Hills gold miners still making millions



HANNAH HUNSINGER, JOURNAL STAFF

In 2016, Wharf Resources used 1.2 million pounds of cyanide and about 150 million gallons of water in its gold and silver mining operations.

## Wharf

From A1

11.33 million tons of overburden or waste rock; and the use of 1.2 million pounds of cyanide as part of the mine's heap-leach method of extracting precious metals from ore.

Reclamation, or the restoring of mined land, was

minimal in 2016.

"We didn't have really any reclamation last year because we were mining in areas that were, for the most part, already disturbed," Zietlow said.

In Coeur's reports to investors, the company is projecting lower production from the Wharf mine this year because of the anticipated completion of a high-grade deposit.

We  
again  
lose.



HANNAH HUNSINGER PHOTOS, JOURNAL STAFF

Mining trucks haul ore up a steep road Tuesday afternoon at the Wharf Resources mine outside Lead. Wharf Resources mined 4.7 million tons of ore in 2016 and generated about \$137 million in precious metals sales.

5/8/17

submitted statement

Hello...my name is [REDACTED] and I live in Rapid City.

Thank you for these hearings. I am not a scientist, but I am a mom and a grandmother. I read quite a bit, except for twitters, and it concerns me that our current President - and - Head of the EPA, both seem more interested in supporting fossil fuel companies, rather than getting serious about climate change and protection of the environment. It makes it even harder for people within the agency to do the right thing. We can no longer write a carte blanche approval to greedy, poison polluters who have done the paper work right. *We know better now, what is your role now?*

I have been told your agency has not denied any of these permits....even though we ALL know of their toxic harm and ruin to our environment. So, I guess what I am asking you to do is to DELAY any permits until you get all of the facts. Many other people here will be talking about the scientific research that still needs to be done, *as well as tribal consultation.*

These permits do not benefit the United States. We don't need any uranium. The US has a 200 year supply. For us, it is all about protecting water. For Azarga, a foreign based conglomerate, it's all about greed. These ~~four~~ <sup>new</sup> disposal wells will make them a fortune and leave us, once again, with a possible irretrievable mess.

South Dakotans do not want to be the dumping ground for toxic waste. No amount of assurances by anyone can guarantee the safety of our precious water. I am incredulous that the EPA is also proposing to exempt the portion of the Inyan Kara Aquifer from the "Safe Drinking Water Act" which is necessary for mining

to occur there. WHY? Why would you want to make our water unsafe to make a few guys rich?

This week, you will hear testimony that our western South Dakota porous aquifers and caves are intertwined and leak into each other. In-situ mining potentially contaminates a great deal of our drinking water, as well as our top soil lands where the animals and birds get their food and water. I urge you to require the necessary research before giving any more permits. Check out the cancer rates in Edgemont and Crawford, Nebraska. Require the water testing that several organizations want to do. And remember, we are volunteers and water testing is expensive. EPA should help us with the funds.

We have been in this fight for a long time. In closing I want to submit to the record, a 2013 resolution by the City Council of Rapid City expressing GRAVE CONCERN.

Thank you again for listening. The United States does not need this and the only way we can keep our water safer, is simply to NOT ALLOW the permits.

*What is the role of the EPA-*



RESOLUTION NO. 2013-083

A RESOLUTION EXPRESSING GRAVE CONCERN ABOUT THE IN SITU MINING OF URANIUM BY  
POWERTECH IN CUSTER AND FALL RIVER COUNTIES.

WHEREAS, Powertech Uranium Corp. has submitted applications to the South Dakota Water Management Board for permits to use water from the Madison and Inyan Kara Aquifers to conduct in situ mining of uranium in Custer and Fall River Counties in the Black Hills of South Dakota; and

WHEREAS, In situ mining, or in situ recovery involves pumping solutions incorporating water from the aquifers into an ore body through wells which will then circulate through the porous rock and recovering the minerals from the ground by dissolving them and pumping the solution containing the ore to the surface where the minerals can be recovered.

WHEREAS, hearings on Powertech's water permit applications will be held by the South Dakota Water Management Board in Rapid City at the beginning of October of 2013; and

WHEREAS, the City of Rapid City obtains a majority of its drinking water from the Madison Aquifer; and

WHEREAS, the safety of the water in the Madison Aquifer is of utmost importance to the City of Rapid

City; and WHEREAS, due to the unanswered questions regarding the safety of the community's water supply, the Common Council of the City of Rapid City believes that the proposed in situ mining of uranium in the Black Hills poses an unacceptable risk to the primary source of Rapid City's drinking water.

NOW THEREFORE, BE IT RESOLVED, by the City of Rapid City that due to the potential risk to the Madison Aquifer the City expresses grave concern about the proposed in situ mining of uranium in the Black Hills.

Dated this 19th day of August, 2013.

CITY OF RAPID CITY

ATTEST:

s/ [REDACTED]

Finance Officer

[REDACTED]

# In-situ mining will foul the waters

I have worked for more than 40 years in the environmental cleanup field for industrial companies and consulting firms on many projects globally where accidental discharges — leaks and spills, etc. — have occurred and resulted in the contamination of groundwater systems.



**RICHARD BELL**

During my work on these various clean-up projects, pollution control agencies have typically insisted that not enough was known about how and where the ill-fated contamination was moving in the subsurface. Well after well needed to be installed in an effort to try to prove the improvability regarding subsurface fate and transport of contaminants. And it is one thing to clean up an accidental spill or other legacy environmental problems when laws governing the handling of hazardous materials were not as stringent as they are today, but it is quite another to allow a company to inject these materials into the subsurface and thereby purposely create a huge contamination problem.

The Environmental Protection Agency recently issued draft permits to Powertech/Azarga for a proposed in-situ leach (ISL) uranium mine in Custer and Fall River counties. If approved, these permits would allow the company to operate for 10 years.

ISL mining occurs in the sub-

surface, within groundwater aquifers. In this case, it would occur in the Inyan Kara aquifer and would include the injection of wastewater back into the Minnelusa aquifer. But people are using the water in these aquifers for drinking water and agricultural purposes, etc. So this is a terrible idea.

ISL mining involves the drilling of thousands of wells into the ore deposit where uranium occurs naturally in a solid state. Leaching solution is then pumped into the aquifer where it makes contact with the ore and artificially dissolves the uranium, along with many other heavy metals.

This solution is then theoretically captured and pumped to the surface for further processing. However, after naturally-occurring uranium and other heavy metals are mobilized in this fashion, it is absolutely impossible to guarantee 100 percent capture of this solution, especially given the heterogeneous conditions (different materials/layers, etc.) that exist in this area.

The interconnections make it impossible to predict with certainty how liquids are truly flowing. And this uncertainty occurs not only when the mining operation is active, but it is exacerbated at the end of operations when the mining ceases and the pumps are turned off.

The remainder of these heavy metals, including uranium, that were loosened during the ISL will then continue to flow within the aquifer. And to make matters worse, no such ISL operation has

ever been successfully cleaned up.

It is shocking that the EPA is willing to consider issuing such permits. If the shoe was on the other foot and the EPA was responsible for the cleanup rather than in the position of issuing these permits, they would be much more discerning and demanding.

If Powertech/Azarga is allowed to proceed, it is a near certainty that this facility will become a Superfund site and therefore the company should be required to place millions of dollars into a reserve account to pay for an inevitable cleanup.

So this is a terrible idea. Why would we risk our precious groundwater resource for a mining operation that is guaranteed to contaminate these aquifers in exchange for a handful of jobs and large profits made by a foreign corporation?

We should keep our water pure to support our local economy and the sustainable growth that is happening in the Black Hills. Common sense dictates that this type of uranium mining should not be allowed to proceed.

Please attend the EPA hearings on the proposed Powertech/Azarga ISL uranium mine to be held from 1 to 8 p.m. on May 8 and 9, at the Best Western Ramkota Hotel, 2111 LaCrosse St. in Rapid City.

Richard Bell is the president of Sustainable Environmental Energy Engineering, LLC in Rapid City and chairperson of Black Hills Chapter of Dakota Rural Action

## LETTERS TO THE EDITOR

### Chance to fight toxic waste in S.D.

The U.S. Environmental Protection Agency has issued two draft underground injection permits for the Dewey-Burdock project near Edgemont. If obtained, the EPA permits would allow for injection mining wells in the Inyan Kara group of aquifers and disposal of treated waste fluid into the Minnelusa formation, below the Inyan Kara. An "aquifer exemption" could also be granted to exempt the mining area from the Safe Drinking Water Act. This is not EPA protection; it's EPA devastation.

No more toxic in-situ uranium mining; nor do we want western South Dakota to become a dump site for local, national and possible international toxic waste.

Please visit the Black Hills Clean Water Alliance website for more detailed information as well as dates and places for upcoming public hearings. The website also includes where you can mail or email written comments.

In Rapid City, public hearings will be from 1 to 8 p.m. on Monday, May 8, and Tuesday, May 9, at the Best Western Ramkota Hotel. Please come. Let your voice be heard. No more toxic waste in South Dakota.

**Mary Jo Farrington**  
Rapid City

## **Mass Mail Post Card Comments**

### **Original post card template:**

Dear EPA, Region 8:

Here are my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:

- Old uranium mines in the Dewey-Burdock area should be fully reclaimed before new mining is permitted.
- Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible, and our groundwater is likely to be contaminated.
- A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected.
- The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is very likely.
- The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather than relying on imperfect protection and clean-up processes.

### **Additional comments that have been added**

We cannot risk ruining our water supply to provide uranium. We don't need uranium to be mined here or anywhere else. Save our water. It's important. [REDACTED]

This is not good for the citizens of South Dakota! [REDACTED]

We need our water left alone & clean. There is no need for more drilling or retrieving of uranium. Focus on wind and solar to create jobs. [REDACTED]

Water is life; uranium is death. [REDACTED]

Why pollute indigenous lands to the sole benefit of China and France? So wrong. [REDACTED]

Please take into close consideration Hannan LaGarry and Linsey McLean's expert scientific testimony. Job consideration & moneys to be made for such a small populations should never be allowed to outweigh the possibly devastating effects to millions. Thank you. [REDACTED]

Benefits of the project are not worth the risk to life and water. [REDACTED]

The probable loss of tourism and ranching would be devastating. [REDACTED]

Stop drilling – stop Trump [REDACTED]

Uranium has no good place in our future – it is a failed industry – do not mess with it!!! [REDACTED]

The mines for uranium have been and are an environmental disaster. These will be, too. [REDACTED]

This is our children's legacy!! It is NOT OK to mine uranium! This project should be stopped. [REDACTED]  
[REDACTED]

I am opposed to uranium mining especially to a foreign owned company. Would you approve this if it were in your backyard? [REDACTED]

Dewey-Burdock is a bad deal. [REDACTED]

We've already spent enough on clean-up and it hasn't been done. [REDACTED]

No new mines should be discussed until this [reclamation of abandoned uranium mines] is done!

Merely exempting these wells is not acceptable.

These [cultural and historical surveys] must be tribal approved!

This [contamination of groundwater] is a risk that is unacceptable!

[History of groundwater contamination from uranium mining] terrible track record - do not permit the mine! [REDACTED]

I do not want any mining or dumping of uranium waste in South Dakota – period. [REDACTED]

No, not here, we do not want your stink. [REDACTED]

Save our water. This project should be stopped. [REDACTED]

Please do not adulterate my aquifer. [REDACTED]

If you proceed to allow this, at least make them pay for the water they use. Thank you. [REDACTED]  
[REDACTED]

NO! NO! NO! Absolutely NO! [REDACTED]

Old mines should be cleaned up. No mining or deep disposal. [REDACTED]

I have children, grandchildren and great-grandchildren that this will – there is no “may” – affect. Please do not do this! I am deeply concerned for our town as we depend on water, tourism, and industry.  
[REDACTED]

The potential for environmental damage is too big a risk for this project to continue. [REDACTED]

How can we put our water at risk? This project should be stopped. [REDACTED]

Please pay attention to our request. [REDACTED]

Therefore, stop the mining. It must not be allowed. [REDACTED]

Save our water!! This project must be stopped. [REDACTED]

This project must be stopped. Please stop this mining. [REDACTED]

To issue a permit for massive amount of water would be a huge mistake no matter to who or for what. DENR regulates water and sewer – where is their involvement? What was Silver King all about if uranium

is of no concern? We don't need another tax payer burden to clean up a foreign company's tailings. [REDACTED]

We do not need this at all. Cancer rates go up, all because the rich get richer. [REDACTED]

Proof states contamination will absolutely be a problem – no guarantee of safe consumption of water for humans, animals and farm land. Knowing the facts would you be willing to subject your water to this? [REDACTED]

Who will be responsible to try to clean up the mess down the road? Taxpayers again. Why would we want to give up our clean water? And way too much of it. You can't fix contaminated water. [REDACTED]

My well is in the Minnelusa Formation and is good drinking water. [REDACTED]

Water is life – no fracking. [REDACTED]

Water is life! Common sense. This project should be stopped. [REDACTED]

Groundwater will be contaminated...contamination of our groundwater will happen! Uranium in NOT SAFE! [REDACTED]

This would jeopardize the safety of our water supply. Must NOT happen. [REDACTED]

The prospect of this mining is insane. [REDACTED]

It should be illegal to mine [uranium]. [REDACTED]

This project should be stopped. [REDACTED]

No uranium mining here. [REDACTED]

[clean up abandoned mines first] My mother taught me to clean a mess before staring another one. You (EPA) have a bad track record of oversight. They [Native Americans] were here first and are still here. We have no control over acts of God, but we can exercise rick management. [REDACTED]

Please do not permit this environmental disaster to happen. [REDACTED]

Not Here! [REDACTED]

June 12, 2017

From:

[REDACTED]

RECEIVED JUN 19 2017

To: Velise Shea

U.S. EPA Region 8

Mail Code 3WP-SKL

1595 Wynkoop street

Denver, Colorado 80202-1129

I am writing regarding Azarga -  
Powertech's request for two underground  
Injection Control Draft Area Permits and an  
associated aquifer exemption request so they  
~~can mine uranium~~

can mine uranium via the ISR method at  
the Dewey-Burlock site near Edgemont, SD, and  
one permit is a UIC Class III Permit in the area  
for up to 4,000 injection wells to pump chemicals  
called lipiviant into bore holes. The other is  
UIC Class II Area Permit for four deep  
injection wells to dispose of ISR process  
waste fluids.

My request is: Do not allow  
Azarga Powertech the permits they  
request as it will likely put radio-  
active and hazardous waste into the  
existing wells in the area as well as the  
rest of the entire environment. Thank you!  
Respectfully submitted,

[REDACTED]

Valois Shea  
U.S. EPA Region 8  
Denver, Colorado

June 8, 2017

Dear Valois Shea and Others:

Greetings, I am a concerned citizen writing to convey my objections to the Dewey-Burdock ISR and waste water injection projects proposed by Azarga Uranium in southwestern South Dakota. I am a permanent resident of the Black Hills and live near Argyle, SD, just a few miles (about 8 miles) east of the proposed site. I am opposed to the project: 1) I know from personal experience, and historical records, that uranium extraction and processing has resulted in the on-site and off-site contamination of land, property, and water—both surface waters and ground water; 2) and while the short-term profits associated with these projects is always private, the long-term costs and liabilities are public, as cleanup activities are difficult and expensive, and the half-lives of radioactive pollutants extend many generations beyond those that receive any benefit from the products. Additionally, I am philosophically opposed to foreign entities, whether private enterprises or governments, being allowed to exploit U.S. resources, and don't understand the laws that enable them to do so.

Given my personal experience working for Chem Nuclear Inc., on the Riverton, Wyoming, UMTRA (Uranium Mill Tailings Remedial Action) Project, I have been converted from an advocate of nuclear power, or the use of its by-products, to one opposed to the mining and processing activities associated with the extraction and use of uranium, or other radioactive elements. As a Health Physics Monitor, I was charged with detecting and monitoring radiation in the air, soil, and on equipment at the Riverton Super Fund site: My job involved directing excavators and surveying excavations with a scintillation probe to insure the removal of tailings and contaminated substrates; inspecting trucks for contamination prior to their exit from the job site, to insure safe transport for off-site disposal; monitoring air quality, on site and off site, with sampling equipment designed to detect air-borne radioactive contaminants; and assaying off-site properties (i.e., nearby farms, homes, and businesses) contaminated by wind-blown sediments from tailings piles, or tailings used as backfill around or under rural and urban building sites such as houses, industrial buildings, and parking lots.

The Riverton UMTRA project site was one of 24 mill processing sites, and 8000 vicinity properties (off-site locations with known or putative contamination), in 9 western states and the state of Pennsylvania, designated by the Uranium Mill Tailings Radiation Control Act (1978, UMTRCA, Public Law 95-604) for remediation. The Department of Energy was responsible for the remediation. The Riverton site had 35 vicinity properties that had to be surveyed for radiological contaminants and cleaned up.

Fremont Minerals, Inc., later known as Susquehanna-Western, Inc., a private enterprise, owned the 218-acre Riverton site where a mill was built and uranium ore was processed from 1958 to mid-1963. Seventy-two acres of a 218-acre site had tailings 4 feet deep, and a total of 140 acres were considered contaminated. The 1 million cubic yards of mill tailings contaminated the air (radon and windblown tailings), soils, and both surface and ground water—consequently, local wells were condemned and well permits were frozen, as surveys revealed that contaminants from the mill site were present in two aquifers below the site. The mill site, which is surrounded by the Wind River Reservation, the home of Shoshone and Arapahoe tribes, was on private property owned by non Indians. It was acquired by the State of Wyoming, in 1987, to facilitate remediation. Under the UMTRCA law, the state was liable for 10% of the costs, and the Federal government 90%. Hence, taxpayers or consumers ultimately paid for the careless behaviors of the mining and processing entities, while it took an act of Congress and *ca.* 25 years to get the cleanup started, and another 2 ½ years to complete the removal of surface contamination.

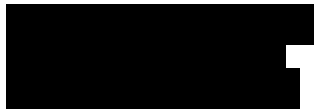
The surface cleanup was conducted between May 1988 and Sept 1990 and cost over \$50,000,000.00. The job site was active 24 hours a day, 7 days a week, in order to excavate

and remove approximately 1.8 million cubic yards of materials. In other words, 1 million cubic yards of mill tailings, with an residual concentration of uranium estimated at 15%, and 800,000 cubic yards of contaminated soils and substrates were removed and trucked to the Gas Hills—the original mining site located 53 miles east of the mill site. In addition, approximately 800,000 cubic yards of clean backfill had to be brought in bring the site to grade, before re-vegetation efforts could begin. The mill was also demolished, removed, and buried off site in the Gas Hills. And a nearby farm had its topsoil removed and replaced due to contamination from wind-borne tailings, while other vicinity properties required soil remediation and demolition and re-construction of affected structures.

The mill tailings site is less than a mile from the confluence of two rivers—it is 4000 feet south of the Big Wind River, and 3000 feet north of the Little Wind River. And closer yet, there is an excavated drainage channel, a natural stream, wetlands, and an oxbow lake. Hence, the site is located on a flood plain terrace, with alluvial deposits, and is underlain by 3 aquifers: There is a surficial aquifer, comprised of 15-20 feet of alluvial sand and gravel, with water 3 to 6 feet below ground surface. This aquifer is contaminated with 10 to 40 times the accepted levels of concentration for uranium and molybdenum. There is a semi-confined aquifer of sandstone 15 to 30 feet thick, partially separated from the surficial by 5 to 10 feet of shale, and it is also contaminated, while the confined sandstone aquifer, the largest and deepest aquifer, has been judged to be free from contaminants, or perhaps, the contaminants have been diluted to concentrations below detection. The nearby oxbow lake, once used by residents of the Reservation for swimming and fishing, is contaminated, as it is recharged by water from the surficial aquifer. In such case, it is off-limits for such uses. The plume of contamination under the mill site is moving towards and into the Little Wind River and the DOE estimates that it will take at least 100 years to flush the upper two aquifers. In 2001, the DOE started issuing annual monitoring reports, and in year-2000 dollars, estimated it would cost \$100,000 a year, or more than \$10 M, to monitor the ground water over this period.

Surface remediation is one thing, but the repair of damage done to aquifers is another. Yes, contaminants from mining or processing uranium can be superficially removed from the surface of such sites, albeit with great expense and effort, but radioactive contaminants in surface waters or aquifers can be nearly impossible to remove fully. Once again, as in the Riverton case, dilution becomes the solution to industrial pollution that private enterprise initiates and profits from. And my goodness, we are considering allowing a foreign entity, with no local interests, to actually add contaminants to our Black Hills aquifers—it is unthinkable. Please deny the related permits and exemptions.

Sincerely,

A large black rectangular redaction box covering the signature area.



I have her email address

Valois Shea  
U.S. EPA Region 8  
8WP-SUI  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

05-11-2017

My name is [REDACTED], I live in Sioux County, I was born and raised in the Crawford area. Please accept these as my comments to the formal hearing record.

Deceptive language is snake oil, descriptions like uranium recovery, and the use of simple soda pop solutions, then to top it off, hiding radioactive waste in deep injection wells that pass through groundwater aquifers. Who will cover the costs of hazardous training for rural emergency responders, contaminated workers and equipment? Who will clean up license area soils that are contaminated because of the toxic waste land applications? Who will monitor the spray discharge of the evaporation pond poisonous waste water as it settles on the surrounding fields and prairie? Count on hazardous delivery spills occurring on your county roads, be ready to evacuate your home when it does. If you doubt it, come to Crawford, I'll give you a tour. The casual transport of yellowcake is lethal to wayside communities. Boreholes and toxic flush extraction and milling yellowcake endangers downstream communities far into the future. Don't let Cameco bring its ~~waste~~ poisonous waste up here. KEEP IT IN THE GROUND! NO AQUIFER EXEMPTIONS!!

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Valois Shea  
U.S. EPA Region 8  
8WP-SUI  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

04-27-2017

My name is [REDACTED] please accept these as my comments to the formal hearing record.

I am a Sioux County Nebraska resident, our home is located about the same distance from the headwaters of the White River as we are from Cameco's CBR in-situ leach uranium mining and milling operation at Crawford, NE.

In 2012 I returned to northwest Nebraska where I was born and raised after living in the Black Hills of South Dakota for 26 years. What little I heard about the Crow Butte yellowcake operation was mostly public relations fluff. In 2004 and 2005 I spent a lot of time in Crawford caring for my terminally ill Mother. Mom was a resident of the Crawford area since the early 1940s, she was diagnosed with lung cancer in 2004 and died in Crawford nine months later. During that time period one of the many Crow Butte Resources' documented violations was an undetected poisonous spill into an underground source of drinking water that lasted for 2 1/2 years spanning from July 1, 2003 through March 31, 2006.

Crawford residents die early in their lives and many assume the mine is causing cancer. Residents have tested positive for heavy metals contamination associated with ISL operations, their recovery is dependent on their leaving the area of contamination. Residents fish nearby ponds and the White River at Crawford, but they do not eat their catch. It is rumored that a farmer had to down crops in their field due to contamination from the adjacent ISL license area. My Uncle, also a long time resident of Crawford, has stopped drinking his tap water. Workers say that one of the 8000 CBR wells has been sealed with railroad ties, and it is rumored that one of deep disposal wells has failed. Crawford, in Dawes County, has 2 of Nebraska's three deepest toxic waste disposal wells.

Locally the only critical thought and formal push back against the uranium mine has been from the Oglala Sioux Tribe and Consolidated Intervener expert witnesses. Elected officials, economic elites and growth groups worry about real estate values and their investments. The uranium mine and yellowcake mill is left off travel publications and maps. It feels like a cover-up. How do you invite people to visit and/or live in a

radioactive contaminated area? Informed consent is vital to ethical human population care and development, otherwise, is it not "human trafficking" to invite uninformed people to get sick?

Up north near the South Dakota border some people are saying they want the economic advantages uranium mining & milling proponents boost about. The economically advantaged up there must be talking about tax relief or school funding because Crawford is dilapidating. The water works infrastructure is giving way and costly repairs are undertaken to keep the city water system functioning for a high poverty and declining population due to health and economic evacuation. It is heartbreaking for me when I think that short sighted land managers and property owners tied our schools to an unlicensed nuclear waste dump and future superfund site.

Regarding the identification of traditional cultural properties at the Dewey-Burdock Project site. Formal consultation under Section 106 of NHPA with First Nations of the 1851 and 1868 Fort Laramie Treaties must be completed. See attached documents for listing.

My husband and I put our life savings into our sustainable build at Glen, NE, near the headwaters of the White River. The Nuclear Regulatory Commission's ASLB hearings made it clear to us what has been allowed on the landscapes of Nebraska's "Garden Beyond the Sandhills". We believe we can contribute to the recovery of the Pine Ridge White River basin but our community needs help. Decision makers need to stop the denial and start to take action against an industry that exploited our rural environs. We need a safe and stable water supply. High pressure injection and extraction mining of uranium, oil and gas is happening in the Nebraska Panhandle as we speak. We in Sioux county are at the gateway of Wyoming's movement to dump out of state waste from these operations into Nebraska soils. Who is accountable when tectonic stability is changed and movement occurs that allows poison production water to further contaminate our regional groundwater? NO MORE EXEMPTIONS. MNI WICONI!!!

[REDACTED]

RECEIVED MAY 09 2017



Valois Shea  
U.S. EPA Region 8  
Mail Code:8WP-SUI  
1595 Wynkoop Street  
Denver, Colorado 802-1129  
April 30,2017 <sup>02-</sup>

Dear Valois Shea, EPA:

We are writing this comment letter as a common family who resides together in Hot Springs, SD. We are not individuals with heavy scientific backgrounds, just concerned citizens. We are asking the EPA to deny any and all permits related to Powertech/Azarga activities for uranium recovery and hazardous waste dumping. No superfund sites should be allowed at any time.

We are familiar with and have read and researched the negative effects of fracking, ISL, UIC injection wells etc. and the negative effects of uranium on the environment, wildlife and humans. The negative effects have been well documented with research and are banned in many places throughout the world. We should never allow a foreign country, with a bad environmental record, that obviously has no concern for the environment, to ever be given the opportunity to contaminate our land for money and then leave it not restored. This has been a previously noted behavior and the environment never fully able to be restored to it's original state.

We have spoken to people that reside in and around our area who have made comments about their relatives using certain lands for sacred and spiritual activities, burials etc. that have not been respected and are visibly contaminated by uranium activities. Blatant disrespect of an indigenous culture and historical abuse! No one should be allowed to do this to any culture!

We drink the water here; have friends with wells; swim, play and heal in the water; fish; hunt; boating activities; grow gardens; raise animals; wash; breath the air; raise children; hike; travel; live; own land; businesses; and pray here with many common people just like us. We don't want to live in a place that could become a toxic waste area, as would anyone else. This is one of the few pristine water areas in the Americas! Powertech should establish their business in their country and not on American soil. No company should be allowed to recover uranium or set up a Superfund site anywhere in the US. Powertech/Azarga permits should be denied, please think about the children's future. A problem could effect millions of people.

Please protect our environment, people, wildlife, archeological sites, tourism and way of life in South Dakota by supporting the denial of Powertech/Azarga permits. Please take no chances.

Thank you for your time and consideration ,  
Sincerely,

[Redacted signature block]

### Post card comments

No uranium mining in the black Hills! Do not allow permits for SD lands to become a solution-mining facility. We don't need to be a nuclear waste dump either! Thanks [REDACTED]

No mining permits in the Dewey-Burdock, Edgemont area of the black Hills of SD---no permits should be awarded to the uranium mining company Powertech/Azarga. ISL will not benefit the Black Hill nor protect the groundwater. [REDACTED]

We demand:

- 1) No Permit
- 2) Clean up old mines
- 3) Tribally defined consultation
- 4) Full tribal approved surveys
- 5) Lakota translation/transcription [REDACTED]

No uranium mining in the Black Hills! No! Do not allow mining operations to inject mining waste into the underground aquifers in South Dakota! Protect our land, protect our air, protect our water. That's what the EPA does best. **No Name**

Uranium mining of the Black Hills is an assault on Native sovereignty and an environmental disaster in and of itself, even if it goes as planned. Please no not allow this to happen. Please respect this important religious, cultural and historical site. [REDACTED]

I'm part of the #WomensMarch movement. I'm from Colton, New York and I'm concerned about uranium disposal in South Dakota. Here's why: It should never be acceptable to poison the earth and its natural resources that we depend upon. Please do not approve the contamination of these precious resources that are depended upon. They feed and nourish our children and all of us. This disposal method can never be undone. In the first 100 days of this new administration, I hope that you understand and take these concerns seriously. [REDACTED]

May 10

First, I would like to thank the EPA and the village of Hot Springs for the chance to speak to the facts as I see them. I've been traveling to the Black Hills for over 30 years, and recently purchased a house here in Hot Springs. I've been a rock hound of sorts and a minor geology buff for many years. After reading the Class 3 and Class 5 permit fact sheets provided by the EPA in regards to the proposed Azarga project, it is evident to me that this project is, at the very least, impractical, and at the very worst, extremely dangerous. Considering the complex sub-surface geology of the area and its close proximity to known fault zones, the choice to use injection well technology to both contain contaminated waste waters and mine sub-surface uranium deposits, is both irresponsible and potentially catastrophic.

~~On [redacted] project fact sheet provided by the EPA, I would like to comment~~  
On [redacted] just a few of the potential sticking points. ~~Geologic fact sheet provided by the EPA~~

~~Page 23 of the Class 5 fact sheet states the locations and conditions of fault zones in relation to the project area. And I quote: "The Dewey structural zone consists of steeply dipping to vertical faults that are uplifted on the north side relative to the south side of the zone a total of 500 feet. The fault zone is located approximately 7 miles south of the project area. This fault zone consists of small NE-trending normal faults observed in outcrops of the Inyan Kara Group and Sundance Formation within a zone measuring several miles across. The displacement across the faults measures up to 40 feet, with folding of the strata adjacent to the faults adding up to 60 feet additional structural relief. The faults in the Dewey Quadrangle occur NW of the Dewey Fault in the Dewey Terrace area approx. 1.5 miles NW of the project area. A sub-surface fault was identified by seismic methods about 5.5 miles N of the project area boundary. It is about 1.5 miles long and 400 feet wide. 3 Faults are shown in the NE corner of the Burdock Geologic Quadrangle. The report states that these faults have a displacement of less than 10 feet and are located 2.5 miles or more from the eastern edge of the project boundary." So in short, there are at least a half dozen faults of differing size located within a mile and a half to 5 and a half miles from the project zone. Page 25 of the Class III Draft fact sheet draws an even better picture of the Dewey Fault in particular, and I quote, "The Dewey Fault, a NE to SW trending fault zone, lies approx. 1500 feet NW of the Dewey-Burdock Area Permit Boundary."~~

So again, we have a steeply dipping fault line lying less than a half-mile away from the project zone. ~~It is also stated that the fault zone is located approximately 7 miles south of the project area. This fault zone consists of small NE-trending normal faults observed in outcrops of the Inyan Kara Group and Sundance Formation within a zone measuring several miles across. The displacement across the faults measures up to 40 feet, with folding of the strata adjacent to the faults adding up to 60 feet additional structural relief. The faults in the Dewey Quadrangle occur NW of the Dewey Fault in the Dewey Terrace area approx. 1.5 miles NW of the project area. A sub-surface fault was identified by seismic methods about 5.5 miles N of the project area boundary. It is about 1.5 miles long and 400 feet wide. 3 Faults are shown in the NE corner of the Burdock Geologic Quadrangle. The report states that these faults have a displacement of less than 10 feet and are located 2.5 miles or more from the eastern edge of the project boundary."~~

~~Related to those facts, page 26 of the [redacted] sheet states, and I quote, "many other faults are probably present but not discernible because of poor exposures." ~LET ME REPEAT THAT~ In response [redacted], it is [redacted] stated [redacted] that "If there are any faults and fractures occurring within a well field area that cause a breach in a confining zone, they will be detected during the wellfield drill and pump testing. If found, the placement of injection and production wells can be modified from the regular pattern to control lixiviant flow around the fractures or faults to keep it flowing through the uranium ore bodies rather than along these paths of lower hydraulic resistance." So, if additional~~

fractures and faults are found in the project area, and there are already many, PowerTech will simply and safely adjust the flow around these breach zones and continue to mine uranium? To think that you can safely continue to apply injection well technologies in an area of potentially breaching fractures and faults, I find to be both ridiculous and irresponsible. ~~And if~~ If the information showing the close proximity of numerous fault zones to this injection well area is not enough to disallow this project, we must also consider the confining layers that will be used to contain the injected toxic fluid. The entire project area relies upon a lower and upper containment layer of Fuson shale that underlies the whole region. However, to quote from page 22 of the Class 3 fact sheet, "There may be points where the Fuson confining zone has been compromised by improperly plugged exploration drillholes or wells that penetrate the Fuson confining zone. Evidence that suggests at least one breach in the Fuson confining zone is included in the reports on the pump tests... conducted in the Chilsen Aquifer in the Burdock area." It is ~~clear~~ clear from ~~pages~~ pages 15 and 17 of the Class 5 ~~fact~~ sheet that the porous nature of the Minnelusa sandstone as an upper containing layer is a concern. ~~And that is not~~ ~~the only concern~~. From pg. 18 of the ~~same~~ ~~fact~~ sheet, "Low-permeability layers in the lower part of the Minnelusa Formation generally act as an upper confining zone to the Madison Aquifer. However, karst features (limestone that has dissolved and is in some stage of collapse) in the top of the Madison Limestone may contribute to reduced competency of the overlying confining zone in some locations." ~~I suspect~~ I ~~suspect~~ we would all like to know where those locations are, and what the consequences of their "reduced competency" will be. I think it should also be mentioned that, on page 25 of the Class 5 fact sheet, PowerTech's own miscalculations on the pressure required to move fluid from containment layers to public water supplies is openly challenged by the EPA itself. ~~PowerTech's own miscalculations on the pressure required to move fluid from containment layers to public water supplies is openly challenged by the EPA itself.~~

Beyond that, we must also consider the history of PowerTech drill sites from the past, and the competency of the work that was done. State regulation requires drillholes be plugged after they are logged. Newer PowerTech drillholes were plugged and abandoned according to SD regulations. However, historical drillhole records are not available to show how they were plugged. ~~And~~ on page 37 of the same report, "It is possible that some historical drillholes may not have been plugged in a manner that would prevent communication between sub-surface aquifers." ~~PowerTech's own miscalculations on the pressure required to move fluid from containment layers to public water supplies is openly challenged by the EPA itself.~~ Page 45 of the same report states, "With one exception, groundwater discharging to the ground surface is limited to flowing artesian wells...the only feature identified that was indicative of groundwater discharge from exploration drillholes at or near surface was the alkali area in the SW corner of the Burdock portion of the project area." ~~It is to be noted that this same Burdock area is also~~ ~~the only feature identified that was indicative of groundwater discharge from exploration drillholes at or near surface was the alkali area in the SW corner of the Burdock portion of the project area.~~ "PowerTech has identified this area as a possible location where groundwater may be discharging to the surface from the Fall River and possibly the Chilson (aquifers) to the surface through an abandoned exploration drillhole." ~~PowerTech will not be able to begin injection activity until this issue is resolved. Resolutions of the issue may involve locating and plugging of improperly plugged historic drillholes, locating and performing corrective action on nearby wells that create a pathway through the Fuson confining zone, or a pumping, injection and monitoring plan that demonstrates control of lixiviant in the areas where breaches in the Fuson confining zone have~~

been identified." It is obvious that there already exist communication between aquifers because of these abandoned drillholes. And it is also clear that they are fully expecting there to be further breaches in these confining zones. To think that all of these potential breaches and leaking drillholes can be identified and resolved is wishful thinking, at best.

In its own outlines, the USGS lists specific factors necessary for injection wells to induce earthquakes. Those factors include ~~the presence of faults that are large enough to produce earthquakes, stresses that are large enough to produce earthquakes, and the presence of pathways for the fluid pressure to travel from the injection point to faults.~~ the presence of faults that are large enough to produce earthquakes, stresses that are large enough to produce earthquakes, and the presence of pathways for the fluid pressure to travel from the injection point to faults. It is obvious that ~~those same factors are in severe question in relation to this injection project.~~ those same factors are in severe question in relation to this injection project.

Finally, I think what I would like to say is that geology is an imperfect science. I'm sure the PowerTech geologists would agree. What cannot be seen below ground, cannot be anticipated or contained. ~~It is not here in search of economics but simply to make the Black Hills a~~ ~~the place to make a dangerous project.~~ In my opinion, considering the toxic nature of these injection fluids and the obvious dangers of both questionable confining layers and their close proximity to known and unknown fault and fracture lines, the idea that this project can be done safely and with no ill effects to our water supply or to local geologic integrity, is foolhardy and defenseless. The massive public and environmental loss that could very well occur far outweighs the ~~massive~~ private gain that is being sought. Thank you.

(singular & unnecessary)

[REDACTED]



RECEIVED JUN 19 2017

12 June 17

Dear EPA,

My wife and I feel it very important that we inform you of our strong opposition to allow ~~Powertech~~ to drill for uranium in the Black Hills area.

We realize all EPA agencies and personnel may be getting pressure from the current administration for "jobs and economic growth" but uranium mining will have little short term impact in that area.

Regardless of Powertech's pledge to protect the Lakota water even a less than 1% chance of pollution is too much to our precious water resources. One only has to see what issues exist in the west when water becomes short and in

(2)

Jeopardy. Radiation last  
forever.

Powertech / Azarga are also  
not American Companies and  
the few jobs they generate  
are not worth the risk  
to our environment.

Please consider these ideas  
along with many others  
and recommend denying  
the permit to Powertech!

Thank You.

[REDACTED]

5/8/2017

Claims, counterclaims fly before uranium mining hearings | Local | rapidcityjournal.com

Submitted 5/8/17

[http://rapidcityjournal.com/news/local/claims-counterclaims-fly-before-uranium-mining-hearings/article\\_37a4bd2f-2b4b-5707-a1ae-6fd24415a94c.html](http://rapidcityjournal.com/news/local/claims-counterclaims-fly-before-uranium-mining-hearings/article_37a4bd2f-2b4b-5707-a1ae-6fd24415a94c.html)

FEATURED

## Claims, counterclaims fly before uranium mining hearings

Waste in focus as big week looms for Edgemont proposal

Seth Tupper Journal staff 18 hrs ago



Journal file

Buy Now

The Powertech Uranium Project building sits on the north end of Main Street in Edgemont. The Environmental Protection Agency is holding hearings about the mining proposal this week.

Opponents of a proposed uranium mine near Edgemont claimed prior to this week's public hearings on the project that waste fluid from other mines will be disposed of there, while a mining company spokesman denied the claim and a federal agency called it a possibility.

The unverified claim, and subsequent adamant denial, illustrate the rising tensions as the proposal to mine for uranium in the southern Black Hills moves closer to possibly being permitted after a years-long process.

A video posted to Facebook by a South Dakota-based nonprofit, the Council for Responsible Mining, includes a narrator saying that if the mine is permitted, the mining company will bring in waste from other mines.

"They want to haul in waste from other states and possibly even other countries to permanently inject it right into our water," the narrator says in the video. ➤

The video is part of a campaign by opponents of the mining proposal to encourage attendance at federal regulatory hearings Monday and Tuesday in Rapid City, Wednesday in Hot Springs and Thursday in Edgemont.

Gardner Gray of rural Pringle, chairman of the Council for Responsible Mining, admitted in a Journal phone interview that he has no direct knowledge of a plan by the mining company, Powertech, to bring other companies' waste fluid to the mining site.

"I haven't heard it from them, but I have heard it," Gray said.

Gray referenced uranium prices, which were \$50 to \$60 per pound five years ago but are now \$20 to \$30 per pound. He predicted Powertech will not mine uranium if prices stay so low but will instead seek revenue by accepting and injecting waste fluid from other mines at the Edgemont-area site.

Mark Hollenbeck, an Edgemont-area rancher and project director for Powertech, spoke with the Journal by phone and denied the claim by the Council for Responsible Mining.

"That is absolutely false," he said.

Hollenbeck said Powertech — a U.S. division of the global Azarga Uranium Corp. — does not plan to accept waste fluid from other mines. But even if it did, Hollenbeck said, other mines already have their own disposal permits and would have no economic incentive to haul their waste to the Edgemont-area site.

Powertech has received two draft permits from the U.S. Environmental Protection Agency, including one that would allow the company to inject mining waste fluid underground. According to the EPA, the permit would not restrict Powertech from bringing in waste fluid from other mines.

The waste-disposal issue and others will be aired this week as the EPA conducts 28 hours of public hearings on the draft permits before issuing a final decision sometime after May 19. This week's hearings will be from 1 p.m. to 8 p.m. each day — Monday and Tuesday at the Best Western Ramkota Hotel in Rapid City, Wednesday at the Mueller Center in Hot Springs, and Thursday at St. James Catholic Church in Edgemont.

During the first hour of each hearing, EPA officials will be available to meet individually with members of the public and answer questions. The EPA officials will then make a brief technical presentation and open the hearing to public comments. Attendees who wish to speak will be asked to sign up and speak in the order of the sign-up sheet.

The first hearing was April 27 in Valentine, Neb., and drew about 50 people. The EPA located the meeting there to accommodate residents of Native American reservations in South Dakota and Nebraska.

The proposed mine location is in a sparsely populated area 13 miles northwest of Edgemont, near the old Dewey and Burdock townships along the southwestern edge of the Black Hills. Instead of extracting uranium-bearing ore with traditional pit and tunnel mining, which was conducted extensively in the Edgemont area from the 1950s to the 1970s, Powertech wants to use a method known as "in situ" — a Latin phrase meaning "in its place."

The company would capture underground water, mix it with oxygen and carbon dioxide, and inject the solution into underground ore bodies to loosen deposits of uranium.

The uranium-bearing solution would then be pumped to the surface, where the uranium would be removed and dried into yellowcake for eventual refinement and use in nuclear power plants. The water-based solution would be reused until all the uranium at the well site is extracted. The solution would then be treated and disposed of by injecting it into a deep underground body of water known as an aquifer.

A similar system is now operating near Crawford, Neb., about 120 miles due south of Rapid City.

The Council for Responsible Mining video describes the waste fluid as toxic and radioactive. Hollenbeck, of Powertech, said regulations require the waste fluid to be treated and made safe before it is injected underground.

"It's basically saltwater," Hollenbeck said.

Powertech acquired its Edgemont-area mining rights in 2006 and has been attempting to begin mining ever since. It already has a license from the U.S. Nuclear Regulatory Commission. If Powertech's EPA permits are finalized, the company would still need additional permits — including from the state of South Dakota — to begin mining.

One of the EPA permits would allow Powertech to drill as many production wells as the company desires — potentially 4,000 of them, according to one EPA document — within 14 designated well fields. The production wells would go hundreds of feet underground into the Inyan Kara formation of aquifers.

The other EPA permit would allow Powertech to drill up to four disposal wells, from 1,615 to 2,540 feet underground in the Minnelusa formation of aquifers. The Council for Responsible Mining has claimed that Powertech is seeking eight disposal wells. That was originally true, but Powertech has since withdrawn its request for four of the disposal wells, leaving only the remaining four wells in the draft EPA permits.

The EPA is also proposing to exempt the portion of the Inyan Kara aquifer in the project area from the Safe Drinking Water Act, which is necessary for mining to occur there.

Critics of the project say the mining solution and the injected waste fluid could migrate and contaminate other underground water sources.

"No money is worth that," Gray said. "If we don't have water, we don't exist down here."

Hollenbeck said Powertech's project is environmentally sound, and while he will attend this week's hearings, he does not plan to comment orally and instead plans to submit written comments prior to the EPA's May 19 deadline.

## Hearing schedule

This week's schedule for public EPA hearings on two permits for a proposed in situ uranium mine near Edgemont:

- Monday and Tuesday, 1 to 8 p.m. (with a break from 5 to 6 p.m.), Best Western Ramkota Hotel, 2111 N. LaCrosse St., Rapid City.
- Wednesday, 1 to 8 p.m. (with a break from 5 to 6 p.m.), Mueller Center, 801 S. Sixth St., Hot Springs.
- Thursday, 1 to 8 p.m. (with a break from 5 to 6 p.m.), St. James Catholic Church, 310 Third Ave., Edgemont.

5/8/2017

Claims, counterclaims fly before uranium mining hearings | Local | rapidcityjournal.com

Written comments may be submitted by midnight May 19 to Valois Shea by email, shea.valois@epa.gov; fax, (303) 312-6741; or mail, U.S. EPA Region 8 Mail Code: 8WP-SUI, 1595 Wynkoop St., Denver, CO, 80202-1129.

## Seth Tupper

Seth Tupper is an enterprise reporter for the Rapid City Journal and the author of the new book "Calvin Coolidge in the Black Hills."

## Currents



Slideshow: Best-selling books



Photos: Remembering slavery, one board at a time



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Small Business Blog Essentials



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Today's top pics: Hawn, Russell get Walk of Fame stars and more

Your daily 6: Another Delta oops, and a dangerously funny 'Veep'

Today's Birthdays, May 5: Adele

Today In History, May 5: Kentucky Derby

Harden, Rockets rout Spurs 125-104 to tie series

Draisaitl helps Oilers rout Ducks 7-1 to force Game 7

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[REDACTED]  
LakM 683: Lakota Environment Mgmt. and Protection

[REDACTED]  
May 10

Powertech Uranium Mining in the Black Hills

My concerns

who owns Powertech

**Introduction:**

Canadian Azarga & Chinese

Powertech Uranium Mining Company proposes to mine uranium in the Black Hills of South Dakota. This is a Canadian company known as Azarga Uranium. In actuality, this company is comprised of shareholders and a Chinese investment fund. This Chinese investment fund is under investigation by Chinese authorities. It doesn't state what they are under investigation for. Powertech proposes to take water out of the ground. The Madison Aquifer. The drainage will eventually leach into the Ogallala Aquifer which reaches down to Texas. There are thousands of wells that draw water from the Ogallala Aquifer through eight states. Nebraska has the most abundant well water available. Should Powertech be allowed to utilize this source of water from the Madison Aquifer. There are many repercussions. Wells are already depleted across several states. More water is being pumped out of the aquifer than being replenished. This hurts the farmers who depend on these wells for their crops and safe drinking water. Cattle operations are vast and many across these eight states. The United States depends on these states to produce the food we eat and export.

A lot of variables

Intervals

Cement caps @ different levels

**Uranium Mining:**

IF 4.0 Earthquake happens

The going rate for uranium is \$30. to \$50.00 per pound. According to a recent article in the Rapid City Journal. Uranium mining has become more profitable since the nuclear meltdown in Fukushima, Japan. There is talk of Powertech using these bore holes already in the ground from past mining near Edgemont, S.D. mining. Powertech will be utilizing current sites already bored into the ground. These were drilled 20, 30 and even 40 years ago. Producing uranium isn't cheap. There are many factors in job costing for these projects. Such as production costs, uranium mining/milling costs, financial & market costs and world production costs. All these

↓  
Best Water



factors are considered for a profit. There is money to be made in the Black Hills. There is only one Mother Earth. When she is depleted; Powertech will have their profits and move on to their next project. The nuclear industry has always said they are environmental sensitive. But; that isn't the truth.

#### **Death and Destruction:**

*There are many direct and indirect social ills associated with uranium mining. Wells in local areas will have their wells drop many feet. Livestock will suffer and radon emissions will affect the surrounding communities. Not to mention chloride, sulfate, radium and iron being present in wastewater ponds. It is bad enough wells contain arsenic already and contribute to the cancer rates. Cancer clusters are a reality. The cost of treating cancer is expensive and does lead to death. Add that to the cost of dying and it becomes more expensive. The benefits to the communities are not what they seem once the in-situ leaching starts. There are many chemicals that will be in the well water, ground and in the air. This project is about making money for the shareholders. The Chinese Investment Fund will get their profits and the surrounding communities will suffer the ill effects. always said they are environmental sensitive. But; that isn't the truth.*

#### **Conclusion:**

*The economic benefits to the state of South Dakota will be minimal compared to the cost of health care and cleaning up the environment. According to The Dakota Rural Action organization; Azarga is requesting an exemption from the EPA Safe Drinking Water Act. They have a good argument. Azarga expects to receive this water for free. They plan on using 12.96 million gallons of water per day. Multiply that by 20 years and at some point all water will be*

*ETS  
ENVIRONMENTAL Impact  
Statement*

*Chloride, Sulfate, Radium  
and Iron*

*Exemption of EPA Safe Drinking  
Water Act - Waiver  
waiver*

unfit for drinking in the local wells and possibly the Ogallala Aquifer. That is a lot of water being contaminated and pumped back into the bore holes already there from past mining. And who says Powertech won't supplement their profits margins by allowing other waste from outside companies. It's their permit to do whatever they want. project is expected to last between seven and twenty years. Should there be leaks and contamination to the environment. The runoff will drain into the Cheyenne River and Angostura Reservoir. Angostura is a recreational manmade lake for boating and, swimming and fishing. It was created for irrigation to crop lands and for watering cattle mainly. It is bad enough there is radiation in the water. Letting Powertech\Azarga mine the Black Hills is a catastrophe waiting to happen. And I believe in "Murphy's Law."

↓  
Contains Radiation already

[REDACTED]  
[REDACTED]  
[REDACTED]  
May 8, 2017

EPA D-B Hearing Board  
Best Western Ramkota Inn

Dear Sirs,

Yesterday I printed off the 151 page EPA summation entitled "Draft Cumulative Effects Analysis of the Dewey-Burdock Uranium in-situ Recovery, Underground Injection Control Area Permits" and took most of the day to read it because I wanted to be as fair as I could be about this process. The report painted a rather benign picture of the mining process ending with kudos for the small carbon footprint left by the power plants that produced the electricity from the enriched uranium. Not mentioned was the enormous amounts of electricity required to isolate U234, U235 from U238 generated by coal or gas fired power plants but more importantly the toxic products of this process that we are creating with no safe place to put them. The entire nuclear industry has left behind a toxic nightmare that has to be dealt with and has been systematically ignored and made the responsibility for a future generation.

With regard to the ISR mining operation, many people might be concerned that sedimentation ponds will leak and contaminate ground water (which they have in other ISR locations), migratory birds will land in these ponds, insects will obtain water from them to become food for birds, West Nile virus will become more prevalent because of the breeding opportunities for mosquitoes among other things. Another concern is the in-situ mining process itself which uses a lixiviant solution to release and suspend uranium in solution but also does the same for a number of other toxic heavy metals including arsenic, vanadium, selenium, et.al that are withdrawn with the uranium and wind up being precipitated out in the settlement pond or sprayed onto fields or sent to a class V deep well. But another concern is that even with numerous sweeps in the restoration phase they remain in solution and without the reducing field formerly provided by the mined out ore body will migrate down gradient within the aquifer to find at some point a breccia column, unplugged bore hole, fracture, mining tunnel or fissure. We are told that TVA did a wonderful job of plugging the bore holes but alas there are some that weren't. The radioactive remains like thorium, radium and presumably non-radioactive elements like lead, arsenic and selenium, products of the RO process that weren't disposed of by spraying on the land or placed in a deep disposal well are sent to White Mesa even though they are trying to detoxify that site as well. Another issue is water consumption where the water is poisoned beyond any future use, although according to EPA report that might be kept to a minimum in the mining process by stripping the lixiviant by RO and reinjecting most of that water back into the Inyan Kara aquifer to repeat the cycle. The restoration phase might be another matter though where multiple pore volumes are required to bring concentrations of these toxic elements even close to baseline levels which has never occurred in any ISR mining operation.

What I see is the worst part of this question though is that the mining phase is just the start of a horrifying development that results in ever more toxic next phases of the uranium story. The UF6 leaks in the separation phase, the electrical generation using the enriched/blended U235, the military uses that have poisoned countless people worldwide from the fallout and bio-accumulation of radioactive nuclides especially Cs137, Sr90, I131, Pu239 et.al. producing cancers; such as, lymphoma/leukemia,

bone, pancreatic, liver, lung, brain, colon, skin and breast which has seen dramatic increases after the 1300 open air nuclear tests. Exploding nuclear power plants like Three Mile Island, Chernobyl and now Fukushima which is an ongoing disaster that won't be stabilized for 40 to a 100 years and continues to gush 100's of tons of radioactive water into the Pacific every day ultimately biologically magnifying into the fish and the humans that eat them. Cancer rates in Japan are just now becoming apparent as we see children being affected by what is referred to as Chernobyl heart disease caused by cs137. We have our own Fukushima potentially waiting for us at the Indian Point reactor just above NY City also subject to the effects of an earthquake. Given the artificially extended lives of our aging nuclear power plants are more such events going to happen? It is just a matter of time before we find out. And now we have high level nuclear waste with no place to go. Oh, yes of course we have Yucca Mountain which will be a disaster because it is not sealed off from water incursions. But we would have to have dozens of Yucca Mountains to take care of all the waste sitting around just the 104 nuclear reactors in the United States. And then it has to be safely transported. The American build sheet metal casks that last about 30 years but the German build cast iron ones seem to last much longer and don't seem to crack with age for on-site storage. And don't leave out the military uses of course. The Nagasaki/Hiroshima experiment is still with us as are the depleted uranium (U238 without the U235) particulates being enjoyed by the Iraqi people to the point where they are afraid to have children in some places. The high level waste from WWII is still sitting in giant pools and with time leaking into the Columbia River. And now "we" want to invest a trillion dollars in making nuclear weapons over a 30 year program to make them more user friendly. We have made a Faustian bargain with the Devil by creating problems no one will be able to solve and in the process engaged in a collective death wish that might be granted earlier than we thought with the present administration filling agencies at the top with administrators who are ignorant and hostile to their missions.

Like the people on the trains to Auschwitz we have to ask ourselves "where are we going?" before it is too late.

Sincerely,

[REDACTED]

statement from

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

EPA D-B Hearing Board  
Best Western Ramkota Inn

Dear Sirs,

Yesterday I printed off the 151 page EPA summation entitled "Draft Cumulative Effects Analysis of the Dewey-Burdock Uranium in-situ Recovery, Underground Injection Control Area Permits" and took most of the day to read it because I wanted to be as fair as I could be about this process. The report painted a rather benign picture of the mining process ending with kudos for the small carbon footprint left by the power plants that produced the electricity from the enriched uranium. Not mentioned was the enormous amounts of electricity required to isolate U234, U235 from U238 generated by coal or gas fired power plants but more importantly the toxic products of this process that we are creating with no safe place to put them. The entire nuclear industry has left behind a toxic nightmare that has to be dealt with and has been systematically ignored and made the responsibility for a future generation.

With regard to the ISR mining operation, many people might be concerned that sedimentation ponds will leak and contaminate ground water (which they have in other ISR locations), migratory birds will land in these ponds, insects will obtain water from them to become food for birds, West Nile virus will become more prevalent because of the breeding opportunities for mosquitoes among other things. Another concern is the in-situ mining process itself which uses a lixiviant solution to release and suspend uranium in solution but also does the same for a number of other toxic heavy metals including arsenic, vanadium, selenium, et.al that are withdrawn with the uranium and wind up being precipitated out in the settlement pond or sprayed onto fields or sent to a class V deep well. But another concern is that even with numerous sweeps in the restoration phase they remain in solution and without the reducing field formerly provided by the mined out ore body will migrate down gradient within the aquifer to find at some point a breccia column, unplugged bore hole, fracture, mining tunnel or fissure. We are told that TVA did a wonderful job of plugging the bore holes but alas there are some that weren't. The radioactive remains like thorium, radium and presumably non-radioactive elements like lead, arsenic and selenium, products of the RO process that weren't disposed of by spraying on the land or placed in a deep disposal well are sent to White Mesa even though they are trying to detoxify that site as well. Another issue is water consumption where the water is poisoned beyond any future use, although according to EPA report that might be kept to a minimum in the mining process by stripping the lixiviant by RO and reinjecting most of that water back into the Inyan Kara aquifer to repeat the cycle. The restoration phase might be another matter though where multiple pore volumes are required to bring concentrations of these toxic elements even close to baseline levels which has never occurred in any ISR mining operation.

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bone, pancreatic, liver, lung, brain, colon, skin and breast which has seen dramatic increases after the 1300 open air nuclear tests. Exploding nuclear power plants like Three Mile Island, Chernobyl and now Fukushima which is an ongoing disaster that won't be stabilized for 40 to a 100 years and continues to gush 100's of tons of radioactive water into the Pacific every day ultimately biologically magnifying into the fish and the humans that eat them. Cancer rates in Japan are just now becoming apparent as we see children being affected by what is referred to as Chernobyl heart disease caused by cs137. We have our own Fukushima potentially waiting for us at the Indian Point reactor just above NY City also subject to the effects of an earthquake. Given the artificially extended lives of our aging nuclear power plants are more such events going to happen? It is just a matter of time before we find out. And now we have high level nuclear waste with no place to go. Oh, yes of course we have Yucca Mountain which will be a disaster because it is not sealed off from water incursions. But we would have to have dozens of Yucca Mountains to take care of all the waste sitting around just the 104 nuclear reactors in the United States. And then it has to be safely transported. The American build sheet metal casks that last about 30 years but the German build cast iron ones seem to last much longer and don't seem to crack with age for on-site storage. And don't leave out the military uses of course. The Nagasaki/Hiroshima experiment is still with us as are the depleted uranium (U238 without the U235) particulates being enjoyed by the Iraqi people to the point where they are afraid to have children in some places. The high level waste from WWII is still sitting in giant pools and with time leaking into the Columbia River. And now "we" want to invest a trillion dollars in making nuclear weapons over a 30 year program to make them more user friendly. We have made a Faustian bargain with the Devil by creating problems no one will be able to solve and in the process engaged in a collective death wish that might be granted earlier than we thought with the present administration filling agencies at the top with administrators who are ignorant and hostile to their missions.

Like the people on the trains to Auschwitz we have to ask ourselves "where are we going?" before it is too late.

Sincerely,

██████████

Dear Ms. Shea,

This letter is concerning the Powertech proposal to use groundwater from the Madison aquifer, and to utilized deep well injection methods to dispose of waste associated with uranium mining.

I strongly object to both of these proposals. I urge the EPA not to permit these activities in the counties of Fall River and Custer located in the south western South Dakota.

My objections are based on the probable contamination of the Madison & Inyan Kara aquifers.

I strongly object to both of these proposals. I urge the EPA not to permit these activities in the counties of Fall River and Custer located in the south western South Dakota. My concerns are with the health and well being of the ecology of the area, the Cheyenne River and all waters downstream of the proposed injection well sites.

Please Do Not issue permits for these projects

Sincerely,

[REDACTED]

[REDACTED]

NOURANION

UNIT REAT

THAT





May 10

EPA Azarga/Powertec

Public Hearings

My name is [REDACTED]. I moved to Hot springs in 2002 because of the abundant clean, pure spring water here. I moved from Colorado after spending my childhood in Breckenridge. Co. I moved to Golden, Co and then to Boulder, CO in the 1970's. I became involved With the Rocky Flats Truth Force, a group of people who wanted the truth about the Rocky Flats nuclear weapons plant to be exposed.

I watched friends who got high paying jobs at Rocky Flats right out high school turn yellow than green, then gray and then they died. The whole time the information coming out of Rocky Flats was the levels of radioactive were safe and below normal ranges. In the 1983, I took my 18 month old daughter to a protest on the ground above the underground plant. A few years latter when the plant was closed due to radioactive contamination ~~and~~ the EPA came in to clean up the underground plant and the plans for the ground above was for an open space. The EPA found the levels of radioactivity were so high the ground was not even safe for day use and it stands empty and fenced off to this day.

I drove from Golden to Boulder when I was attending CU and went right by Rocky Flats. I always thought as I was passing I would just hold my breath. While attending CU I was an art major with my focus on Pottery. In the glaze room where I formulated glazes form mineral powders there was a large jar with a skull and cross bones and a sign, vanadium oxide. It was a beautiful yellow and I experimented with it. Today I know that vanadium is radioactive and I carry that in my body today. I am in the 97.5 percentile for vanadium.

In the 1970, one of the many geology classes I took in college, was paleontology. We took a field trip to an old limestone quarry right across the highway from Rocky Flats. We were digging in the radioactive limestone for marine fossils. People didn't believed that this was safe. I carry uranium in my body today. I am in the 95 percentile for uranium.

In the 1960 and 70's the public was not educated about radioactivity and believed the propaganda mining, power and weapons industry fed them. Today it is different and we know the dangers of radioactivity. It's ironic, that the picket signs for Rocky Flats nuclear weapons plant I painted were "Don't kill me before the enemy". None of the nuclear bombs made at Rocky Flats have<sup>even</sup> been use against any enemy. The radioactivity released in making all those bombs still contaminates the earth and many of us who lived there.

I have been the organizer of a group of citizens in the Southern Hills, working to educate the people of Fall River and Custer County about radioactivity, uranium, and the inSitu Leach mining process.

~~I am handing my story in with a copy of Dr. Moran's Hydrology testimony for the NRC Hearings in 2013. I will be submitting my written comment on the toxic and radioactive waste injected into our drinking aquifers. I have been busy organizing since you released the draft permits and as of tomorrow I will have time to write my testimony and e-mail it to you by May 19<sup>th</sup>.~~

and my test of radioactive elements as well as heavy metals.

Please protect me & the other residents of Fall River county from in the future more uranium exposure

You have the Power to  
Protect us from more  
radioactive & heavy metal

You have the Power to keep  
our water pure. That is  
why the EPA was banded.  
Please prevent our water  
from becoming toxic

Submitted by

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )  
 )  
POWERTECH (USA) INC., ) Docket No. 40-9075-MLA  
 ) ASLBP No. 10-898-02-MLA-BD01  
(Dewey-Burdock In Situ Uranium Recovery )  
Facility) )

**SUPPLEMENTAL DECLARATION OF DR. ROBERT E. MORAN**

I, Dr. Robert E. Moran, do hereby swear that the following is true to the best of my knowledge:

**Professional Qualifications and Introduction**

**Robert E. Moran, Ph.D.**  
Michael-Moran Assoc., LLC  
Water Quality/Hydrogeology/Geochemistry  
Golden, Colorado, U.S.A.  
[REDACTED]

1. I am a hydrogeologist and geochemist with more than 40 years of domestic and international experience in conducting and managing water quality, geochemical and hydrogeologic work for private investors, industrial clients, tribal and citizens groups, NGO's, law firms, and governmental agencies at all levels. Much of his technical expertise involves the quality and geochemistry of natural and contaminated waters and sediments as related to mining, nuclear fuel cycle sites, industrial development, geothermal resources, hazardous wastes, and water supply development. In addition, I have significant experience in the application of remote sensing to natural resource issues, development of resource policy, and litigation support. I have often taught courses to technical and general audiences, and has given expert testimony on numerous occasions. Countries worked in include: Australia, Greece, Bulgaria, Mali, Senegal, Guinea, Gambia, Ghana, South Africa, Iraqi Kurdistan, Oman, Pakistan, Kazakhstan, Kyrgyzstan, Mongolia, Romania, Russia (Buryatia), Papua New Guinea, Argentina, Bolivia, Chile, Colombia, Guatemala, Honduras, Mexico, Peru, El Salvador, Belgium, France, Canada, Great Britain, United States.

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2. In addition to my professional experience, the opinions and comments that follow are based on review of all, or significant portions of the following documents:

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### **Summary Comments**

3. These opinions focus predominantly on the water resources and related impacts within the proposed Dewey-Burdock (D-B) area. These waters are natural resources presently used collectively by numerous parties (ranchers, municipalities, tribal groups, fish and wildlife, mineral and oil and gas developers, etc.). However, the DSEIS must realistically anticipate what will be the true *long-term* uses of these waters—especially when many generations must be considered. Thus, *truly conservative assumptions* should be employed—which is not the case in this DSEIS.

4. Some of these waters are already contaminated by past uranium exploration and mining, with little or no remediation required by any regulatory agency, which suggests a great deal about the future oversight. The D-B site contains numerous old uranium workings (shallow open-pit and underground), accumulations of various contaminated waste materials, 1000s of unplugged

past  
contaminated

boreholes, which likely provide hydraulic connections between various water-bearing units. To allow for a meaningful review, all available borehole information needs to be assembled and presented in a comprehensive manner.

5. Past exploration and mining activities have exposed the mineralized rocks to reactive surface waters and ground waters and bacteria, increasing the concentrations of numerous contaminating chemical constituents in local waters, soils, etc. *Nevertheless, some of the water-bearing units within and around the DB area will still contain high or relatively-uncontaminated waters, suitable for numerous other uses.* This pattern is the norm at typical metal mine locations worldwide, including uranium sites. The proposed D-B activities will increase the concentrations of such contaminants in some local ground waters, as a minimum. Thus, it is imperative that the specific locations and characteristics of these contaminated and uncontaminated waters be defined in a DSEIS available for public review and comment prior to publication of a FEIS and project approval.

6. The DSEIS gives the impression that all of the D-B-area waters (surface and ground) are already contaminated. However the DSEIS fails to supply the detailed data necessary to support that contention. Experience at similar sedimentary uranium sites indicates that significant quantities of uncontaminated ground water likely exist, and could be used for other livestock, agricultural, domestic, etc. uses. The NRC has failed to require Powertech to provide statistically-adequate, reliable, preoperational baseline data, either within the D-B project area, or in surrounding regions. Without adequate baseline data, the presently-uncontaminated waters could become contaminated through ISL-related activities, but the public would have no way of discovering this impact.

7. The DSEIS fails to provide basic information necessary to reliably evaluate future, LONGTERM impacts. If the D-B-area resources had been evaluated in a truly detailed, interdisciplinary, scientific manner, the DSEIS would have collected and summarized the most fundamental technical information relating to water resources, such as:

- a detailed inventory of all present water users within a radius of at least 2 miles of the proposed D-B boundaries. Such an inventory would include statistically-valid, preoperational data on well yields, water levels, detailed water quality.
- a detailed, statistically-valid summary of BASELINE data for water quality and quantity from the relevant water-bearing units, based on pre-operational data. These would already include evaluation of hydrogeologic characteristics for all of the relevant water-bearing units based on actual, long-term aquifer / pump testing data. Such baseline data would also incorporate all relevant data collected prior to Powertech's involvement, including data collected during the 1950s to the present (including, for example, TVA data).

- detailed data on the presence and condition of all subsurface borings (exploration holes, oil and gas holes, etc.)
- a detailed spring and seep survey, which would have included statistically-reliable (and seasonally-meaningful) measurement of field parameters and yields, detailed water quality—all based on preoperational data.
- all such actual data / information could easily be summarized in the form of maps, tables, and graphs, without resorting to thousands of pages of disorganized text, which has been the approach taken by Powertech and the NRC.

8. In addition, a technically-reliable study of the D-B area would have summarized the detailed data and long-term impacts from the numerous actual, operating and closed ISL sites (throughout the USA and other countries), to gain insight on actual results and impacts obtained from a *population* of sites. It is technically-meaningless to make deterministic predictions about such impacts at a *single* site, especially a site to be operated by a company that has never operated another ISL mine.

9. Impact evaluation (by NRC, PT and consultants) in this DSEIS fails to follow accepted approaches used in the wider scientific community. The DSEIS fails to use reliable scientific investigation to assess or compare known impacts at *populations* of other operating and closed ISL sites. Most importantly, it is not possible to reliably-rank future D-B impacts [SMALL, MODERATE, LARGE] when the NRC and public lack reliable baseline data to use as a measure of change. Such approaches would not be acceptable in most technical, scientific (academic-research) publications.

10. The data and information described above are required for an analysis in a DSEIS prior to FEIS or license approval. Otherwise reliable evaluations of future impacts cannot be made. In addition, without such data, it will be largely impossible to hold the operators responsible for future, unremediated impacts.

### **Specific Comments**

**The DSEIS has been publicly-released at a period specifically inconvenient for public review.**

11. By releasing the DSEIS over the winter holiday season, NRC has obviously made review and commenting on these documents more difficult and precluded the public from making a useful site visit to verify data and claims made in the DSEIS.

**The DSEIS comprises thousands of pages of convoluted, poorly-organized and inadequately-summarized material.**

12. The various D-B documents submitted to the NRC encompass more than **14,512 pages**, yet fail to adequately present the most basic data (see below).

For example:

--the 2009 Application was almost 6000 pages;

[Technical Report (TR)-- 3103 pages; Environmental Report (ER)-- 2615 pages;

Supplement to Application-- 66 pages.]

--the 2011 Powertech submittal totaled roughly 5000 pages;

--the present DEIS (Vols. 1 & 2) comprises 858 pg., which is only part of the GEIS;

--the GEIS, to which much of the DSEIS refers comprises 3512 pages.

13. The relevant D-B information, if compiled in a direct, transparent manner using predominantly maps, tables and graphs, could easily have been summarized in 150 pages for the DSEIS. Instead, the DSEIS is so duplicative and poorly-organized that it makes informed review by both the regulators and general public unnecessarily convoluted.

**The DSEIS fails to adequately respond to the weaknesses and written criticisms of the Powertech Application.**

14. The Powertech Application submittals (2009, 2011) were prepared by Powertech and its consultants, based largely on data collected by these same parties. While the DSEIS states that it was prepared by the NRC [and the CNWRA (Center for Nuclear Waste Regulatory Analyses)], it appears that it is based entirely on these same Powertech data, with no new water-related data added since the application. Clearly most of the DSEIS opinions are also based on the technical opinions of Powertech and their consultants.

15. Also, the DSEIS fails to adequately respond or address most of my written Opinions made regarding the D-B Application, which were submitted to the NRC in April 2010 (Moran Declaration, April 2010).

**The DSEIS is Technically-deficient, lacking fundamental data that are needed to reliably evaluate likely impacts to the D-B-area water resources and related environment.**

16. The DSEIS admits that important water quality data collection and aquifer testing will only be conducted after license issuance (e.g. DSEIS p. 2-16, 7-8, 7-14, 7-17).

17. Such data are needed *now*, as part of any useful EIS and certainly prior to issuance of an operating permit. These data include: reliable preoperational

baseline data on water quality and quantity / yields of all relevant surface and ground waters; specific data on the total water volumes to be used by all D-B operations; detailed data on hydrogeologic characteristics of all relevant geologic units; detailed evaluations of the hydraulic interconnections between the uranium production zones and the other relevant water-bearing and confining units; data on the detailed chemical compositions of barren and pregnant solutions, evaporation pond waters, etc.; a detailed inventory of all water users within at least a 2 mile distance of the D-B project boundaries. Details on these categories are discussed below.

### **Concerns Expressed by Other Federal and State Agencies not Addressed**

18. The DSEIS mentions on p. 1-15 and 16 that several other Federal and State agencies have expressed concerns regarding impacts to Water Resources, etc. from the proposed D-B project, but fails to discuss or address in any detail these criticisms. This omission gives the false impression that the present comments (for the Oglala Sioux) are made in isolation from those of these other regulatory agencies.

19. A brief review of the coordination conducted with other agencies reveals the following points of concern with respect to these agencies:

- Coordination with BLM: South Dakota BLM field office: provided NRC staff with information on oil and gas leases in the proposed project area. DSEIS, P1-16. Additionally, BLM staff expressed concerns related to water quality and hydrology, land use, and cumulative effects.

- Coordination with U.S. Army Corps of Engineers: USACE documented the presence of 20 wetlands within the project area and determined that 4 were jurisdictional waters; these are Beaver Creek, an unnamed tributary to Beaver Creek, Pass Creek, and an unnamed tributary to Pass Creek (Powertech, 2009b, Appendix 3.5-H).

- Coordination with USFS: it expressed concerns that construction and operational activities could impact the nearby Black Hills National Forest and Buffalo Gap National Grasslands. USFS staff noted a concern about the cumulative groundwater effects of the project on the USFS-managed aquatic recreation areas of Cascade Springs and Keith Park Springs. USFS also expressed concerns about potential effects the project could have on Craven Canyon, known to have traditional cultural significance to Native American tribes.

- Coordination with USGS: With respect to the proposed Dewey-Burdock ISR Project, USGS staff expressed a concern that contaminated groundwater may travel from the project area and discharge into Beaver Creek within the proposed

project area and the Cheyenne River south of the proposed project area [via groundwater or surface water].

-Coordination With South Dakota Department of Environment and Natural Resources expressed concerns regarding:

(i) the adequacy of subsurface characterization, (ii) groundwater flow rates within and in the vicinity of the project area, (iii) potential complications in hydrology caused by past exploratory drill holes, (iv) potential hydrologic connection of production zones and abandoned onsite surface mines, and (v) the effectiveness of confining layers in isolating ore-bearing aquifers. NRC and SDDENR staffs also discussed the applicant's Class III UIC permit application (Powertech, 2010) and the water appropriation and waste management permitting processes for the proposed project. Potential risks to wildlife from wastewater surface impoundments associated with the proposed project were also discussed. SDDENR would coordinate with SDGFP to mitigate the potential effects of surface impoundments on wildlife; mitigation measures discussed included the use of netting and fencing to protect wildlife and implementing protocols to assess the effects of wastewater constituents on wildlife.

-Coordination with S.D. Game, Fish and Parks:

focused primarily on threatened or potentially threatened and endangered species (e.g., the plains topminnow, sage-grouse, and black-footed ferret) and species of local concern (e.g., raptors). SDGFP expressed a major concern: the potential effects on birds flying through the proposed project area and drinking at exposed wastewater evaporation ponds. SDGFP suggested two measures to mitigate effects on bird populations: (i) testing to determine the toxicity of constituents in the evaporation ponds and (ii) using netting and fencing to restrict wildlife access to exposed ponds. SDGFP also noted the need for testing and monitoring of soils at the proposed site to identify any buildup of salts and metals that could result from proposed land application of treated wastewater.

**Water Use: The D-B Project will use and contaminate tremendous volumes of ground water. How much water will be used throughout the life of the proposed DB operation?**

20. The D-B project area is semi-arid, having an average yearly precipitation of about 12.4 inches, and the range of evaporation for the So. Dakota-WY-Nebraska uranium region is between 40 and 50 inches (NRC GEIS 2009). Thus evaporation is roughly 3 to 4 times the yearly precipitation (ER, pg. 3-176 and 177; Fig. 3.6-27). Because the project is presently expected to operate for between 7 and 20 years, it will require the use of tremendous volumes of local ground water, and will result in losses of significantly greater quantities of water via evaporation.

**After 7 yrs = 239,148,000 gallons, or 239.15 Million gallons.**

**After 17 yrs = 580,788,000 gals or 580.8 Million gallons.**

**320 gpm = 168.2 Million gpy (gals. / yr).**

**After 7 yrs = 1,177,344,000 = 1.2 Billion gallons**

**After 17 years = 2,859,264,000 gallons = 2.86 Billion gallons.**

29. Clearly, this range of estimates indicates that vast quantities of ground water will be extracted from these aquifers over the long-term. At a minimum, Powertech should be required to construct a credible project water balance and to more seriously investigate the potential that such large-volume water use might impact local / regional ground water levels and well yields.

30. At present, I see no evidence that the Application contains a reliable compilation of *baseline water level and pumping-rate data for the surrounding domestic and stock wells (see discussion below)*. Without such reliable, summarized data, there will be no viable method to demonstrate that ground water levels (and related pumping costs) have not been impacted by project-related activities.

31. The public must assume that Powertech will pay no cost for the actual water (the commodity) used during operations—while numerous other users do. The specifics of this issue should be addressed by Powertech in writing.

32. Despite the central role of water in the operation of the project, water use, availability, depletion, and consumption are not seriously analyzed through a water balance investigation, or other similar technique. This analysis is critical to understanding the anticipated impacts during project review and for monitoring actual water impacts should this project actually begin using and consuming groundwater.

#### **Hydrogeologic Performance of the Water-bearing and Other Geologic Units.**

33. The DSEIS fails to provide detailed, site-specific information / data on the hydrogeologic characteristics of the relevant D-B water-bearing and other bounding geologic units, including the mineralized zones. Such data must be obtained by performing and interpreting *long-term*, aquifer test data. The DSEIS admits that such long-term, detailed testing will not be performed until after the NRC license is issued (e.g. DSEIS at 2-17, 7-11).

34. The hydrogeologic data presented in the DSEIS are **inadequate** to reliably portray and predict the following:  
-the baseline, detailed directions of ground water flow in the relevant water-bearing units;

- the extent of long-term hydraulic connections between the various geologic units, both within the project area and outside;
- the horizontal / regional extent of water level declines (and impacts on pumping rates) outside the project boundaries;
- the degree to which ground water withdrawals may impact local surface waters;
- the operator's ability to contain the migration of contaminants;
- the operator's ability to restore aquifer water quality to baseline / acceptable conditions.

35. Such inadequate hydrogeologic data also mean that any ground water flow simulations based on these data are likely to provide highly imprecise and unreliable predictions (e.g. SEIS, P.2-16, L 30-37).

36. In addition, such inadequate hydrogeologic data, coupled with the lack of reliable baseline water quality data (see below), render the NRC staff predictions about impacts (both incremental and Cumulative) to water resources *largely meaningless* (e.g. the Executive Summary and Section 5.0). For example, despite failing to define the extent (areal, vertical) and specific, detailed chemical compositions of past contamination, the NRC staff predicts that Cumulative Impacts to *Surface Waters and Wetlands* will be MODERATE TO LARGE (p.5-17), but that the D-B project will have a SMALL incremental impact on surface waters and wetlands when added to all other past and present impacts (p. 5-30). *Given the lack of detailed baseline data (hydrogeologic and water quality) such conclusions sound more like public relations statements than science.*

#### **Impacts from Long-term Pumping of Ground Waters.**

##### **Radius of Impacts / Influence. (modified from Moran Declaration, 2010)**

37. The DSEIS presents no specific hydrogeologic information on the anticipated declines in water levels at domestic and stock wells outside the D-B project. Despite lacking adequate, long-term aquifer test data, the Powertech ER (2009) presented *predictions of water level declines* after 8 years of continuous pumping:

- **9.9 to 42.8 feet** at the nearest domestic well in the Fall River Aquifer, located 15,075 feet [about 2.9 mi.] from the approximate center of pumping (ER pg 4-23);
- **4.9 to 12.6 feet** at the nearest domestic well in the **Lakota Aquifer**, located 10,915 feet [about 2.07 mi.] from the approximate center of pumping.

38. With such uncertainty, it is quite possible that some neighboring wells will be negatively impacted (water level declines / reduced pumping rates). These data interpretations indicate that domestic and stock, etc. wells should be inventoried and monitored out to at least 2 miles from the D-B boundary.



**The D-B water-bearing units are hydrogeologically interconnected.**

39. The DSEIS avoids discussing definitively the likely hydraulic interconnections between the various D-B water-bearing units. The 2009 Powertech Application does discuss these issues, but presents overly-optimistic conclusions about the isolation of the ore-bearing zones, aquifers, and the lack of fluid excursions that will occur, both vertically and horizontally. Powertech's description and evaluation of possible water-related impacts [2009 Application, ER pg. 8-2 (Table 8.1-1)] are unreasonably optimistic. It is unlikely that the process waters can be contained within the project boundaries given the following pathways that connect the project area with surrounding aquifers: 1) sedimentary formations; 2) geologic fractures, 3) exploration boreholes, 4) mine workings, 5), other anthropogenic fractures and borings.

40. The D-B uranium deposits occur in subsurface, fluvial channel, sandstone deposits in the Lakota and Fall River formations (Smith, 2005). These sandstones *inter-finger* with finer-grained silts and shales, often associated with lignites and coals, which form the typical lithologic sequences often seen in classic sedimentary uranium deposits (Abitz, 2005; Gott, 1974; Henry, 1982; Galloway, 1982; Henry, 1980; Harshman, 1972).

41. Hydraulically, such sedimentary packages typically allow ground waters to flow between the inter-fingering facies, both vertically and horizontally, when the coarser-grained sediments are *stressed by long-term pumping*. The hydraulic inter-connections are verified by conducting ***long-term aquifer tests integrated with sequential water quality sampling and in-situ measurement of field parameters*** (Henry, 1982; Galloway, 1982; Moran, R.E.—hydrogeochemical research activities, U.S.G.S., Water Resources Div., 1973—1978). *The hydraulic interconnections of such inter-fingering facies has been well known for decades within the petroleum industry research groups (e.g. Fisher, et. al., 1969).*

42. Thus, ore-bearing sandstones in typical sedimentary packages associated with roll-front uranium deposits *do not routinely behave as hydraulically-isolated bodies*. Numerous specific lines of evidence from the 2009 D-B Application documents indicate that the project sediments possess various pathways for the migration of water and contaminants from the ore zones into neighboring sediments, both vertically and laterally. For example, thousands of exploration boreholes have been drilled since the 1950's at the D-B site (Smith, 2005; TR, ER), many of which were not correctly plugged and abandoned (TR, Pg. 2-157; Append. 2.7-B, sub-Appendix D, pg. 1484; TR, Append. 2.6- A, pg. 972-1111). In addition, several sources (Smith, 2005, pg. 9; ER, pg. 3-106) report that the area contains historic shallow mine workings, both open pits and short tunnels that would provide additional flow pathways.

43. There are numerous old and existing water wells and old oil test wells in the D-B area, many with rusty and leaky casings, often unplugged or partially-plugged, drilled through several formations which act as potential pathways for

flow between water-bearing units (ER, pg.3-40; TR, Append. 2.2-A, pg. 740-779; 2.2-B, especially pg. 864- 902).

44. The 2009 Application, TR, pg. 2-153-154, states that hydraulic connections between local D-B aquifers often result because confining units are thin or are absent in many areas (ER, pg.3-56-57). In addition, Gott (1974) and others have mentioned the presence of breccia / evaporite pipes (collapse structures), which create vertical permeability pathways between aquifers. Gott (1974, pg. 27-29) and others discuss the common presence of faults and joints throughout the region, which could easily act as flow pathways. The DSEIS states that detailed geologic mapping conducted by Powertech found no indication of such breccia pipes (p. 3-32), but the document fails to state that a detailed examination of all the subsurface data was searched for the presence of such breccia pipes.

45. Vertical and lateral hydraulic connectivity between the ore zones and the neighboring facies / formations are also indicated by the aquifer test results conducted in both 1979 and 2008 (ER, pg.3-56-57; TR, pg. 2-170 & 2-180, for example; TR Append. 2.7-B, Knight-Piesold Pumping Test Report, pg. 1290).

46. The DSEIS fails to assess the forgoing conditions, or likely impacts associated with these conditions in any scientifically meaningful way, nor does it consider that geologic materials with geologic / hydraulic characteristics similar to the D-B target formations frequently yield both water and oil and gas from **geologic fractures**. A classic example is the Florence oil field in Colorado, which has been producing continuously from fractures in the Cretaceous Pierre Formation since 1862, making it the second oldest producing field in the U.S. [<http://ghostdepot.com/rq/library/magazine/florence%20oil.htm> ].

47. The Pierre Formation exists in the Black Hills region and lies stratigraphically above the Inyan Kara Group, the target formations at D-B (Tourtelot, 1962; DSEIS p.3-14). Thus, it is likely that several of the geologic units in the D-B area can also transmit fluids via fracture pathways. This indicates that future computer simulations of D-B ground water flow and leach field performance should be capable of modeling fracture flow characteristics.

48. The aquifer testing already performed *demonstrates leakage between the various formations / facies bounding the ore zone. However, it seems equally likely that longer-duration aquifer tests conducted at even higher pumping rates would demonstrate even more clearly the leaky nature of these site sediments.*

**Potential hydrogeologic pathways to nearby wells have not been adequately investigated and documented.**

49. The discussion above presents ample evidence that the D-B area sediments contain numerous possible subsurface pathways for project leach fluids to migrate vertically between water-bearing units and outside the project

boundaries. Unfortunately, as noted above, Powertech has not adequately defined the baseline water levels or water quality conditions of neighboring wells within a 2-mile radius of the D-B project. In addition, the 2009 Application, TR pg. 2-180, states that no public data are available on the use of aquifers in Fall River or Custer counties. Such data should have been compiled by Powertech as part of the DSEIS and Application, and should be required before any licenses are given.

#### **Toxic and Hazardous Substances to be Used at D-B.**

50. The following chemicals are proposed to be used / stored at D-B (DSEIS, p.4-19):

"The applicant proposes to store, use, and receive shipments of the following chemicals: sodium chloride (NaCl), sodium carbonate (NaHCO<sub>3</sub>), sodium hydroxide (NaOH), hydrochloric acid (HCl), hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), carbon dioxide (CO<sub>2</sub>), oxygen (O<sub>2</sub>), anhydrous ammonia (NH<sub>3</sub>), diesel fuel, gasoline, and bottled gases (Powertech, 2009b)."

51. All these chemicals are likely stored / used in concentrations that would qualify them as toxic or hazardous substances. Releases of such chemicals can contaminate local soils and waters. Despite the proposed use of these chemicals, the proposed water quality (surface and ground waters) and soils monitoring does include constituents adequate to demonstrate the presence of several of these chemicals, especially the fuels / organic compounds (see below).

#### **Chemical Analyses (Detailed) of Ores, Pregnant Leach Solutions, Liquid Wastes are not presented in the DSEIS.**

52. The DSEIS fails to provide actual, detailed chemical analyses (numerous) of representative pregnant leach solutions (ore reacted with lixiviant), both before and after undergoing ion exchange treatment. Such data would routinely include both in-situ measurements of fluid temperature, pH, specific conductance, possibly D.O. (dissolved oxygen) and Eh (redox). Similar representative, detailed data should also have been included for the detailed chemical composition of liquid wastes to be disposed of via deep-well injection, land application and evaporation.

53. Because most mining projects at a similar stage of advancement have already conducted extensive laboratory testing and prepared Feasibility Studies to present to potential investors, such detailed chemical composition data would be available. It is not sufficient to present theoretical / expected chemical compositions, as has been done in the 2009 Powertech ER, pg. 4-83. Smith & Assoc. (2005), pg. 5, reports that TVA, one of the previous mineral right holders, had a "pre-mine feasibility study" prepared, probably in the late 1970's or 1980's. If TVA had obtained such detailed data in earlier decades, certainly Powertech would have obtained the older Feasibility information and contracted to have an

updated Feasibility Study performed. Clearly some information in Feasibility Studies is considered proprietary, but detailed chemical composition data on the pregnant solutions and liquids / wastes described above should be analyzed and available to the public and included in any complete DSEIS.

**Characterization of Water Resources: Inadequately Described and Characterized.**

54. The DSEIS fails to clearly distinguish site surface waters, ground waters (including springs and seeps), wetlands, and waters flowing from boreholes. As all of these waters are ultimately interconnected, hydraulically, this prevents a clear understanding of future impacts to water resources. In several sections, the DSEIS actually confusingly describes ground waters as surface waters. For example, on p. 3-23, it discusses ground waters in abandoned mine pits as though they are surface waters. Page 3-23 states that there are *no known natural springs* within the proposed Dewey-Burdock ISR Project area, which does not mean that a detailed attempt to locate and characterize such springs was ever conducted. On p. 3-27-28, the DSEIS confusingly describes water flowing from an old well as the source of a wetland, when it is obviously not a natural wetland.

55. DSEIS page 3-20 contains a section disingenuously entitled "Artificial Penetrations", but which is strangely not included in the discussions pertaining to either Surface or Ground Waters. It states: "According to the environmental report, there are 4,000 exploration drill holes representing historic exploration activities (Powertech, 2009a). The applicant has drilled approximately 115 exploration holes, including 20 monitoring wells in the project area. While the applicant cannot confirm that all historic borings were properly plugged and abandoned, the applicant has made commitments to ensure that unplugged drill holes will not impact human health or the environment during operations (Powertech, 2009b, 2011). In the technical report (Powertech, 2009b), the applicant stated that little evidence of unplugged boreholes has been observed given infrared photography data. However, an infrared map of a portion of the Burdock area shows an alkali pond area (Powertech, 2011). The applicant states unplugged borings appear to explain the presence of this pond area. No other pond areas or springs appear in infrared photography data of the Dewey-Burdock site. There is no other evidence indicating that previously unplugged borings are current groundwater flow pathways (Powertech, 2011)."

56. This section makes several half-explained statements as though they are proven facts, and diverts from the likely hydraulic interconnections these boreholes have created between the site surface and ground waters. It implies that a careful study of the site using infra-red photography has been performed, when it is clear that a map of only a portion of the site was available. Despite this tortured language, there is no reason to dismiss the likelihood that many of the old boreholes are acting as conduits between the various water-bearing units, at least below the land surface. Strangely, the DSEIS describes the presence of

several water-filled mine pits (p. 3-23), yet they are not mentioned as being visible on the "infrared photography data of the Dewey-Burdock site". Clearly a more thorough investigation using infra-red photography and satellite imagery is called for.

### **Baseline Water Quality**

57. The D-B project area has been historically mined and thousands of exploration holes have been drilled within the properties. Hence, it is imperative that high-quality baseline data be supplied to evaluate the actual extent of past impacts to water resources, and the success of future containment or aquifer restoration.

58. The DSEIS, like the Powertech Application, fails to define pre-operational baseline water quality and quantity—both in the ore zones and peripheral zones, both vertically and horizontally. Without adequate baseline water quality data (both ground water and surface water), there is no reasonable method for either the public or the NRC to evaluate the success or failure of either fluid containment or aquifer restoration. The DSEIS and Powertech Application documents repeatedly attempt to convey the impression that the D-B ground water quality is already degraded, rather than compile statistically-defensible data from both the ore zones and non-mineralized zones.

59. This approach contradicts NRC guidance, which requires that pre-mining baseline conditions be defined *before licensing* (NRC, 2003, pg. 2-24). Failing to define specific baseline conditions prior to license approval also contradicts NEPA regulations (Parsons, 2013, p.2).

60. Failing to define and quantify preoperational baseline is also scientifically unsupportable as it allows Powertech and the DSEIS to avoid discussing which specific water sources are contaminated by past uranium mining activities and which represent naturally-contaminated waters.

61. The DSEIS, Table 3.5-4 misleadingly presents what is entitled: Baseline Groundwater Samples with Values Exceeding the MCLs(p. 3-38). Firstly, this table and related discussion fail to make clear that many of these sites are contaminated by past, un-remediated uranium mining and processing. Secondly, the table leaves out most of the important baseline constituents a competent evaluation would have included. Thirdly, the table leaves out any values below the MCLs. Thus, this table does not represent baseline ground water quality. *Most importantly, the DSEIS does not contain tables of any of the detailed water quality data, baseline or otherwise.* Further, there is no data or analysis of the hydrogeological mechanisms by which the previous contamination occurred, spread, or was contained.

62. Clearly the DSEIS / Powertech ground water baseline data should include, *as a minimum*, the chemical constituents listed in Table 2.7.3.1 of the NRC's Standard Review Plan (NRC, 2003, pg. 2-25), and Table 7.3-1 of the DSEIS. In addition, baseline water quality monitoring (both ground and surface water) should be expanded to include nitrate, ammonia, aluminum, antimony, strontium, lithium, thallium, turbidity, scans for organic compounds, and / or total organic carbon, and be integrated with *in-situ* field measurements (temperature, pH, S.C. turbidity), water levels and well yields and / or flows.

63. It is only logical that the actual list of baseline constituents should be based on analyses of pregnant solutions resulting from leach testing of the D-B ores and lixiviants—not on theoretical assumptions about what might be the chemical compositions. Such pregnant solution analyses should be made public in the DSEIS prior to Application approval.

64. Frequently, uranium roll-front ores will also mobilize significant concentrations of additional constituents, such as antimony, lithium, and strontium (Moran, 1976). In addition, it is common to detect elevated concentrations of aluminum, sometimes as the result of well-drilling and completion techniques. Thus, it is recommended that these constituents be included in routine determinations of baseline water quality. In fact, standard lab analytical scans, such as ICP (inductively-coupled plasma spectroscopy) routinely report all (or most) of these metals and metalloids at the same cost. It should be noted that almost all of these constituents were included in the data in Appendix 3.4-C of the Powertech ER.

65. I suggest that nitrate and ammonia determinations be included to allow future analysis and determinations regarding impacts from agricultural or industrial sources (ammonia may enter the aquifer via numerous agricultural or industrial activities).

66. Section 2.7 of NRC (2003) is unclear whether applicants shall provide water quality data from unfiltered (Total concentrations) or 0.45-micrometer-filtered ("dissolved") samples. Table 7.3-1 of the DSEIS states that only dissolved constituents will be reported. Much of the D-B data in the Powertech Application Appendices includes both dissolved and Total determinations. It is recommended that unfiltered samples be collected and analyzed, as a minimum, for baseline ground water evaluation. These provide more *conservative* characterization of the ground waters, and waters used in rural areas (human and livestock consumption from wells; other agricultural uses; irrigation; fisheries) are not filtered. Furthermore, contaminants carried in particulate form are ingested by humans and other organisms when consuming unfiltered waters. These particles / colloids are dissolved by the extreme biochemical conditions found in the guts of such organisms, mobilizing the contaminants into the blood and other tissues. In addition, many trace constituents are mobile in ground waters as colloidal

particles (McCarthy, 1989; Ramsey, 2000), which would be removed by filtration, generating unreasonably-low concentrations.

67. Determination of “suspended” fractions is of little utility as there are no regulatory criteria or standards for suspended forms, and such data are subject to much greater error (from the combination of sampling and analytical errors) than are either simple filtered (Dissolved) or unfiltered (Total) determinations.

68. To ensure data quality, the D-B baseline data should include:

- statistical comparisons of the field and lab determinations of pH, and S.C. for the same samples;
- comparisons of Dissolved versus Total determinations from the same samples;
- ion balances, to assist in evaluating the reliability of the analytical data, with comparisons of TDS and S.C. (Hem, 1985).

69. No coordinated, statistically-sound data set for all Baseline Water Quality data (both surface and ground water) is presented in these documents—as is required in NUREG-- 1569. The DSEIS makes clear that baseline water quality will actually be established after operations begin (e.g. DSEIS p.7-13, 14: Projectwide GW monitoring ). The DSEIS fails to include reliable baseline water quality data for any of the categories of ground water or surface water.

70. The 2009 Powertech Application, carried forward in the DSEIS, include what it incorrectly calls baseline. For example, on pg. 2-14 and 2-15 of the Technical Report (TR), Sect. 2.2.3.2.2, Powertech states: “At the project site, baseline groundwater sampling was conducted in general (sic) accordance with NRC Regulatory Guide 4.14 (NRC, 1980). ... A summary of the results and methods for the groundwater quality monitoring program, as well as the historical TVA data, is presented in Section 2.7.” However, when the reader goes to TR Section 2.7, there are no tables that actually statistically summarize complete baseline field and lab water quality data for the complete data sets—both historic and recent. Instead, for ground waters, Powertech presents statistics for field data from individual wells or selected aquifers, but fails to statistically-summarize the laboratory data and leaves out the historic TVA data. Powertech then states (TR, pg. 2-203): “Complete groundwater quality data results are available in Appendix 2.7-G.” However, on TR, pg. 2-205 (Sect. 2.7.3.2.2.2, Results for Laboratory Parameters) Powertech then states: “Summary statistics for baseline monitoring program laboratory samples are contained in Appendices 2.7-H and 2.7-I. Appendix 2.7-H gives statistics for all groundwater constituents detected at or above PQL by constituent.” Thus, it appears that Powertech has not included “qualified values,” that is data reported as “less than” some concentration. By deleting the “less than” values, Powertech has severely biased the data set, rendering it useless as a reliable source for evaluating baseline conditions.



71. Furthermore, Powertech states (TR, pg. 2-217-218) that they have arbitrarily selected some analyses from the voluminous historic TVA data, but the reviewer is never allowed to see a statistical summary of the total original data set. This error is carried forward in the DSEIS. Portions of the relevant data are scattered throughout the Appendices of the various documents, and disingenuously organized to leave out all baseline data that had concentrations reported below the detection limits (i.e. "less than" values). Obviously, this approach biases the data. The NRC must require Powertech to statistically summarize all historic water quality data and all recently collected data in separate tables, including all "less than values." Both historic and recent baseline data should be segregated by water-bearing unit. Even should averaging of water quality data over a portion of the aquifer be acceptable, the methodology employed in the Application and DSEIS of discounting relevant data points is untenable.

72. To further confuse the baseline issues, Powertech's Supplement to the Application (August 2009) states on pg. 3-3: "A minimum of eight baseline water quality wells will be installed in the ore zone in the planned well field area." Thus it appears that the Applicant intends that the massive amounts of water quality data (historic and recent) presented in both the TR and ER (Environmental Report) will not actually be used to determine baseline. More importantly, it is unclear whether Powertech has true baseline (pre- operational) ground water quality data that describe the **non-ore zone regions of the relevant aquifers**. It is imperative that baseline data for the non-ore zone ground waters be collected and summarized separate from those of the ore zones – a review the DSEIS fails to conduct.

73. Any revision of the DSEIS should incorporate the comments made in Abitz (2009) regarding baseline characterization and data interpretation.

74. Lastly, the DSEIS should already contain a statistically-reliable database of baseline ground water quality data from all known wells within at least 2 miles of the DB boundary

### **Confusion of Baseline and Background**

75. Table 7.3-1 of the DSEIS (p. 7-8 to 7-11), and the accompanying text confusingly and incorrectly use the terms "Background" and "Baseline" as having the same meaning. For many decades, "background" in geochemical / water quality literature has been defined as: "The normal abundance of an element in unmineralized earth materials is commonly referred to as background." (Rose, Hawkes & Webb, 1979, p. 30). Baseline in environmental studies has routinely been used to define a starting criterion, or yardstick, against which subsequent data are to be compared. Baseline has been used in this sense for many decades. In mining-related studies, the most common "baseline" is either pre-mining or preoperational conditions.



**The DSEIS fails to clearly and adequately describe the detailed methods employed for collecting water quality and water quantity data, for both surface and ground waters.**

76. Because the specific sampling and handling procedures can drastically change the results obtained when collecting water quality samples (both surface and ground water), it is imperative that the DSEIS include detailed descriptions of the various sampling, sample handling, preservation and shipment methods employed. Likewise, the DSEIS contains inadequate detail concerning the specific methods employed in collecting field water quality measurements and measurements of well yield, stream flow, etc.

77. For example, such details should provide information similar to those contained in the U.S.G.S. methods documents cited below:

[USGS] United States Geological Survey, variously dated, National field manual for the collection of water-quality data: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chaps. A1-A9, available online at: <http://pubs.water.usgs.gov/twri9A>.

**Surface Water Quality Baseline Data: The DSEIS fails to adequately characterize these resources, or to include statistically- reliable summaries of detailed surface water data.**

78. Tables 3.5-1 and 3.5-2 (p.3-25-26) present totally incomplete and inadequate summaries of surface water quality. Most hydrogeologically-important chemical constituents are missing from these tables and they contain no indication of whether samples were field-filtered, or if the data are Total concentrations. (unfiltered samples).

79. The DSEIS contains no substantive discussion of the interactions between ground and surface waters, especially when the hydrogeologic system would be under pumping stress—as would be expected during the operating life of the D-B project. The DSEIS contains no detailed analysis or discussion of potential impacts to site surface waters due to ground water pumping, or potential spills and permitted discharges to surface waters. All such operations generate short-term impacts to surface waters, as a minimum.

80. The DSEIS no longer contains the questionable statements included in the 2009 application at ER pg. 4-16, which state: “Most ISL operations extract slightly more groundwater than they re-inject into the uranium bearing formation. ***The groundwater extracted from the formation could result in a depletion of flow in nearby streams and springs if the ore-bearing aquifer is hydraulically connected to such features.*** However, because most, if not all ISL operations are expected to occur where the ore- bearing aquifers are

confined, local depletion of streams and springs is unlikely, and potential impacts would be anticipated to be SMALL (NUREG-1910, 2008).” However, the DSEIS provides no detailed technical analysis to support the contention that surface waters will not be impacted because water-bearing units having confined aquifer conditions underlie much of the D-B site.

81. More importantly, the DSEIS and Application fail to provide a summarized, statistically-reliable surface water quality baseline database. As such, there will be no defensible method for verifying whether impacts to surface water quality have or have not occurred.

**A Baseline Spring and Seep Survey is not presented in the DSEIS.**

82. Disingenuously the DSEIS states that: “There are **no known natural springs** within the proposed Dewey-Burdock ISR Project area (Powertech, 2011). There is one area in the southwest corner of the Burdock area, known as the “alkali flats” or the “alkali area,” where **groundwater is discharging** to the ground surface from the Fall River aquifer and Chilson aquifer (Chilson Member of the Lakota Formation) **through improperly plugged exploratory boreholes** (Powertech, 2011). Two springs are present along the Dewey Fault near the town of Dewey approximately 2 km [1.2 mi] northwest of the proposed project boundary (DSEIS p. 3-23).”

83. The DSEIS presents no information to indicate that either the NRC or Powertech have conducted an actual spring and seep survey. Such a survey would have included and characterized the springs along the Dewey Fault, and any others located within the D-B area and a reasonable perimeter, which should be at least 2-miles from the project boundary—given the results of the short-term pump test data in the 2009 Application.

84. The region surrounding the D-B project contains numerous springs in both the Madison and Minnelusa formations (DEIS p.3-32; Driscoll, et al., 2002). Baseline surveys of springs and seeps are crucial in studies where large volumes of ground water are to be extracted. The flows of such seeps and springs often decline or stop after large-scale, long-term ground water extraction begins, especially in arid or semi-arid regions, such as the D-B area. If such impacts begin to occur, disputes will arise as to the possible roles of the project water extraction and overall climate change, for example. Hence, it is imperative that such a survey be performed prior to issuance of any licenses, and such a survey should include, as a minimum:

- locate and survey all springs and seeps within some reasonable radius of the project boundary;
- measure and record flow / discharge quarterly for at least one year prior to issuance of any licenses;
- during all field episodes, make field measurements of in-situ pH, water temperature,

and S.C.(specific conductance) and collect samples for laboratory analysis.

Samples should be analyzed for the same list of constituents noted in the Baseline water Quality comments above. Spring and seep water quality data should be interpreted as representative of local ground water quality (Freeze and Cherry, 1979; Hem, 1985).

**The presence of high quality ground waters within the D-B Project boundary have not been adequately defined.**

85. Much of the DSEIS discussion concerning ground water quality seems focused on showing that the site waters are already contaminated. This would not be surprising given the presence of the uranium mineralization and the past mining and exploration activities—all of which would have caused increased concentrations of numerous chemical constituents above true pre-mining baseline. However, based on statements and data presented in the DSEIS, Powertech has not adequately defined whether zones peripheral to the D-B ore-bearing geologic formations and bounding formations (above and below) also contain zones of high-quality, possibly potable ground water. Such zones should already have been defined as part of the DSEIS and Application documents.

**Potential impacts to ground waters have been unrealistically minimized and inadequately characterized.**

86. The DSEIS fails to provide adequate baseline data to demonstrate that portions of the ore-bearing zones do not contain high quality ground water. In fact, it is clear that the NRC has relied on Powertech data that clearly are biased against revealing the extent of high quality ground waters. For example, Table 3.5-4 includes only water quality concentrations that exceed the MCLs (maximum contaminant levels), and discards all data having lower concentrations (p. 3-38). The discussion on p. 3-37 also is clearly intended to convey the message that most of the D-B area waters are already contaminated. A similar bias is presented in the DSEIS discussions of D-B area surface water quality (p.3-23, 25, 26, 27).

87. The DSEIS continues the unbalanced discussion of contaminated “baseline” that was presented in the 2009 Application. The ER (pg. 4-18) states that all D-B ore zone ground water quality is degraded by natural mineralization processes, but there are no data provided to support this allegation and in many similar situations it is simply not true. Furthermore, many ground water- bearing zones in mineralized areas do not contain elevated concentrations of metals, non- metals, etc. until they have been exposed to air and bacteria—often as the result of previous mining or exploration drilling—as has occurred here. Even following exploration and mining activities, some portions of ore-bearing formations continue to contain high-quality ground water.

88. Hence, it is not defensible for NRC and Powertech to state, as the company does in ER Sect. 4.6.2.2 (Potential Impacts of Production on Ore Zone Groundwater Quality) that: "Potential environmental impacts to groundwater are changes to water quality in well fields within the exempted aquifer. The impact, in and of itself, is of limited significance, due to the fact that the groundwater quality is very poor prior to ISL operations; due to the presence naturally occurring radionuclides, heavy metals, and other constituents that exceed EPA and/or state drinking water limits. Accordingly, the exempted aquifer is not and can never serve as a USDW (HRI, 1997; NMA, 2007)." The citations provided here by Powertech do not pertain to the specific D-B situation and one, the NMA citation, is simply a routine public relations statement made by the industry's lobbying group. The DSEIS inadequately addresses these issues.

89. The public relations statements continue on ER, pg 4-18, where they state: "Powertech (USA) has proposed to use gaseous oxygen and carbon dioxide lixiviant. The interaction of the lixiviant with the mineral constituents of the exempted ore zone results in a slight increase in trace elements and primary constituents of sulfate, chloride, cations and TDS above pre production levels. There is no introduction of non-naturally occurring constituents from the leach fluids into the ore body."

90. To support these unsubstantiated statements, Powertech needs to supply actual, detailed chemical analyses of the pregnant leach solutions (multiple analyses)—solutions resulting from the chemical interaction of the proposed lixiviant and the ore zone rocks. It is a basic purpose of an ISL operation to introduce these lixiviants to drastically change the local ground water chemistry, routinely producing significantly-elevated concentrations of many major and trace metals and metalloids, plus other constituents: i.e. arsenic, antimony, molybdenum, selenium, vanadium, uranium, strontium, iron, manganese, lead, lithium, nickel, chromium, sulfate, chloride, etc. It is a total "red-herring" to claim that: "There is no introduction of non- naturally occurring constituents....."

91. *In addition, there is ample evidence in the technical and regulatory literature to show that the leached aquifers at most, if not all ISL operations, have never truly been restored to their pre-operational, baseline water quality.*

**Ground Water Monitoring Methods are Inadequate to Reliably Define Past or Future Impacts. Domestic and Stock Wells.**

92. DSEIS p.7-13 and 14 (Project-wide GW monitoring), states that all domestic and stock wells within 2km (1.2 mi.) of the project area will be sampled quarterly for a year to establish baseline water quality after operations begin [based on NRC, 1980, Regulatory Guide 4.14]. "All the preoperational groundwater samples will be analyzed for the constituents listed in Table 7.3-1."

93. The stated approach presents several *serious flaws*:

- if the samples are collected after operations begin, they cannot be considered true baseline;
- the list of constituents to be monitored is inadequate;
- The NRC Guidance Document cited is inappropriate: it refers only to uranium mills, not ISL operations, and deals only with radiological effluent.
- This Guidance Document does not define the radius to which domestic and stock, etc. wells should be monitored, for any type of uranium operation--ISL or mill. The authors have incorrectly applied the 2-Km distance as the Guidance speaks only with regard to tailings impoundments at conventional mills (section 2.13; p. 4.14-4).
- sampling of these wells *during operations* is proposed to be done *once per year*, which is totally inadequate to note changes in water quality or water level.

94. The definition of the area containing domestic and stock wells to be monitored needs to be expanded and defined more precisely. Because the DSEIS fails to show that Powertech has ever performed a detailed well inventory of all wells outside the proposed DB boundary, such an inventory is needed to evaluate present and future impacts as part of any acceptable EIS. A preliminary inventory should investigate and summarize the characteristics of all wells within at least 2 miles of the DB boundary. The inventory should plot the locations of all such wells on appropriate maps and summarize their uses; date drilled; completion characteristics, including depths; well yields; availability of water quality data. Once such an inventory is completed, all of these wells should be monitored for detailed water quality and water levels quarterly for a year, with all data summarized in a revised EIS.

#### **Baseline Water Quality Within Proposed Operation Areas.**

95. The DSEIS states (p. 7-8) that selected wells completed within the mineralized zones will be used to evaluate "baseline" water quality and they will then be converted into injection or production wells. Clearly the water quality in many of these zones is no longer true baseline due to all of the historical drilling / mining in many of these areas. These activities would have altered the original geochemical and bacteriological conditions, leading to significant changes in the water quality. In addition, if the "baseline" wells are converted to injection or production uses, these wells must be maintained, post-closure, to allow for long-term monitoring to evaluate the success or failure of aquifer restoration.

#### **Land application is not an approved method of radioactive liquid waste disposal.**

96. The DSEIS proposes that various liquid wastes may be disposed via land application. However, US EPA (2008) guidance states that land application is not an approved method for disposal of such wastes. Equally importantly, the DSEIS has failed to supply detailed chemical analyses of these proposed wastes (see discussion below) to clarify the chemical nature of the materials being disposed.

97. Such detailed chemical composition data should be included in the DSEIS available for public comment and technical review prior to FEIS and license approval.

98. It is ironic that the Supplement to the 2009 Application erroneously states on pg. 4-7 that irrigation pivots have been used to dispose of non-hazardous wastes via surface application “with no deleterious effect on the environment” at Hobson, Mount Lucas, and Highland. In 2008, the operators of the Highland and Smith ISL mines in Wyoming were forced into a settlement agreement with the WY Dept. of Environ. Quality, because land application of liquid wastes containing elevated concentrations of selenium had contaminated soils. Part of the settlement agreement required the operators of Highland to immediately pay \$8 million to accelerate reclamation activities and to increase their financial assurance bonds for these two sites to \$80 million (WY DEQ, 2008). Furthermore, Faillace and others (1997) report that release of such waters will contaminate the soil at the land application areas. Radionuclides adsorbed by the soil will become a source term for radioactive release through wind erosion processes.

**Deep Well Injection of Liquid Wastes. The DSEIS fails to provide necessary details on the chemical composition of the wastes and water treatment specifics.**

99. At present, the public has not been told what specific measures will be used to dispose of D-B liquid wastes. One option mentioned is to dispose of such wastes via deep wells completed into the Minnelusa and / or Deadwood Formations (DSEIS p. 2-22). However, the public has no idea of the detailed chemical compositions of these liquid wastes. Detailed chemical analyses of these liquids should have been included in the DSEIS, including, as a minimum, all chemical constituents for which any category of environmental standard or criterion exists. These should include determinations of S.C., TDS, pH, all commonly-reported inorganics, trace elements, radiochemicals, and a detailed organic-constituent scan. Such data should be provided in the EIS for both treated and untreated liquid wastes.

100. While both the Minnelusa and Deadwood Formations are deep below the land surface, it is quite short-sighted to assume that these waters, once contaminated by the process wastes, could never generate negative impacts—especially if one considers the cumulative impact of the other industrial wastes that are or will be injected into these formations, long-term. Long-term scenarios should consider timeframes of at least 100s to 1000s of years in the future, when these deep waters may be required for other foreseeable domestic, agricultural, or industrial uses, and the economics of water are likely to be quite different than has been assumed in the GEIS (DSEIS p. 5-31). Thus, detailed water quality

analyses should be performed on these deep aquifer waters, both pre-injection and at various periods after injection is initiated.

**The technical and regulatory literature amply documents the numerous failures to restore aquifer water quality at other ISL sites. Thus, it is reasonable to assume that portions of the D-B ground water surrounding the leached zones will have degraded water quality and may be unfit for future uses.**

101. GEIS Section 2.5 described aquifer restoration activities within wellfields that *ensure water quality in surrounding aquifers would not be adversely affected by the uranium recovery operations* (DSEIS p. 2-35; NRC, 2009a). However, neither the DSEIS or the GEIS contain detailed discussions to demonstrate that the population of other in-situ operations have been able to do so. Indeed, the historical reality from other operating or closed ISL sites demonstrates an inability to restore to pre-operational or baseline WQ conditions for all constituents. (Otton, 2009; Hall, 2009).

**The public has no detailed information concerning the specific aquifer restoration standards / criteria that will actually be employed. The DSEIS presents no such specific aquifer clean-up standards / criteria.**

102. Because the DSEIS does not contain actual baseline data for D-B water resources, the DSEIS does not contain any such specific aquifer restoration standards / criteria. Instead, the DSEIS has the following convoluted, bureaucratic language (p.2-35):

“The primary goal of aquifer restoration is to return groundwater quality within the production zone of wellfields to the preoperational water quality conditions or to standards consistent with NRC requirements at 10 CFR Part 40, Appendix A, Criterion 5B(5) (Powertech, 2009b, 2011).”

103. The subsequent language makes clear to the reader that the public will not be told what the specific aquifer clean-up criteria will be until long after aquifer restoration has begun, and that the criteria are totally flexible.

“10 CFR Part 40, Appendix A, Criterion 5B(5) requires that groundwater quality in the exempted ore-bearing aquifer be restored to (i) a Commission-approved background (CAB) concentration; (ii) the maximum contaminant levels (MCLs) listed in 10 CFR Part 40, Appendix A, Table 5C, for constituents listed in Table 5C and if the background level of the constituents fall below the listed value; or (iii) an alternate concentration limit (ACL) established by the Commission, if the constituent background level and the values listed in Table 5C are not reasonably achievable. The ACL development is described in SEIS Appendix B. These groundwater quality standards would be implemented, as part of the aquifer restoration phase, to ensure public health and safety.”

**Target Restoration Goals and UCL Parameters and standards should all be selected by the NRC and presented publicly in the EIS, prior to license approval.**

104. The DSEIS uses unnecessarily convoluted and inconsistent terms to describe aquifer restoration standards / criteria. Various parts of the DSEIS use the following terms (DSEIS p. 2-35):

Commission-approved background (CAB)

Maximum contaminant levels (MCLs)

Alternate concentration limit (ACL)

target restoration goals

lixiviant migration indicators (DSEIS p. 7-11)

105. It is impossible to discern whether or not the target restoration goals are the same as lixiviant migration indicators.

106. DSEIS p. 7-11 states: "The constituents and parameters selected as lixiviant migration indicators and for which UCLs will be set at the proposed Dewey-Burdock ISR Project are **chloride, conductivity, and total alkalinity** (Powertech, 2011)."

107. The 2009 Powertech Application Supplement, pg. 5-6, Sect. 5.2.7, states: "Powertech management has always used **Chlorides, Sulfate, and Uranium** as Upper Control Limit (UCL) Parameters. **Sometimes Total dissolved Solids** is used." This statement fails to provide necessary clarity, as Powertech has never operated an ISL mine.

108. The descriptions of proposed water quality monitoring (surface and ground waters) on pages DSEIS 7-4 through 7-15 are unclear and unnecessarily convoluted. Instead of the pages of unclear wording presented here, these details should have been summarized using tables to show: the specific sites / wells to be sampled; specific constituents & parameters; sampling frequency, reporting protocol and frequency.

109. The procedures describing how UCLs will be determined are inconsistent (p. 7-11, L 24-38). The UCLs named in the 2009 Application supplement and the DSEIS (2012) are different. How could the procedures used in both cases comply with NUREG-1569 (NRC 2003)? Furthermore, setting the UCLs at the mean concentration plus 5 standard deviations is excessively lax. It would be much more meaningful to present means plus the 95 percent confidence intervals.

110. Apparently only water level and UCL data (chloride, conductivity, and total alkalinity) will be reported to EPA, and only quarterly (DSEIS p. 7-11). Such reporting is totally inadequate in both frequency and constituents. In essence it



prevents the public and the EPA from understanding what is happening at the site.

111. The NRC has considerable experience with numerous operating and closed ISL / ISR operations. Clearly NRC, not the operator, should select the appropriate "target restoration goals". Yet, the DSEIS p. 2-35, L 37-38, states: "The applicant would establish target restoration goals [CAB concentrations per.....]." Selection of such target restoration goals and UCL parameters and standards should be done by the regulatory agency in the DSEIS to avoid possible conflicts of interest and reveal these foreseeable impacts at the earliest possible stages of project analysis.

112. *Such specific restoration goals and standards should be presented in the DSEIS for public review and comment prior to FEIS or license approval.*

**The SDEIS does not clearly define the various zones that are contemplated to contain, monitor, and control migration of lixiviant-mobilized groundwater and chemical constituents.**

113. D-B Application Supplement, pg. 5-5 describes an aquifer exemption boundary, which acts as an additional buffer zone outside the monitor well rings "to provide protection to adjacent water from the excursions that occur in the normal course of operations." Page 5-6 of the Supplement further states that the aquifer exemption boundary is proposed to be up to 1200 ft. outside the monitor well ring, and would be considered the point of regulatory compliance. Apparently simply pumping to create an inward flow direction is not adequate to control "excursions." It appears this aquifer exemption boundary is actually an expanded ground water sacrifice zone.

**Mitigation is Not Detailed In a Manner That Allows Any Meaningful Review**

114. The DSEIS portrays mitigation to account for impacts, but the mitigation consists only of proposals to make plans to restore groundwater in the future. There is no detail as to the effectiveness of these proposed mitigation measures, nor any analysis of whether any such plans have succeeded in the past.

115. The DSEIS provides for monitoring of restored groundwater aquifers for only 12 months. DSEIS, P. 2-37. However, there is no assessment as to whether 12 months is adequate. Aquifer restoration activities at numerous other ISL sites have failed to return aquifer water quality to baseline conditions following years of attempts at clean-up. Hence, at minimum, the NRC should conduct these effectiveness reviews and require that post-operational monitoring of D-B aquifer water quality continue until baseline conditions are attained.

## Financial Assurance

116. DSEIS, p. 2-35 states that: "The applicant would also be required to provide financial sureties to cover the costs of both planned and delayed restoration programs, in accordance with 10 CFR Part 40, Appendix A, Criterion 9. NRC reviews financial sureties annually." Although a final decision on surety amounts will come at a later date, the revelation and analysis of the likely amount of surety must be revealed and analyzed in the DSEIS.

117. The NRC and the public know several general facts about the usefulness of most company-generated financial assurance estimates:

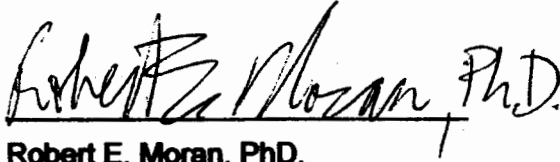
- 1-They generally are based on overly-optimistic assumptions about future water quality, thereby under-estimating costs. Kuipers (2000) conducted a survey of bonding practices at metal mines throughout the western U.S. and found that the bond amounts available were hundreds of millions of dollars below that necessary to conduct actual clean-ups. Many of the "problem" sites have been foreign-owned entities, especially those with their corporate headquarters and assets based in Canada.
- 2-Aquifer restoration at most, if not all previously-licensed and operated ISL sites has failed to actually return ground water quality to baseline conditions [Hall (2009); Otton and Hall (2009);
- 3-Predictions of future aquifer restoration success made by the project proponents seldom use truly conservative assumptions. Calculation of financial assurance amounts made by representatives of the party that stands to profit from project licensing represents an extreme conflict of interest.
- 4-The technical literature is filled with documentation that quantitative predictions of future water quality at *specific* sites cannot be done reliably [Sarewitz, et. al. (2000); Moran (2000); Pilkey & Pilkey-Jarvis(2007); Kuipers & Maest (2006)], and the general failure to restore aquifers back to pre-operational baseline concentrations supports this. This approach must be totally rejected because it assumes one can make accurate and precise *deterministic* predictions.

118. For these reasons, at least preliminary financial assurance calculations should be included in the DSEIS, preferably made by some independent party, not paid or directed by the project proponents. These calculations should also consider the actual reclamation and restoration costs incurred, long-term, from a statistical sampling of the previously-licensed ISL sites. Furthermore, these financial assurance amounts and mechanisms should be made public prior to award of any licenses.

119. To ensure protection of the general public, such financial assurance agreements (bonds, etc.) should be made with the parent corporation, not simply the local operating entity.

Pursuant to 10 C.R.F. § 2.304(d) and 28 U.S.C. § 1746, I declare under penalty of perjury, that the foregoing is true and correct to the best of my knowledge and belief.

Signed on the 24<sup>th</sup> day of January, 2013,

A handwritten signature in black ink, reading "Robert E. Moran, PhD." The signature is written in a cursive style with a horizontal line underneath the name.

Robert E. Moran, PhD.



LAB #:   
PATIENT:   
ID:   
SEX:   
AGE:

CLIENT #:   
DOCTOR:

## Toxic & Essential Elements; Hair

TOXIC METALS				PERCENTILE
		RESULT µg/g	REFERENCE INTERVAL	68 <sup>th</sup> 95 <sup>th</sup>
Aluminum	(Al)	4.6	< 7.0	
Antimony	(Sb)	0.019	< 0.050	
Arsenic	(As)	0.058	< 0.060	
Barium	(Ba)	2.1	< 2.0	
Beryllium	(Be)	< 0.01	< 0.020	
Bismuth	(Bi)	0.011	< 2.0	
Cadmium	(Cd)	< 0.009	< 0.050	
Lead	(Pb)	0.59	< 0.60	
Mercury	(Hg)	0.12	< 0.80	
Platinum	(Pt)	< 0.003	< 0.005	
Thallium	(Tl)	0.003	< 0.002	
Thorium	(Th)	0.002	< 0.002	
Uranium	(U)	0.20	< 0.060	
Nickel	(Ni)	0.13	< 0.30	
Silver	(Ag)	0.48	< 0.15	
Tin	(Sn)	0.18	< 0.30	
Titanium	(Ti)	0.38	< 0.70	
Total Toxic Representation				

ESSENTIAL AND OTHER ELEMENTS				PERCENTILE
		RESULT µg/g	REFERENCE INTERVAL	2.5 <sup>th</sup> 16 <sup>th</sup> 50 <sup>th</sup> 84 <sup>th</sup> 97.5 <sup>th</sup>
Calcium	(Ca)	1250	300- 1200	
Magnesium	(Mg)	79	35- 120	
Sodium	(Na)	26	20- 250	
Potassium	(K)	11	8- 75	
Copper	(Cu)	37	11- 37	
Zinc	(Zn)	150	140- 220	
Manganese	(Mn)	0.30	0.08- 0.60	
Chromium	(Cr)	0.35	0.40- 0.65	
Vanadium	(V)	0.31	0.018- 0.065	
Molybdenum	(Mo)	0.081	0.020- 0.050	
Boron	(B)	0.92	0.25- 1.5	
Iodine	(I)	11	0.25- 1.8	
Lithium	(Li)	0.022	0.007- 0.020	
Phosphorus	(P)	138	150- 220	
Selenium	(Se)	2.4	0.55- 1.1	
Strontium	(Sr)	11	0.50- 7.6	
Sulfur	(S)	45500	44000- 50000	
Cobalt	(Co)	0.029	0.005- 0.040	
Iron	(Fe)	11	7.0- 16	
Germanium	(Ge)	0.042	0.030- 0.040	
Rubidium	(Rb)	0.020	0.007- 0.096	
Zirconium	(Zr)	0.081	0.020- 0.42	

SPECIMEN DATA		RATIOS		
COMMENTS:		ELEMENTS	RATIOS	RANGE
Date Collected: 08/06/2016		Ca/Mg	15.8	4- 30
Date Received: 08/17/2016		Ca/P	9.06	1- 12
Date Completed: 08/18/2016		Na/K	2.36	0.5- 10
Methodology: ICP/MS		Zn/Cu	4.05	4- 20
Sample Size: 0.196 g		Zn/Cd	> 999	> 800
Sample Type: Head				
Hair Color: Brown				
Treatment:				
Shampoo:				

46A-1-8. Resolution of conflicting interests. The objectives and purposes to be served by the Board of Water and Natural Resources shall be to resolve conflicting special interests of federal, state, and local agencies or entities or private interests in proposed water projects, including federal projects and the designation and preservation of certain rivers or portions thereof as scenic rivers so that the public interest in such project proposals will be protected and enhanced, optimum over-all benefits will accrue to the people of South Dakota, and maximum consideration of all needs and desires in such water projects will be ensured, especially in those involving multiple purposes such as combinations of irrigation, flood control, navigation, electric power, domestic and stock water, municipal and industrial water supplies, lake stabilization, pollution control, water quality enhancement, fish and wildlife, recreation, groundwater recharge, erosion control, or other beneficial purposes and uses.

Source: SL 1972, ch 241, § 14; SDCL Supp, § 46-17A-13.

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Enacted Feb 11, 1994 Executive Order 12898  
entitled 'Federal Action to Address Environmental  
Justice in Minority Populations and Low Income  
Populations'

over

## **A Summary of the 1851 and 1868 Treaty Issue in South Dakota**

The Great Sioux Nation, which is composed of the Lakota, Dakota, and Nakota speaking people, once resided in a vast land area in the central part of the United States covering what is now 14 states and 3 Canadian Provinces. One of the Lakota origin stories says that the people of the Great Sioux Nation came onto the Earth from the mouth of Wind Cave in the Black Hills. The Black Hills were so sacred that they were used for ceremonial, medicinal, and funeral purposes only.

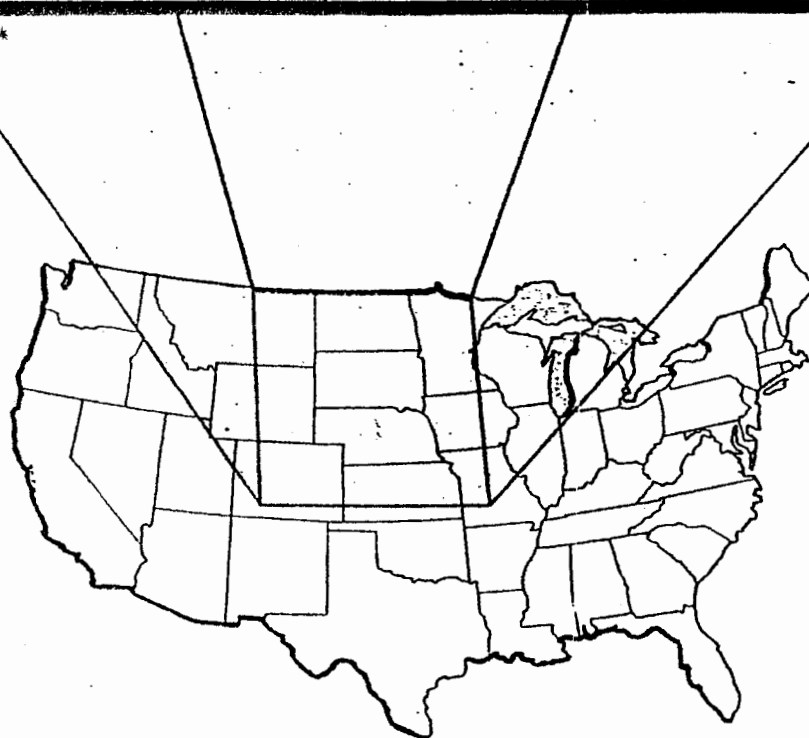
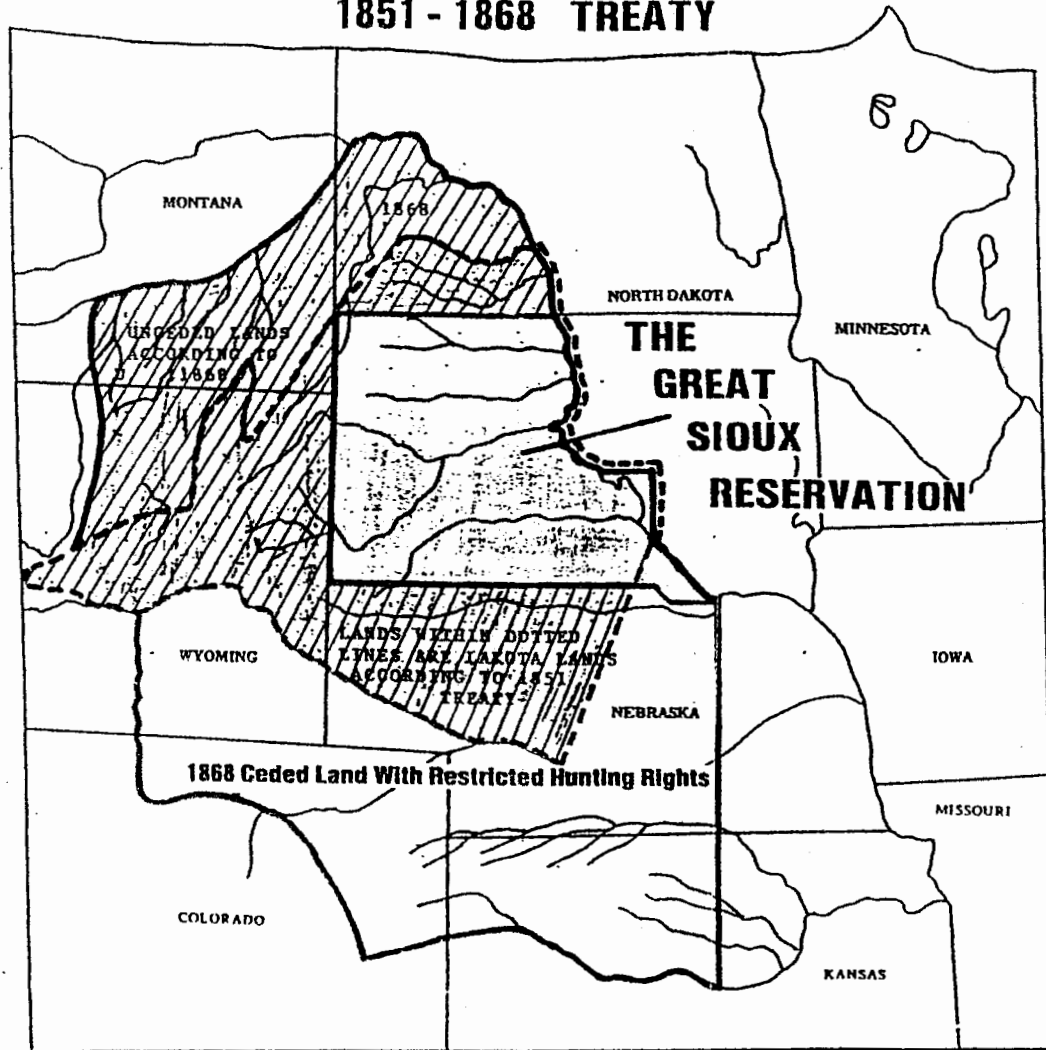
The encroachment of the European-Americans, and the subsequent devastation of the buffalo, caused the people of the Great Sioux Nation to wage war upon the United States. When the US realized that they could not win the war, they asked the Great Sioux Nation for a treaty for peace. The Great Sioux Nation agreed in 1851, and again in 1868, to treaties for peace at the request of the US, both times relinquishing large tracts of land but always keeping the sacred Black Hills intact within their care. The people of the Great Sioux Nation had resided in this area for over 11,000 years.

On March 3rd, 1871, the US Congress passed a law which said that treaties made prior to that date would not be abolished. It also said that no new treaties would be made in the future with Indian nations. From that date to this, since the Fort Laramie Treaty of 1868 was made prior to March 3, 1871, any laws passed by the United States are applicable only to the people of the United States, but not to the people of the Great Sioux Nation. To try to enforce any American law that violates the Fort Laramie Treaties of 1851 and 1868 would also be a violation of the March 3rd Act of 1871. Furthermore, to violate any treaty would also be a violation of the US Constitution which states that "treaties are the supreme law of the land."

The land area that is stipulated in the Fort Laramie Treaties of 1851 and 1868 includes all of western South Dakota from the East bank of the Missouri River to the summits of the Big Horn Mountains. This also includes all of the Black Hills and is the actual, legal, land base of the Great Sioux Nation. A larger land area surrounds this central base and is reserved for the exclusive use of the people of the Great Sioux Nation. This reserved area includes portions of Nebraska, Colorado, Wyoming, Montana, and North Dakota.

William Allen White, a newspaper publisher, once said, "Peace without justice is tyranny." Upholding the 1868 Fort Laramie Peace Treaty would be upholding justice as well as the Constitution of the United States.

# 1851 - 1868 TREATY



1851 and 1868  
Unceded Land  
Reserved For  
Hunting  
Use



1851 Treaty Land  
Settlement



Good afternoon:

My name is [REDACTED]. I have lived in Edgemont for the past 33 years. I teach high school math here in town. Prior to doing that, I received a Mining Engineering degree from the South Dakota School of Mines and Technology.

I am here today to publically say that I am in favor of the proposed uranium mining project. I trust the science presented and the experience and expertise of those individuals that conducted the studies put before us.

Science:

- Doesn't involve emotions – it involves facts
- Doesn't take sides
- Doesn't care about the economy – one way or the other
- Can be proven – and it proves this to be a safe proposition.

I ask you to read the facts and only the facts. When you isolate yourself from all the false information, speculation, and rumors, you can clearly see the facts in front of you will prove this is a safe project for humans, plants, and animals.

I have known Mark and Suzanne Hollenbeck for over 30 years. I know that they would never risk the health of their children, the ranch on which they live, the ground water, or their future. Nor would they risk any of ours. I firmly believe the science is sound – please trust it, as I do.

Thank you



May 10

The Proposed In-situ Uranium mining project in west South Dakota:

Cost - Benefit Analysis:

Cost:

Thousands of gallons of water from aquifers in a drought prone area.

Benefit:

1. Lots of money to companies, Canadian, Chinese and in the future, likely others.
2. A few local jobs.

**Result: The benefits are not worth the extensive costs.**

In the past companies have simply gone bankrupt and disappeared...

How much are the bonds the company is paying to guarantee the decontamination & desalination of the waste water?

- EPA stands for Environmental **Protection** Agency:
- You need to do what we taxpayers pay you to do:

**Protect our Water from this contamination!!**



May 8, 2016

#### WHAT IS AZARGA/POWERTECH?

Azarga Resources Limited, is a Canada-based, China-led company that has never mined uranium. After owning part of Powertech since 2013, it is now merged with Powertech to form a new company named Azarga Uranium. The new ownership controls Powertech's operations in South Dakota, as well as uranium interests in Colorado.

Azarga's largest stockholder is Platinum Partners, a hedge fund that is based in the Cayman Islands. Seven members of Platinum Partner's leadership team, including its founder, Mark Nordlicht, have been charged in federal court in New York for a \$1 billion fraud and for running what the media has called a "ponzi scheme." This makes the status of Azarga uncertain.

The former investment banker who heads Azarga Resources is Alexander Molyneux, who was born in Australia. Molyneux left investment banking and entered the mining industry with the help of Robert Friedland, a dual citizen of the United States and Canada who lives in Singapore. Friedland is known by some as "Toxic Bob," partly for his role in the disaster at the Summitville gold-silver mine in Colorado. The Summitville mine was run by a subsidiary of Friedland's company, Galactic Resources. It is now a Superfund site that discharged acid drainage and cyanide, arsenic, cadmium, copper, lead, mercury, and other heavy metals into the Alamosa River. Friedland's bankrupt subsidiary pled guilty to 40 felony counts. Cleanup, which is expected to cost \$150 million, is ongoing.

Molyneux's mining experience began with his stint as CEO of SouthGobi Energy Resources, a coal mining operation in Mongolia. The company was controlled by a firm founded by Friedland. Molyneux was fired from this position after the company racked up millions of dollars in operating losses and he apparently alienated the Mongolian government. A market observer summarized the situation: "The SouthGobi thing was a mess, with restated financials for two years, an abortive takeout by a China company, Rio Tinto's giving Mr. Molyneux his walking papers, and Ontario-groomed class-action lawsuits." (The Calandra Report)

Whether Azarga intends to actually mine uranium in the Black Hills remains to be seen. It is also possible that the company hopes to make a profit by getting mining permits, then selling the proposed mine site to someone else, or they might get permission to create deep disposal wells and start taking in other mines' wastes.

In addition, Azarga/Powertech statements have faced scrutiny by the British Columbia Securities Commission. Canadian regulators consider Azarga's preliminary assessments "too speculative geologically." Azarga acknowledged certain "deficiencies" in its filings relating to the Dewey-Burdock project. There should be NO deficiencies where OUR WATER is concerned. Regardless of who owns uranium properties in the Black Hills, I oppose uranium mining in the area.

[REDACTED]

[REDACTED]

U.S. EPA, Region 8  
Denver, CO

According to a June 15, 2015 Washington Post article, new NASA satellite data indicates that fresh water aquifers are being depleted at alarming rates. Much of this depletion is the result of various kinds of mining. They all use water-intensive processes.

<sup>Azarga's</sup> Powertech's proposed mining activities include ~~the~~ pumping 9,000 gallons of water per minute from area aquifers, including the Inyan Kara. This demand on the Inyan Kara aquifer competes with other local uses, reducing the water level while at the same time putting it at risk of contamination.

Powertech has also requested permits for a number of extra wastewater wells in the Minnelusa aquifer. The risk of contamination of this water source from this waste is obvious, but the danger is greater than that. The Minnelusa communicates with neighboring water sources through naturally occurring breaks in the structure of the rock. One of these nearby aquifers is the Madison, the major source of Rapid City's drinking water.

<sup>Drilling itself disturbs the geology, causing unexpected fractures.</sup>  
Powertech <sup>said</sup> speaks with scientific certainty about the safety of its technology. Other mining companies have ~~done~~ the same. Then the unanticipated happens. <sup>gets</sup> Water <sup>often</sup> is polluted, ~~sometimes~~ without remediation. There is no perfect understanding of underground geology, no mining technology that can anticipate and prevent every possible problem, and no effective methodology for cleaning up a toxic mess deep in the ground. So why risk the inevitable failure with our precious water?

But if the danger of poisoning our water doesn't stir you, then <sup>foreign</sup> why allow the more obvious and certain outcome of Powertech's project? I am speaking of allowing a company seeking only its own profit, to <sup>eliminate</sup> ~~disturb~~ so much of a public good, even as that good, our precious water, is steadily dwindling away as we meet here today? Please deny Powertech's permits for the good of our community.

May 8-9, 2017

# **New NASA data show how the world is running out of water**

**By Todd C. Frankel**   June 16, 2015   The Washington Post

More than half of Earth's 37 largest aquifers are being depleted, according to gravitational data from the GRACE satellite system.

The world's largest underground aquifers – a source of fresh water for hundreds of millions of people – are being depleted at alarming rates, according to new NASA satellite data that provides the most detailed picture yet of vital water reserves hidden under the Earth's surface.

Twenty-one of the world's 37 largest aquifers – in locations from India and China to the United States and France – have passed their sustainability tipping points, meaning more water was removed than replaced during the decade-long study period, researchers announced Tuesday. Thirteen aquifers declined at rates that put them into the most troubled category. The researchers said this indicated a long-term problem that's likely to worsen as reliance on aquifers grows.

Scientists had long suspected that humans were taxing the world's underground water supply, but the NASA data was the first detailed assessment to demonstrate that major aquifers were indeed struggling to keep pace with demands from agriculture, growing populations, and industries such as mining.

"The situation is quite critical," said Jay Famiglietti, senior water scientist at NASA's Jet Propulsion Laboratory in California and principal investigator of the University of California Irvine-led studies. Underground aquifers supply 35 percent of the water used by humans worldwide. Demand is even greater in times of drought. Rain-starved California is currently tapping aquifers for 60 percent of its water use as its rivers and above-ground reservoirs dry up, a steep increase from the usual 40 percent. Some expect water from aquifers will account for virtually every drop of the state's fresh water supply by year end.

The aquifers under the most stress are in poor, densely populated regions, such as northwest India, Pakistan and North Africa, where alternatives are limited and water shortages could quickly lead to instability.

The researchers used NASA's GRACE satellites to take precise measurements of the world's groundwater aquifers. The satellites detected subtle changes in the Earth's gravitational pull, noting where the heavier weight of water exerted a greater pull on the orbiting spacecraft. Slight changes in aquifer water levels were charted over a decade, from 2003 to 2013.

"This has really been our first chance to see how these large reservoirs change over time," said Gordon Grant, a research hydrologist at Oregon State University, who was not involved in the studies. But the NASA satellites could not measure the total capacity of the aquifers. The size of these tucked-away water supplies remains something of a mystery. Still, the satellite data indicated that some aquifers may be much smaller than previously believed, and most estimates of aquifer reserves have "uncertainty ranges across orders of magnitude," according to the research.

Aquifers can take thousands of years to fill up and only slowly recharge with water from snowmelt and rains. Now, as drilling for water has taken off across the globe, the hidden water reservoirs are being stressed.

"The water table is dropping all over the world," Famiglietti said. "There's not an infinite supply of water."

The health of the world's aquifers varied widely, mostly dependent on how they were used. In Australia, for example, the Canning Basin in the country's western end had the third-highest rate of depletion in the world. But the Great Artesian Basin to the east was among the healthiest.

The difference, the studies found, is likely attributable to heavy gold and iron ore mining and oil and gas exploration near the Canning Basin. Those are water-intensive activities.

The world's most stressed aquifer — defined as suffering rapid depletion with little or no sign of recharging — was the Arabian Aquifer, a water source used by more than 60 million people. That was followed by the Indus Basin in India and Pakistan, then the Murzuk-Djado Basin in Libya and Niger.

California's Central Valley Aquifer was the most troubled in the United States. It is being drained to irrigate farm fields, where drought has led to an explosion in the number of water wells being drilled. California only last year passed its first extensive groundwater regulations. But the new law could take two decades to take full effect.

Also running a negative balance was the Atlantic and Gulf Coastal Plains Aquifer, which stretches across the southeast coast and Florida. But three other aquifers in the middle of the country appeared to be in relatively good shape.

Some groundwater filters back down to aquifers, such as with field irrigation. But most of it is lost to evaporation or ends up being deposited in oceans, making it harder to use. A 2012 study by Japanese researchers attributed up to 40 percent of the observed sea-level rise in recent decades to groundwater that had been pumped out, used by humans and ended up in the ocean.

Famiglietti said problems with groundwater are exacerbated by global warming, which has caused the regions closest to the equator to get drier and more extreme latitudes to experience wetter and heavier rains. A self-reinforcing cycle begins. People living in mid-range latitudes not only pump more water from aquifers to contend with drier conditions, but that water — once removed from the ground — also then evaporates and gets recirculated to areas far north and south.

The studies were published Tuesday in the Water Resources Research journal.

Famiglietti said he hoped the findings would spur discussion and further research into how much groundwater is left.

"We need to get our heads together on how we manage groundwater," he said, "because we're running out of it."

It have email address

May 10, 2017

RECEIVED MAY 15 2017

Dear EPA, Region 8:

Please take into consideration the concerns I have about the proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells in the Black Hills. My concerns center on the dangers of cumulative radiation exposure.

Those who stand to profit from the in situ mining at Dewey Burdock would like us to believe that the mining risks are minimal and that the contaminated water would be fully contained, even though our region is full of faults in the rock strata. We often hear the well-worn talking point about how one glass of this water is still within "acceptable limits". Seriously, who drinks only one glass of water in their lifetime? It is curious that with all the "expert testimony" about the supposed safety of the mining techniques and "minimal" contamination to the water, the issue of cumulative radiation exposure never is mentioned.

The Mayo Clinic and most other major health care organizations in the USA are taking great measures to minimize the impact of radiation exposure to their patients. This is because they recognize the fact that the human body accumulates radiation that it is exposed to. This radiation is not expelled, but stays in the tissues. As the radiation accumulates in the body, so does the risk for cancer and other diseases. The EPA studies have shown we already have some naturally-occurring radiation in the environment. It makes no sense to add to those naturally-occurring risks with the exposure from mining contamination that will inevitably leach into our water supplies.

Have we learned nothing from history? Historically, most mine owners and investors do not live on-site. When things go bad, they cut and run, leaving the mess for others to suffer from and to clean up. Few, if any of them would be willing to daily drink the water polluted by their mines. Yet they expect others to do so, while the owners and investors pocket the profits.

Unless science can come up with a way to safely extract the uranium AND leave the water in as good (or better) condition than it was before, why would any rational and unbiased person support in situ uranium mining? Our society at large has little to gain from this, but much to lose. Please do not allow this uranium mining project to proceed.

Thank you for your attention in this matter.

Sincerely,

[Redacted signature block]

Injection wells like the one being proposed here have caused many problems in areas like Oklahoma over the last few years. The United States Geological Survey data shows that between 1978 and 2008 there were no more than 3 earthquakes per year with a magnitude of 3.0 or greater in Oklahoma. With the proliferation of fracking, the number of earthquake with a magnitude of 2.0 was 585, 887, and 639 for the years 2014-2016. The impact of these earthquakes is borne by citizens who suffer property damage and businesses who lose revenue while they recover.

An exemption to the Safe Drinking Water Act is being sought as part of this project. Protection of drinking water is necessary and should be a basic function of a government that is concerned with its citizens' health and well-being. If the EPA abdicates itself of this responsibility to the people of South Dakota, those people's health and livelihoods will be put at risk. It will potentially add to the burden of the healthcare system and could ultimately results in lawsuits costing the EAP millions of dollars, for which the US taxpayers will ultimately be responsible. [REDACTED]

Class V wells are for non hazardous waste disposal

What non hazardous material will be injected in these class V wells?

Are there any exploratory wells in the area involved or close by, Are these wells cased, filled or capped? What is the possibility of these wells becoming avenues for migration of mining fluid or waste into drinking water aquifers?

The permit requires monitoring. Who will be doing the monitoring?

The permit allows for information to be confidential. Why would there be a need for confidentiality at all in regards to these activities and the communal water supply?

The permit is showing that the class V waste wells will be at the 2,800 ft level which is the same as the depth of the Edgemont drinking water wells. How could this be a good thing?

Injection wells have created increased earthquakes along fault lines. Is this a possibility in regards to the class V injection waste wells in the Dewey Burdock area?

My well is in the Minnelusa Aquifer, What is the potential for waste or mining contamination to my well?

Who will pay the damage if it can be corrected at all?



TO:EPA

FROM [REDACTED]  
[REDACTED]  
[REDACTED]

I am writing regarding the application for InSitu uranium mining in the Dewy-Burdock area of Fall River county and Custer County in South Dakota. I Have grave concerns for giving an aquifer exemption for the Minnelusa to deposit waste in Class V deep injection wells, or Class III wells for InSitu mining of Uranium. My well is in the Minnelusa Aquifer and waste with any radioactive or other chemical allowed in the drinking water on purpose, or by accident would possibly contaminate my well.

While we know a lot about what happens underground we certainly do not know the extent and variables of the geologic forms below the surface to guarantee how water moves or will move. Compounding this is the presence of numerous exploratory wells that have been drilled in the past. These wells have not been filled, cased, or capped.

The Class V wells according to the EPA site are for waste that has been cleaned and will not contaminate USDW. The problem is monitoring this procedure. The mining industry cannot be trusted to self monitor and the EPA has not done a good job in the past. Mistakes and violations once made cannot be remedied.

It has been discovered that pumping high pressure fluids into faults and cracks in the rock can and do cause increased earthquake activity and strength. The area in question is of this nature and has connection with immense cave networks such as Jewel and Wind Cave.

This area has already suffered at the hands of the Uranium mining industry. These foreign corporations basically exploited the area and left the clean up to the taxpayers. The medical and physical harm is still evident today.

I am asking that this application for Uranium mining and high pressure deep injection waste wells be denied.

[REDACTED]

We all used world wide resources that our Earth has provided for her two-legged children for centuries. Out of her love for us we are still here today! It is out of that love & nurture, that I pray for your spirits that have become stagnant which has occurred overtime of ignoring our history. We should utilize our past to stop burning ourselves in the same fire!

This representing the choices we make to destroy our Grandmother Earth, expecting different results to make what was once created perfect for us a supposedly "better place."

For our brothers & sisters that have been led astray from their bond with Grandmother Earth by greed, let them be made aware it is a hunger that shall never be fulfilled! The emotion your spirit yearns for is the connection every child should have with their mother.

The biggest band wagon to self-destruction is greed! A conception that the more currency you have will fill the emptiness that only mother earth can make whole. Let your spiritual roots grow, spiritual connection with Grandmother Earth is true happiness & we will not allow this to happen to our communities any longer.

Do not mistake our kindness as an Indigenous people as a weakness among a misunderstood nation I obviously the last protectors of a wisdom that can heal our world. We will not be easily pushed aside time after time. I stand before you today, not only for the people standing strong behind me, but for your children you have sold out for what?

Through my humbled spirit instilled within me through my connection with the Earth, I pray persistently for everyone among us that we may remove the veil from our spiritual consciousness & that our Grandmother Earth forgive our naïve curiosity derived from the discerning spread of greed. The ways of our Ancestors that flourished contently without depleting our precious resources are either chosen to be forgotten or stomped on. What is happening now here with the mine is just one of the many events of a bigger picture that will be an inevitable expression of cause & effect. We will soon no longer exist if we do nothing! If we fail to compromise the entity that plagues our lands, chaos will spread. Where are the men hiding? In their planning rooms? They send out their minions that are programmed with paper printed with the faces of the people that have deceived all people...For that is the affliction by any decisions made by the Government, Mankind?



# JAY DAVIS LAW OFFICE

JEREMIAH J. DAVIS, ATTORNEY AT LAW

May 22, 2017

Valois Shea  
U.S. Environmental Protection Agency: Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop St.  
Denver, CO 80202-1129

RE: Dewey-Burdock uranium mining proposal

Dear Ms. Shea:

As a long-time resident of the Black Hills, I am writing to express strong opposition to Powertech-Azarga's proposed permit for an in situ uranium mining operation in the Dewey-Burdock area north of Edgemont, South Dakota.

Western South Dakota is a semi-arid region, much of which is Indian Country, whose primary industries are agriculture (both farming and ranching) and tourism. We depend on our underground aquifers for domestic use, livestock, wildlife and recreation. Past uranium mining operations have compromised water quality in Angostura Reservoir, which is a resource for recreation and irrigation, and also on distant Indian reservations whose residents depend on the Cheyenne River for drinking water and fishing. Water is truly the lifeblood of our communities, and South Dakotans know that in situ uranium mining operations in other states have degraded the water resources that they exploited.

If Powertech-Azarga obtains the uranium mining permits that they are seeking, they may well transfer this valuable property right to a different corporation. It is a major concern that one facet of the proposed uranium mining operation is the disposal of in situ uranium mining wastes into underground aquifers. Radioactive wastes from elsewhere, notably Nebraska and Wyoming, could be disposed of at the Dewey-Burdock site.

Public testimony in South Dakota has been overwhelmingly opposed to Powertech-Azarga's uranium mining permit. There is a good reason for this: South Dakotans value their water and other natural resources. Please respect this overwhelming testimony, from the people who will be directly affected by this permit, and reject the proposal.

Sincerely,

[Redacted Signature]

[Redacted Footer]

RECEIVED MAY 30 2017

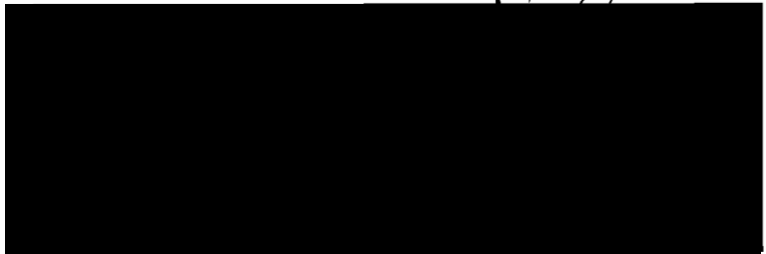
May 2017

Dear People —

Sorrow and Pain cannot  
be measured and brokered —

Please don't inject Poison into  
the beautiful and Holy  
Black Hills (or anywhere)

one solution is to build  
a pile on very dry land, and  
cover it with demolition  
materials from all over the <sup>country</sup> ~~world~~.  
How about some land that is  
already contaminated —



RECEIVED JUN 14 2017

Dear Valois,

I AM APPALLED AT THE CHANCE THAT "THEY"  
COULD RUIN OUR WATER SUPPLY BY FORCING "WASTE"  
UNDER PRESSURE INTO THE NEAR BY SOIL.

HUNDREDS OF FEET DEEP, THOUSANDS OF GALLONS OF  
WASTE PRODUCE. THIS AREA IS FULL OF CAVES, CAVERNS  
FISSURES, CRACKS, THEY CLAIM SCIENTIST HAVE IT  
FIGURED OUT, THAT IT IS SAFE,

"WHAT IF IT ISN'T" //

THE PRODUCT THEY WILL MINE IS VERY DANGEROUS  
TO ALL,

PLEASE DON'T LET "MONEY" BE THE BIGGEST  
FACTOR, WATER IS GETTING VERY PRECIOUS, AND  
THE CHANCE OF LOSING IT IS NOT WORTH THE RISK!!  
THE LAND THEY WILL DRILL IS IN THE CHOYENNE RIVER  
DRAINAGE AND IT WILL RUN INTO THE RIVER,  
MY WELL GOES 300' DOWN AND WILL BE RUINED  
BY RADIOACTIVE WASTE,

PLEASE! PLEASE!  
DON'T LET THIS HAPPEN!  
PLEASE!

HOPEFULLY YOURS,

[REDACTED]

Valois Shea  
U.S. EPA, Region 8  
Mail Code:8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129

May 8, 2017

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There should be NO deficiencies where OUR WATER is concerned. Regardless of who owns uranium properties in the Black Hills, I oppose uranium mining in the area.

[REDACTED]

RECEIVED JUN 14 2017

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Saturday, April 22, 2017 2:09 AM  
**To:** Shea, Valois  
**Attachments:** text\_1492848510940.txt

---

I grew up in Gallup, NM which is surrounded by reservation and Native American sites. My home was on w66, west of town. We moved out there in 83 but my mom had lived on the property as a young child. We are not Native but have respect and love for the different Native cultures. I watched Twin Buttes, year by year become a hill of rubble. When I see pictures from the 50's and 60's of how beautiful it was I am sad, angry and frustrated. I implore you to do the honorable and environmentally responsible thing and refuse to allow more Native American sites, land that we all love and need, to be destroyed for capitalism and greed. [REDACTED]

[REDACTED]



This message was sent to you by a T-Mobile wireless phone.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 10:48 PM  
**To:** Shea, Valois  
**Subject:** Opposition to the UIC Permits and Aquifer Exemption

I am writing to submit my resounding opposition to these careless acts of environmental injustice. Dump uranium into aquifers??? How is this policy even possible with all the water quality problems in places like Flint, MI and Hoosick Falls, NY? How do we know if the EPA will properly monitor the treatment of this highly contaminated water if these misguided permits are issued when your Administrator has time and again shown that he sides with business interests first and American Public Health last?

You must withdraw these permits for the sake of residents impacted by the injections and the slippery slope you will create by even considering such reckless activity.

I urge this agency to reject both activities immediately.

(Denver, Colo. – March 6, 2017) EPA has issued two draft Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota. EPA will conduct information sessions combined with public hearings on April 27<sup>th</sup> and on May 8 through May 11 at the times and locations detailed below. EPA will accept public comments on the draft permits and a proposed aquifer exemption associated with the project through May 19, 2017.

The draft permits issued today include a UIC 'Class III' Area Permit for injection wells for the in-situ recovery (ISR) of uranium in the Inyan Kara Group aquifers and a UIC 'Class V' Area Permit for deep injection wells that would be used to dispose of ISR process waste fluids into the Minnelusa Formation below the Inyan Kara after treatment. Under the terms of the draft permits, waste injected under the Class V permit must be treated prior to being injected and must meet all radioactive waste and hazardous waste standards. Monitoring of the underground sources of drinking water surrounding the Class III injection wellfields will take place before, during and after ISR operations to ensure the underground sources of drinking water are protected.

EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur.

Thank you,

[REDACTED]



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Thursday, May 11, 2017 8:38 AM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock Project

Good morning,

I want to start off by saying that I support the mining of uranium in South Dakota. I think nuclear energy is a smart investment for the future as we begin to move away from fossil fuels. The amount of energy that can be produced is just too great to look past and it's one of the better options for energy production for the future. Ieer.org has a fact sheet comparing fossil fuels and nuclear power. Some of the high points include nuclear power having no incremental climate change while fossil fuels are rated as potentially catastrophic and nuclear power has relatively low air pollution and fossil fuels have severe tendencies to air pollution.

I also believe that uranium mining could be very good for South Dakota's economy. The mining itself has potential to create many jobs for the area as well as bring in new people to fill our cities. The Richmond Times-Dispatch published an article titled "New Uranium Mining Study Assesses Economic, Social Impacts." In it they state that the uranium mine in Virginia offered 1,000 annual jobs and could bring in \$135 million a year over 35 years. One can't really look at a possible financial boom in a bad light. It can only bring in good things for the citizens and their home state.

My major concern with the permits being issued is that Powertech is going to be responsible for their own monitoring of the underground drinking water. This to me seems a bit outlandish. What about checks and balances? It seems that if anything were to go south with this project this would be this instance. Who will hold them accountable? I appreciate that the EPA is going to be holding this company to specific standards for their waste and the surrounding source water. I think it's a good idea that they will be testing the water before, during, and after the project. But I think a third party with no financial ties to the project or company should be in charge of these regulations. Corruption and cover ups are too common in situations like these and the people that pay for it are the local citizens.

I would feel much more on board with this project if some of these concerning issues were taken care of. Projects like these are a tricky situation on all sides and everyone wants to be happy with the end results. I think many people would feel more inclined to support this if the idea of corruption wasn't looming over their heads.

Thank you for your time,

[REDACTED]

References:

<http://www.ieer.org/ensec/no-1/comffnp.html>

[http://www.richmond.com/news/article\\_c5e6f300-59f4-5566-a1eb-ea56e4144556.html](http://www.richmond.com/news/article_c5e6f300-59f4-5566-a1eb-ea56e4144556.html)

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Friday, May 12, 2017 8:49 AM  
**To:** Shea, Valois  
**Subject:** Approve Dewey-Burdock Permits

Valois Shea (shea.valois@epa.gov)  
Fax: 303-312-6741  
U.S. EPA Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

May 10, 2017

RE: Dewey-Burdock Public Comment

Dear Ms. Shea:

The U.S. Environmental Protection Agency (EPA) Region 8 is requesting public comment on two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota.

I wish to voice my support for the Dewey-Burdock Project, and it is my hope that swift approval of these permits will be granted.

I recently attended one of the public hearings in Rapid City, and listened to the parade of detractors who spoke against the issuance of these permits. Most were concerned that irreparable damage would occur to drinking water aquifers and that contamination would spread throughout the land and harm wildlife. Very few speakers backed up their claims with credible scientific evidence to support those claims. Certainly, we all want to have clean water, clear air and healthy soil, and I believe that with proper management and oversight, both sides can achieve their respective goals. Public comment periods and hearings provide both the opponents and the proponents a forum in which to voice concerns, facts and opinions, and in the end, it creates a more robust permit that promotes safety and environmental awareness.

As a former Senior Geologist at Cameco's Crow Butte Operation near Crawford, Nebraska, I am intimately familiar with the ISR process of uranium extraction and waste disposal proposed by Powertech. For 20 years, I designed, installed, maintained and abandoned Class III wells at an operating ISR mine. The process CAN be done safely and responsibly, with limited environmental impacts to only the permitted areas. The impacted groundwater, wellfields and surrounding lands are regularly monitored during and after mining to ensure public safety and regulatory compliance. Extensive pre-mining baseline data provides data that sets the restoration standards for groundwater and land surface clean up. EPA and the South Dakota Department of Environment and Natural Resources can ensure that proper precautions are enacted in these permits to protect the water, lands, wildlife and people of South Dakota and the surrounding area.

In August 2015, I provided expert testimony for the Crow Butte License Renewal to the U.S. Nuclear Regulatory Commission's Atomic Safety Licensing Board (ASLB) in response to contentions filed by many of the same detractors present at the Rapid City meeting. Many of the same allegations concerning groundwater quality, uranium and heavy

metal mobilization, contamination of drinking water, and public health impacts were presented by the intervenors during five days of testimony before the ASLB judges.

Before the hearing concluded, after hearing the facts, even the intervenors' own geologic expert agreed that the modes of uranium transport and contamination raised in the contentions were unlikely to occur. In the end, the ASLB judges ruled that the intervenors' contentions concerning groundwater quality and groundwater movement were not plausible, and ruled in favor of the Crow Butte license renewal.

Again, I support the acceptance of the Dewey-Burdock UIC Draft Area Permits, and the proposed aquifer exemption for uranium mining. This is a sound project run by competent, responsible people that will provide jobs to a struggling community.

Thank you for your time and consideration.

Sincerely,

██████████  
██████████  
██████████████████  
██████████████████

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:48 PM  
**To:** Shea, Valois  
**Subject:** Uranium Mine Waste Disposal - No

Valois Shea

EPA asks public for permission to allow Uranium mining waste disposal in SD aquifer:

No.

Must abide by regulations, and ideally common sense.

Thank you

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 9:49 AM  
**To:** Shea, Valois  
**Subject:** Please do not issue permits for the Dewey-Burdock uranium mine

Dear EPA decision-maker,

I'm writing to comment on the applications the Dewey-Burdock Uranium mine.

The location of this proposed mine is not suitable for this type of operation because the stata is unstable and full of perforations. Use of the proposed techniques poses an unacceptable risk to the groundwater aquifer.

Please insist that a full study taking these risks into account be performed before considering the application for this unusually dangerous and destructive method of uranium extraction.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 08, 2017 5:31 PM  
**To:** Shea, Valois  
**Subject:** No uranium mining Dewey Burdock!

To whom this may concern, I am writing to support native Americans in there opposition to the Dewey Burdock uranium mining of the black hills territory !  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Saturday, March 11, 2017 3:03 PM  
**To:** Shea, Valois  
**Subject:** South Dakota Uranium Mining

I oppose the allowance of these mining permits, as they endanger the drinking water in nearby areas, as well as intrudes on Indigenous-owned spaces.

[REDACTED]  
[REDACTED]  
[REDACTED]



[REDACTED]

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**5-11-17**

Valois Shea  
US EPA Region 8  
1595 Wynkoop St.  
Denver, CO 80202-1129

**RE: Proposed Uranium Mining Site near Dewey, SD**

**Dear Valois Shea:**

I am writing to express my approval of the mining operation near Dewey, SD. My family has lived in the Black Hills for 5 generations. My relatives homesteaded just east of the proposed location of the mine. I am an environmental consultant that has worked in the Black Hills area for over 30 years and have extensive background in mining activities in the Black Hills area, specifically in environmental monitoring. I am also a local businessman with three businesses located in Custer, SD that include consulting, a retail shop, and wholesale products sales.

I have conducted groundwater sampling for Powertech over this last 10 year period. I have extensive knowledge of the mining plan and believe the plan to provide adequate protections to the environment. The Nuclear Regulatory Commission and the South Dakota Department of Environment and Natural Resources have approved the mining plan and I trust their/your expertise in regulating this operation.

Personally, I feel we need to develop this resource. The United States as a whole will need more energy because of increased demand. Nuclear energy is needed as much as any other energy source. Solar energy, wind energy, petroleum energy, fossil fuel energy are all important sources but nuclear energy needs to be developed right alongside these sources to provide a reliable, carbon dioxide free energy source.

I have been reading a lot of misinformation about the operation. I think many of the negative claims about the operation are misleading and downright false. I encourage you to review those comments using good scientific thought.

The southern Black Hills needs the jobs created by this operation. We have witnessed a steady decline in year round jobs in Custer, Hot Springs, and Edgemont. While this operation will not balance the loss of jobs, it will certainly help.

In short, I support the approval of Powertech's mining application.

**Sincerely,**

**██████████, Environmental Scientist**

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 11:19 AM  
**To:** Shea, Valois  
**Subject:** Uranium Mining in South Dakota - public comment

Dear Mx. Shea,

I am writing to express grave concerns about the plans to mine uranium in South Dakota. There seem to be clear environmental risks at stake and I am not reassured by the EPA's assertion that it has consulted with experts or with local Indian tribes. There is no way to guarantee that accidents won't happen and that it not a risk that I am willing to take. As a citizen of the US and a member of the public, I am staunchly opposed to this step.

Sincerely and with all due respect,

--

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 10:52 AM  
**To:** Shea, Valois  
**Subject:** Comment on UIC Area Permit to Powertech, Inc

To Whom It May Concern:

I find the use of injection wells in the Inyan Kara Group horrifying and should not be permitted. Further, this aquifer should NOT be exempted from the Safe Drinking Water Act. It is my belief that these permits should be rejected. It is my expectation that the EPA will ensure the safety of drinking water. Even though I do not live in the area, I find the fact that industry is so eager to compromise the safety of America's drinking water supplies disgusting and would not want these actions to affect the integrity of my drinking water.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 9:36 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock Uranium Aquifer Mining

Dear Ms. Shea,

I write with grave concern after reading various possible scenarios regarding uranium and the Black Hills <https://www.epa.gov/newsreleases/epa-seeks-public-comment-draft-permits-and-aquifer-exemption-uranium-mining-project>.

We must protect the waters and the peoples of this country. Deregulation is NOT the answer. If any one person or company feels that these measures are just but would never perform such measures on the land in which he or she lives then it is not a proper way.

The Black Hills are a precious land that has caused much strife for over 100 years. We need to show respect to the land and to the peoples who reside there and say no to the corporate greed and yes to environmental safety. Future generations will thank you for saying NO to this mining.

Best,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 10, 2017 3:16 PM  
**To:** Shea, Valois  
**Subject:** Class III, Class V, Dewey Burdock Comment

I am a landowner and rancher who lives 30 miles from the proposed uranium site. My wells use the Madison and Minnelusa aquifers and other shallow wells to support our cattle and our own water consumption. If Azarga is allowed to use this water supply there is no guarantee that it could sustain 10 years if in situ mining and our wells. This is the only sustainable water we have for livestock. Livestock is the economic driver in Western South Dakota. If you take our water, you risk a much larger industry for South Dakota in exchange for 10 years of uranium mining.

Second, and most important is. What if the chemical laden, radioactive water that is injected back down in these wells eventually leaks.

On the EPA's website is states: "Regardless of the use of Class V wells, owners and operators are responsible for protecting underlying ground water from contamination"—

Who will be at the site to ensure that the water injected into Class V wells meets ClassV standards? Where is the guarantee that the chemical laden water can even be filtered to acceptable ClassV standards. Radioactive minerals should not be allowed in Class V wells.

And if Azarga goes bankrupt and they don't cap the wells, what happens?

Will there be continued monitoring when Azarga is done with the site and the wells are capped? NO! Who monitors these sites 20 or 30 years from now to know if the wells crack and leaking occurs? And IF these wells leak to our water supply there is no restoring it back to a safe drinking water state which I am sure you are well aware of. The entire western half of South Dakota relies on the Minnelusa and Madison for its water supply. We can't haul water from anywhere else if the Madison or Minnelusa gets contaminated. Please don't risk the tourism economy and the livestock economy and the American people's livelihoods of Western South Dakota for a foreign company.

Facts:

<http://projects.propublica.org/graphics/underground-injection-wells>. From 2008 to 2010 there have been 6,723 that have tested positive for major leaking and 60,467 wells with violations. And 859 unauthorized injections!!!

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## State-by-State: Underground Injection Wells

projects.propublica.org

The data below is from annual state regulatory summaries for underground injection wells that were submitted to the Environmental Protection Agency between late 2007 ...

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[REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 1:11 PM  
**To:** Shea, Valois  
**Subject:** Aquifer exemption for uranium mining project in southwestern South Dakota

In regards to the uranium mining exemption- We must not continue to destroy our waterways and lands by allowing big business to dump wastes and bypass the protections provided by the EPA. The EPA's job is to Protect the environment although it appears that Mr Pruitt is unfamiliar with the concept. What could possibly make anyone think that allowing dumping near an aquifer would be a good idea except someone who doesn't live near by and is only concerned about making more money.

Mr Pruitt- Step up and protect the environment or step down!

[REDACTED]



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, May 29, 2017 9:29 AM  
**To:** Shea, Valois  
**Subject:** DENY PERMITS & RETURN BRIBES Re Dewey-Burdock Uranium Mine

Dear CRIMINAL EMPLOYEES @ EPA,

Commenting on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells.

The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of groundwater resources is very likely.

I am also concerned that adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be inadequate, and groundwater WILL be contaminated.

A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected.

The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. Groundwater has never been returned to its original condition at any In-Situ leach uranium mine in the U.S. These permits should not be issued until it can be demonstrated that groundwater resources will be protected.  
DISGUSTED VOTER

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:**  
**Sent:** Monday, March 13, 2017 4:44 PM  
**To:** Shea, Valois  
**Subject:** FW: Exemptions for Uranium Mining

Comment

-----Original Message-----

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 4:38 PM  
**To:** McClain-Vanderpool, Lisa <[REDACTED]>  
**Subject:** Exemptions for Uranium Mining

Dear Lisa,  
This proposal is simply obscene. Please do everything you can do to stop it.

[REDACTED]

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 10:37 PM  
**To:** Shea, Valois  
**Subject:** SD aquifer

Dear Shea,

I am a member of the public who would like to comment on the proposed permits for injecting uranium into the ground near a SD aquifer.

This is an extremely and astonishingly bad idea.

I understand that the uranium would be ostensibly treated to be made safe before injection. Still: no. Really, adamantly, no.

I understand that the water would be monitored for safety throughout the process. Still: no. Completely and emphatically no. What happens when the water in the aquifer is found to be contaminated? How long would the remediation process take, if it's even possible?

I understand that you are an actual person showing up for work every day, just like me, and I appreciate that at times like this, it is probably a mostly thankless job. I can only hope that opposing opinions to this idea, like mine, are genuinely counted and can have an impact in stopping this harebrained proposal. You would indeed be thanked for advocating for the public who is contacting you with our concerns.

All best,

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Thursday, March 16, 2017 1:48 PM  
**To:** Shea, Valois  
**Subject:** Formal comment on South Dakota UIC permits and ISR aquifer exemption

Formal comment under the authority of the Safe Drinking Water Act and UIC program regulations, regarding:

- Proposed two Underground Injection Control (UIC) Draft Area Permits
- Proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site near Edgemont, SD

Dear Ms. Shea,

I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.

We can live without uranium but not without clean water and soil.

Best regards,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, April 09, 2017 8:37 PM  
**To:** Shea, Valois  
**Subject:** Valois Shea , permits to mine uranium

**This is unacceptable. permits to mine uranium in the southern Black Hill should be denied! Putting poison water in to the ground should never be permitted .....The Black Hills, the heart of everything that is. The 1868 Fort Laramie Treaty was ratified by Congress and was never amended. Under international law it is Native land.** “The laws of the United States, the NRC regulations, and the individuals who sit behind those desks can honor treaty law, the life way of the Lakota, environmental laws, and demonstrate respect for Mother Earth by denying application to mine uranium.”

Sent from [Mail](#) for Windows 10

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 12:02 PM  
**To:** Shea, Valois  
**Subject:** EPA seeks public comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

Please, there are some things that we can't get wrong, and this is one of them.  
Clean-up is near impossible and will not be an option.  
Some things can't be reversed.  
Between this and the proposed healthcare repeal / replace, you're going to actively kill off people.  
Is that what you really want?  
Please, be a responsible government for all the people, not just a few who will benefit from this.  
Thank you.

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[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## News Releases

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# News Releases from Region 08 EPA seeks public comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

# *Public hearings will be held in Valentine, NE and in Rapid City, Hot Springs and Edgemont, SD*

03/06/2017

Contact Information:

(Denver, Colo. – March 6, 2017) EPA has issued two draft Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota. EPA will conduct information sessions combined with public hearings on April 27<sup>th</sup> and on May 8 through May 11 at the times and locations detailed below. EPA will accept public comments on the draft permits and a proposed aquifer exemption associated with the project through May 19, 2017.

The draft permits issued today include a UIC 'Class III' Area Permit for injection wells for the in-situ recovery (ISR) of uranium in the Inyan Kara Group aquifers and a UIC 'Class V' Area Permit for deep injection wells that would be used to dispose of ISR process waste fluids into the Minnelusa Formation below the Inyan Kara after treatment. Under the terms of the draft permits, waste injected under the Class V permit must be treated prior to being injected and must meet all radioactive waste and hazardous waste standards. Monitoring of the underground sources of drinking water surrounding the Class III injection wellfields will take place before, during and after ISR operations to ensure the underground sources of drinking water are protected.

EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur.

Under its obligation to comply with the National Historic Preservation Act and under EPA's Tribal Policy on Consultation and Coordination with Indian Tribes, EPA has been consulting and coordinating with several interested Tribes to identify the potential effects of the proposed project on traditional cultural places, historic and sacred sites. EPA will continue to consult and coordinate with Tribes as necessary throughout the public comment period concerning these proposed permitting actions.

The public is encouraged to provide comment on these draft permits and the aquifer exemption by midnight mountain time, **May 19, 2017**. EPA's final permit decision will be based on an evaluation of comments received and a determination of whether underground sources of drinking water are protected. The draft permits can be found at the EPA Region 8 UIC Program website: <https://www.epa.gov/uic/uic-epa-region-8>

**How to Comment:** Written comments must be received by email, fax or mail sent to: Valois Shea ([shea.valois@epa.gov](mailto:shea.valois@epa.gov)); Fax: 303-312-6741

U.S. EPA Region 8 Mail Code: 8WP-SUI

1595 Wynkoop Street

Denver, CO 80202-1129

**Public Information Sessions and Hearing Information** (The public may also provide written and/or verbal comments during the following EPA public hearings):

**Thursday, April 27, 2017** from 4:00 to 8:30 p.m. (with a break from 5:00 to 6:00 p.m.)

Niobrara Lodge

803 US Highway 20  
Valentine, Nebraska 69201

**Monday-Tuesday, May 8-9, 2017**, 1:00 to 8:00 p.m. (with a break from 5:00 to 6:00 p.m.)  
The Best Western Ramkota Hotel, 2111 N. LaCrosse Street, Rapid City, South Dakota 57701

**Wednesday, May 10, 2017**, from 1:00 to 8:00 pm (with a break from 5:00 to 6:00 p.m.)  
The Mueller Center, 801 S 6th Street, Hot Springs, South Dakota 57747

**Thursday, May 11, 2017**, from 1:00 to 8:00 pm (with a break from 5:00 to 6:00 pm)  
St. James Catholic Church, 310 3rd Avenue, Edgemont, South Dakota 57735

[Contact Us](#) to ask a question, provide feedback, or report a problem.



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 3:43 PM  
**To:** Shea, Valois  
**Subject:** Aquifer Exemption for S D Mining Project

I am writing to provide an opinion of the exemption rules proposed for this project.

Why in the world would injecting uranium waste products into a fresh water aquifer even be considered for approval?

Protect our drinking water, no matter where it is. An aquifer is not a garbage can for some mining company.

Sincerely

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 12:35 PM  
**To:** Shea, Valois  
**Subject:** Draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

To Whom It May Concern,

I am writing to voice my strong opposition to the EPA issuing Underground Injection Control Area permits to Powertech Inc for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota.

I am specifically horrified that the EPA would allow an exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur and strongly oppose this exemption.

Thank you for considering my voice and views in this matter.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Saturday, May 20, 2017 9:40 AM  
**To:** Shea, Valois  
**Subject:** Re: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Would you please provide us with an appropriate letter template from which we can personalize to submit our comment? That would be very helpful.

Thank you,  
[REDACTED]

On May 17, 2017, at 4:15 PM, Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)> wrote:

Hello,

The EPA has extended the public comment period through Monday, June 19, 2017 for the proposed Underground Injection Control (UIC) Program actions at the Dewey-Burdock site located near Edgemont, SD. These actions include two draft UIC permits and a proposed aquifer exemption decision. Please see the EPA website for the official announcement and administrative record for these proposed actions:

<https://www.epa.gov/uic/extension-public-comment-period-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-0>

The EPA will accept mailed written comments postmarked by June 19 and emailed and faxed comments date stamped by midnight Mountain Time at the close of June 19. My contact information is listed at the bottom of this email and on the website above.

Thank you for your participation in the EPA public review process for these proposed actions.

*Valois*

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Thursday, June 01, 2017 10:03 AM  
**To:** Shea, Valois  
**Subject:** Re: Dewey-Burdock templates

Hello Valois.

Here is my letter concerning Dewey-Burdock Mine Permits:

Dear EPA,

This letter is in reference to the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells.

History tells us that uranium mining cannot be done without creating and leaving contamination. In the past, groundwater has never been returned to its original condition at any In-Situ leach uranium mine in the U.S.

The proposed mine and deep disposal wells are in a severely compromised area. Ample documentation exists that demonstrates that the proposed Mine and Well area has numerous faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged.

Considering these issues, it would be impossible to contain mining fluids and waste liquids. The likelihood of contamination of groundwater is extremely high.

Additionally, liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells is highly likely to be insufficient; again this raises the probability of groundwater contamination.

I urge that a full survey of cultural and historical sites be conducted prior to mining or deep disposal and all efforts to protect cultural and historical sites.

Thank you for your consideration.

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, May 14, 2017 8:13 PM  
**To:** Shea, Valois  
**Subject:** Powertech permits

I understand in March of this year the EPA issued two draft permits to Powertech, a multinational corporation and division of Azarga Uranium Corporation of Canada. Together these permits would allow the drilling of thousands of wells within 14 different fields. These wells would bore hundreds of feet into the ground and pierce the Inyan Kara system of underground aquifers. The second of the two permits is to allow the disposal of hazardous waste materials resulting from uranium mining. Both permits would needlessly expose the Lakota Oyate to the devastation of uranium mining and continue america's war against Red Nations' peoples.

"The Inyan Kara, Minnelusa, and Madison aquifers are the principal sources of ground water in the northern Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming. The aquifers are exposed in the Bear Lodge Mountains and the Black Hills and are about 3,000 to 5,000 ft below the land surface ... The direction of groundwater movement is from the outcrop area toward central South Dakota."

Please stop this. If it were happening to you or your family you wouldn't want it either. Please show some compassion and simple human decency.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 2:30 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining/aquifer S. D.

Dear EPA:

I am writing to oppose the plan to dump wastes from uranium mining under the aquifer in S. D. This is not wise from many standpoints. Once again our Native American tribes are threatened with a real risk to their drinking water. Once again we run the risk of standards for treating the waste not being stringent enough and residents enduring dangerous consequences over time. And once again, big business seeks to make tons of money off the backs of the little guy, we common folks, who do not have the money to buy the power to stop them. When will we return to the concept of the common good? The EPA can embrace that concept and apply it to this situation. Please oppose this project of uranium mining. Thank you for your time.

Respectfully,

[REDACTED]  
[REDACTED]

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 2:55 PM  
**To:** Shea, Valois  
**Subject:** Please Leave the Black Hills In Peace

Please, we need you to participate in doing the "ethical and sane" thing. Please leave our Black Hills alone.

I know the powers that be would like to have us warring, angry, overwhelmed and distracted. We know this. Please step up and care about this nation as a whole.

We the people deserve healing, lucidity and truth from our governing bodies. The treaties were broken, 1000 times over, the gas lighting never ceased, Indigenous nations were decimated and destroyed - turning our people into shells, barely human.

Our government succeeded in humiliating, destroying and bringing Indigenous Nations on this continent to our knees. That is not a governing body who unites, nurtures and expands - it is divisive.

Please work with the ethical, the humane and the joyful parts of yourself and this nation.

Please stay out of sacred sites and allow us our peace.

Honor the Treaties!

[REDACTED]

## Shea, Valois

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**From:**  
**Sent:** Monday, March 13, 2017 8:40 AM  
**To:** Shea, Valois  
**Subject:** FW: Comment on Uranium extraction and aquifers in South Dakota

comment

-----Original Message-----

**From:** [REDACTED]  
**Sent:** Saturday, March 11, 2017 4:34 PM  
**To:** [REDACTED]  
**Subject:** Comment on Uranium extraction and aquifers in South Dakota

I am opposed to the extraction of Uranium in South Dakota. If Ivanka Trump is going to drink the test water in front of a live audience, I might be convinced to change my mind. I would want her and her children to return weekly and drink and bathe in the water to prove it is safe. Write that into the agreements.

Sent from my iPhone



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 9:38 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining disposal in the black hills

I can't even begin to express how vehemently I oppose allowing uranium mining waste to go into an aquifer in the black hills. Obviously, no aquifer should be abused in this manner, but having grown up in Spearfish, SD, the idea sickens me that much more.

Please don't let this happen!

Thank you,

[REDACTED]

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 6:17 PM  
**To:** Shea, Valois  
**Cc:** [REDACTED]  
**Subject:** Black Hill Aquifers Comment

Hello, I am writing today as a concerned citizen of the United States of America. I live in San Diego, CA 92114. As a concerned mother I want to place a comment here for the people and water in the area. It is an unrighteous thing to do if you abandon this site like you have. Our people are getting sick, we can feel it in the spirit of things. Mothers are crying up to the heavens over all the atrocities our government is bestowing on us. Azarga has no compassion for us while contaminating our ground waters. I say "ours" and "my people" because we are one and we feel you as a government bringing shame on yourselves for what you have done so far. We feel you as mothers who mourn for the children yet to get sick from this. We grieve and feel the Holy Spirit grieving with us for those who are sick now and have died unchecked in your balances. Spiritually, if you ignore this and allow these mines to go unchecked your mark will be checked in heaven. You just cant keep grieving the Holy Spirit and think it is ok. We are the poor, the widowed, the downtrodden and your allowing a corporate company to further damaging access against our families. We are connected to each other. We saw how your business, your EPA was slashed and know about the things you as the EPA are required to do by court order in Flint alone. We know there is no physical way that settlement can be honored based on your deployment of agents, because the number of houses doubled in count testing positive for poison. You simply don't have the man power. We want change, we want a government and the agencies associated who will not be able to receive a profit. To push that profit over people mentality. It is deep rooted in our government as they continue to slash employees from your EPA and throw out books that contain important regulations we need. Regulations our children need. We see it as a blatant attack on our right to life and want to bring suit against you all based on this uranium mess. We are expecting a righteous outcome because it is what we are praying for. Do the right thing EPA, Government and leaders of the corporate genocide and clean this mess up ! Because if the letters don't help us stop this injustice, some of us are prepared to go to litigation to bring charges against the multitude of evil profit people, for manslaughter, for neglect, for emotional damages. we are strong and many. Please, do the right thing..

Sincerely,

[REDACTED]  
[REDACTED]

To whom it may concern,

## **1. Background**

From this time until May 19th, the United States Environmental Protection Agency (EPA) is calling for public comments regarding a hot topic issue in the state of South Dakota. The small town of Edgemont, South Dakota is currently at the center of an environmental deal between the US company PowerTech and the EPA that consists of permitting the company to conduct an in situ uranium recovery project that is located roughly 13 miles northwest of the town. This recovery site is located on the southwestern edge of the Black Hills, a wild horse sanctuary established roughly 20 east of Edgemont. In 2015 the EPA determined that the cleanup of these sites, the Darrow, Triangle, and Freezeout mines, was not required. While the EPA may have sampled upstream and downstream of the site in question, they were criticised for their ruling because testing within the actual mine sites was not conducted due to the fact that site assessors were unable to gain private landowners permission to access the sites. While this is not entirely the fault of the EPA, the conclusions drawn from their testing ultimately do not reflect the real life exposure and contamination potential and therefore should not be fully accepted. In addition, these assessments do not take into consideration large soil and mine-waste piles or possible runoff potential from the mine pits. Due to sampling conducted downstream that did not exceed healthy concentration levels, the EPA was not able to document an occurrence of a release, however large gaps in preliminary site testing leaves a large amount of uncertainty to be accounted for.

## **2. Overview of proposed action**

This action by the EPA would allow Powertech to conduct in situ recovery mining that utilizes a series of wells to inject groundwater enriched with oxygen and baking soda into the uranium ore area. By doing so, the mixture dissolves the uranium ore and is then drawn out by a pump and sent to a processing plant. Once at the plant, the uranium can be removed using ion exchange techniques, while the leftover water is refortified with oxygen and baking soda again. By doing so, Powertech is able to create a sustainable extraction method that reuses the injected groundwater. This process eliminates the need for mining machines, open pits, mine waste, mine shafts, and mine workers who previously have been required to use explosives in previous extraction methods. From their purchase and surveying of the 11,000 acres Powertech bought in 2005, the company has reported an estimated 11 million pounds of recoverable uranium that would take over two decades to fully recover. The site itself has a few key natural characteristics that have prevented the uranium from contaminating further including good geological confinement and natural upward groundwater gradients that prevents dissolved uranium and mining solutions from traveling down the water gradient. In addition, engineering controls will be established including well field design and the implementation of monitoring wells that

measure groundwater levels and water chemistry. Finally, the operation will implement a technique known as bleed pressure which creates a pressure gradient in the injection process that causes the groundwater to flow towards the production wells, ensuring as much of the treatment water is recovered. Powertech has determined they will need roughly 190 employees for the operation and has estimated a rough investment of \$51 million dollars. Once the operation is complete, Powertech has stated that all wells will be sealed/capped, pipelines and process facilities will be removed, and the site will be re-vegetated. Finally, freshwater will be pumped through the aquifer to ensure it is restored to NRC standards.

### **3. Personal opinion of proposed action**

While taking all of the previous information into consideration, including the various technological controls, natural site features, and established plans of process and cleanup, I believe this operation has the potential to be a disastrous environmental catastrophe. Given the various technological failures that have occurred over the years, such as chemical plant explosions or the water contamination in Flint, Michigan, the most extreme consequences must be taken into consideration. These operations are highly digitalized and rely on a variety of different technological controls in order for the system to function properly without any unintentional runoff or seepage to occur. These processes are so streamlined and integrated that a single issue process could prove catastrophic to the community of Edgemont. For example, a chemical plant in the United States had a buildup of gases in a chemical reserve tank that caused in a backflow of chemicals into the system that resulted in a destructive explosion. This explosion destroyed most of the plant and resulted in one of the largest death counts from an industrial accident in recent years. These situations are thankfully not frequent occurrences, however a proper risk assessment must take into consideration both the probability and the impact of the consequences regardless of their assumed probability.

### **4. Consideration of legal and cultural impacts**

In addition to the possibility of technology failure, the cultural significance to the area must also be taken into consideration. The Black Hills have been home the The Lakota, or the Sioux tribe, for generations. Because of this, the EPA is required to comply with the National Historic Preservation Act under the EPA's Tribal Policy on Consultation and Coordination with Indian Tribes. These people have been interested in the potential outcomes of the Powertech operation, and as such have requested the EPA provide them with a concise and well researched identification of potential effects of the proposed project. These are historic and sacred lands, and as such the EPA continues to provide the tribe with as much information as possible, however these potential cultural impacts must be weighed against the benefits.

### **5. Consideration of scientific argument**

In addition to the cultural consequences, the scientific ramifications of the project must be taken into consideration. While research and modeling has determined that the flow rates between the 3 Black Hills aquifers is minimal, flow between aquifers ultimately occurs. While this flow rate has been deemed minimal a technological control failure could result in the tribe being exposed to an extremely dangerous radioactive material that has serious health implications associated with both short term and long term exposure. The EPA has drafted permits for Powertech that include a UIC 'Class III' Area Permit for injection wells for the in situ recovery of uranium in the Inyan Kara Group aquifers, as well as a UIC 'Class V' Area Permit for deep injection wells that would be used to dispose of recovery process waste fluids into the Minnelusa Formation below the Inyan Kara after treatment. These terms establish treatment requirements for the waste encompassed under the 'Class V' Area Permit that must meet all radioactive waste and hazardous waste standards. In addition, the permits establish monitoring of the sites prior, during, and after the operation to ensure concise data records of the process. Finally, the EPA is also considering an aquifer exemption rule for Powertech in combination with the UIC 'Class III' Area Permit. This would exempt Powertech from complying with the Safe Drinking Water Act in all uranium-bearing portions of the Inyan Kara Group aquifer. While it has been determined that water flow out of and between the aquifers is minimal, omitting a key step in the cleanup process is a counterproductive decisions of which the consequences must be taken into consideration.

## **6. Conclusion**

Thank you for the opportunity to provide input on the proposed aquifer exemption for uranium mining waste issue. These environmental issues are things that many citizens of this country must deal with in their everyday lives, and unfortunately will be present for future generations to deal with. The long term time frame and scale of the consequences that could from technological control failure, corporate negligence, and natural leakages must be taken into consideration when determining whether or not to approve this project. With the information provided, it only makes sense to discourage potentially dangerous operations such as these, and it is my hope that I have convinced you to take into consideration a perspective you may not share.

**Cordially,**

A large black rectangular redaction box covering the signature area.

## **7. References**

Thares, Paul. "Proposed Powertech (USA) Dewey-Burdock In Situ Recovery Uranium Mine Project". *iGrow / SDSU Extension*. N.p., 2017. Web. 30 Mar. 2017.

"EPA: Cleanup Not Required At Uranium Mines Near Edgemont". *KELOLAND News*. N.p., 2017. Web. 30 Mar. 2017.

"Public Notice: Administrative Record For The Dewey-Burdock Class III And Class V Injection Well Draft Area Permits | Protecting Underground Sources Of Drinking Water From Underground Injection (UIC) | US EPA". *Epa.gov*. N.p., 2017. Web. 30 Mar. 2017.

Kyllonen, David, and Kathy Peter. "GEOHYDROLOGY AND WATER QUALITY OF THE INYAN KARA, MINNELUSA, AND MADISON AQUIFERS OF THE NORTHERN BLACK HILLS, SOUTH DAKOTA AND WYOMING, AND BEAR LODGE MOUNTAINS, WYOMING". *www.usgs.gov*. N.p., 2017. Web. 30 Mar. 2017.

"EPA Seeks Public Comment On Draft Permits And Aquifer Exemption For Uranium Mining Project In Southwestern South Dakota | U.S. EPA News Releases | US EPA". *Epa.gov*. N.p., 2017. Web. 30 Mar. 2017.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 9:14 PM  
**To:** Shea, Valois  
**Subject:** U.S. EPA Region 8 Mail Code: 8WP-SUI

Valois Shea  
U.S. EPA Region 8 Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver CO 80202-1129

In regard to the permits to allow for the waste fluids to be injected, I do NOT think it should be allowed. If there is ANY chance at all for the contamination of the aquifers, and I do not think anyone can give a 100% guarantee that it wouldn't. There could be earthquakes and water moves. As good as those engineers and scientists are they cannot be 100% sure that our aquifers and water would be completely protected.

Some of my questions would be: You are using water to make money. That is the public's water. Who is this company? Where will the uranium be going? Will it go to countries that are not friendly to the United States?

I do not think that injecting it back into the ground should be allowed'.

[REDACTED]  
[REDACTED]  
[REDACTED]

Sent from [Mail](#) for Windows 10

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 6:02 AM  
**To:** Shea, Valois  
**Subject:** draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

This activity will poison the water supply. People cannot live without clean water. I oppose granting these permits.

[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 12:00 AM  
**To:** Shea, Valois  
**Subject:** Comments on EPA permits for Uranium mining in South Dakota

The potential contamination of drinking water should be avoided at all costs. Our water is a limited resource. The monitoring of the water will not prevent contamination and once contaminated the water will be undrinkable and taste bad. How did uranium become more valuable than our drinking water? Stop all drilling and other activities that will or has the potential to contaminate our water supply.

Who will be doing the monitoring of the water? The companies cannot and should not be trusted with this activity. We all know about companies who have historically not provided accurate information to the public when water has been contaminated. This withholding of information has resulted in serious illness or death for people who have been exposed to contaminated water.

What happens when the injection material gets into the aquifer? Will the companies pay to clean it up or does that fall on tax payer to clean up their mess.

No to any and all drilling, mining, pipelines with the slightest potential to contaminate water.

[REDACTED]  
[REDACTED]  
[REDACTED]

Sent from my iPhone

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 1:12 PM  
**To:** Shea, Valois  
**Subject:** No!

No! No! No! Radioactive waste in the Aquafier!!! No! No! No!

[REDACTED]  
Photographer  
[REDACTED]  
[REDACTED]

## Dewey-Burdock Class III and Class V Injection Well Draft Area Permits – Public Comment



Department of Geography, Environment, and Society  
University of Minnesota  
414 Social Sciences  
267 19<sup>th</sup> Ave S  
Minneapolis, MN 55455

### 1. Introduction

In April of 2017, the US Environmental Protection Agency (EPA) released draft permits for uranium recovery and wastewater disposal associated with the proposed Dewey-Burdock in-situ recovery project. In accordance with EPA policy and Executive Order 12898, the EPA also conducted an environmental justice (EJ) analysis concerning the mine's possible environmental or health impacts on minority and low-income communities. The report finds that “the city of Edgemont is a potentially overburdened community” based on its low-income status and accumulation of environmental health risks, but that the Dewey-Burdock project is not expected to meaningfully change this status. The EPA also recognizes the need for consultation with tribal communities for whom “the Black Hills is an area of cultural importance,” although it recognizes that consultation activities are not a part of the EJ analysis. Finally, the EJ analysis mentions several times that the EPA will conduct “enhanced public participation and outreach activities” given that UIC wells have the “potential for significant public health or environmental impacts.” These included several public comment sessions in the Black Hills area.

We find the EJ analysis deficient in several connected ways. First, the analysis appears at odds with broad public understandings of environmental justice, scholarly expansions on public understandings, as well as the narrower, pragmatic definition of EJ used by the EPA. Second, although the draft EJ analysis and the EPA's actions seem to suggest an understanding that the project might affect Lakota and other tribal relationships with the Black Hills, the draft EJ analysis as written does not allow the EPA to acknowledge the possible burden the proposed project might place on the culture, religion, or health of Native peoples. Legal precedent - most notably *Lyng v. Northwest Indian Cemetery Protective Association* - suggests that even in the most extreme circumstances, the religious and cultural significance of a place will not prevent the completion of mining and resource extraction projects, as the significance of the whole (in our case, the Black Hills) is conceived by permit-granting institutions as separate from its part (the Dewey-Burdock project area), and the latter is not seen by the federal government to impose a substantial burden on the exercise of religious or cultural rights. Nonetheless, the EPA has still undertaken enhanced outreach activities, including extensive public participation hearings closer to the Oglala Sioux Tribe and Cheyenne River Sioux Tribe, in order to hear their concerns. To us, this action shows the EPA has some interest in accounting for the impact this project would have on Lakota and other Native peoples. This document thus presents an argument that the historic environmental justice concerns of the Lakota, Dakota, and other tribes must be taken into

account more substantially and meaningfully as a condition of this and any future EPA permitting in the Black Hills region.

## **2. Defining environmental justice**

The concept and practice of environmental justice emerges directly from the activism of people of color and Native peoples directly affected by extractive industries, refineries and processing plants, and hazardous waste repositories. In fact, much of this activism was responding to uranium mining, processing, waste disposal, and nuclear weapons testing. In South Dakota, Native and non-Native groups alike devoted many years in the 1970s and 80s to proving that drinking water on the Pine Ridge and Cheyenne River reserves had been contaminated by past mining activities, resulting in undue health burdens for their people. The organization Women of All Red Nations (WARN) conducted many of the first drinking water tests on South Dakota reservations and fought for environmental justice on a national and international scale (LaDuke and Churchill 1985). The Indigenous Environmental Network (IEN) emerged to help facilitate the extremely influential 1991 People of Color Environmental Justice Summit, which directly led to Executive Order 12898, signed by President Clinton in 1994.

Based on EO 12898, the EPA defines environmental justice in the following way.

“Environmental justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.

Fair treatment means no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies.”

The EPA goes on to define the meaning of meaningful involvement:

- People have an opportunity to participate in decisions about activities that may affect their environment and/or health
- The public's contribution can influence the regulatory agency's decision
- Community concerns will be considered in the decision making process
- Decision makers will seek out and facilitate the involvement of those potentially affected

We will return to this definition in a moment, but first it is important to contrast these principles originally agreed upon at the 1991 Summit (which can be viewed in full at <http://www.ejnet.org/ej/principles.html>). These include, most notably,

4) Environmental Justice calls for universal protection from nuclear testing, extraction, production and disposal of toxic/hazardous wastes and poisons and nuclear testing that threaten the fundamental right to clean air, land, water, and food.

7) Environmental Justice demands the right to participate as equal partners at every level of decision-making, including needs assessment, planning, implementation, enforcement and evaluation.

11) Environmental Justice must recognize a special legal and natural relationship of Native Peoples to the U.S. government through treaties, agreements, compacts, and covenants affirming sovereignty and self-determination.

In contrast to the EPA's definition of environmental justice, the 1991 Summit identified the specificity of particular activities (e.g., uranium mining) and the specificity of particular communities and their relations with land and law (e.g., Native peoples) as fundamental to achieving environmental justice. Here, environmental justice did not simply mean the absence of harms or equality of distribution of risks, but also the proactive recognition of historic relationships with specific land and environments as well as industries.

Scholars of environmental justice have focused closely on the twin problems of distribution of environmental harms and benefits and participation in public decision-making processes (Holifield 2001, Holifield et. al. 2010, Schlosberg 2009, Young 1996). What both social scientists and political theorists commonly argue is that public contribution rarely has the chance to influence the regulatory agency's decision. Nonetheless, individuals and organizations participate wholeheartedly and without pay in public hearings like those conducted by the EPA in South Dakota and Nebraska for the Dewey-Burdock project. In the case of the Dewey-Burdock project, public comments were overwhelmingly against the project. Although not always couched in this terminology, we would suggest that many of the speakers were attempting to demonstrate to the EPA that the proposed Dewey-Burdock project does not produce just outcomes for marginalized populations in South Dakota. Whether their public comments meet the threshold for 'meaningful participation' depends on how willing the EPA is to modify its approach and adhere to its own principles.

The EPA has continued to expand upon its definition of environmental justice through its EJ 2014 and 2020 Action Agendas. EJ 2014 went a long way toward strengthening the EPA's capacity to recognize possible overburdened communities, as the Dewey-Burdock analysis via EJ Screen and expanded use of participation and outreach meetings demonstrates. However, the EPA has also recognized the difficulty of integrating EJ into all aspects of agency practices, including permitting, public relations, and actual results. This includes understandings of treaty rights, which the EPA admits has been "a major evolution in EPA's understanding of environmental justice and tribal rights" (EPA 2016, 43). The EJ 2020 Action Agenda sets out 4 strategies for enhancing environmental justice towards Native peoples. These are:

1. Strengthen consideration of tribes' and indigenous peoples' issues, their involvement in EPA's decision-making processes, and responsiveness to their concerns when EPA directly implements federal environmental programs.
2. Help federally recognized tribal governments build capacity and promote tribal action on environmental justice.

3. Address disproportionate impacts, improve engagement, promote meaningful involvement, and improve responsiveness to the environmental justice concerns of indigenous peoples.
4. Promote intergovernmental coordination and collaboration to address environmental justice concerns in Indian country and in areas of interest to tribes and indigenous peoples throughout the United States.

Is the permitting process the EPA is conducting for the Dewey-Burdock project consistent with these strategies and goals? Although enhanced public participation was conducted in the spring of 2017, this outreach focused almost completely on the potential health and water quality impacts of the project. While we find these very important, information from the draft environmental justice report was only mentioned, but not explained or referenced in any substantial manner by EPA officials. Although we took the time to download and comment on this report, it is likely that many more participants would have done so if the EPA representatives had explained their findings more substantially.

The EJ analysis is insufficient in the EPA's own standards. Yet ultimately the standards of environmental justice today, as thirty years ago, should be responsive to debates and actions in the public sphere, including proposals emerging from social movements. Our next section examines in more detail perspectives on environmental justice elaborated by Native peoples.

### **3. Native American perspectives on environmental justice**

Environmental justice scholarship and activism features various assertions of (and mobilizations against) environmental (in)justice in the US from the perspectives of Native peoples, ranging from industrial pollution and contamination (Johnston, Dawson, and Madsen 2010; Voyles 2015) to hydroelectric power (Howe and TallBear 2006; Lawson 2009) and oil and natural gas development (Estes 2014; Allard 2016) to the threats which climate change poses to traditional food sources and ecosystems (Doerfler, cited in Scheman 2012; Dittmer 2013; Whyte 2017; Wildcat 2009). Importantly, nearly all Native-led engagements with questions of environmental justice are grounded in claims and relationships to *land*, some aspects of which are legally enshrined by treaties with the US government. Many scholars and activists, including Tsosie (1996; 2009), Whyte (2013), and various Lakota, Dakota, and otherwise-affiliated Native individuals who testified during the EPA public comment sessions, have noted that their communities' complexly reciprocal relationships with the land escape capture by the narrowly defined terms of federal treaties. Despite this important caveat, *treaties* remain an important ground from which Native individuals and communities have articulated their visions for environmental justice. This emphasis on land, water, and treaty rights extends to Lakota articulations of environmental justice. Contemporary Lakota concerns with the impacts of proposed uranium mining activities, including the proposed Dewey-Burdock project, are grounded in a longer history of negative fallout from and concerted opposition against harmful mining projects in the Black Hills region.

The Black Hills region was recognized as the land of the Dakota, Nakota, and Lakota peoples of the 'Great Sioux Nation' in the Fort Laramie treaties signed with the US government in 1851 and 1868. After gold was discovered in the region in 1874, the Act of 1877 was orchestrated to

provide legal cover for the seizure of the Black Hills by the US federal government, facilitating the entry of prospecting settlers. In 1980 after years of protracted legal arguments, the US Supreme Court affirmed that the sale of Black Hills had indeed violated these treaties and awarded the 'Great Sioux Nation' a settlement of \$106 million. Not one nation accepted the payment, insisting that the sacred region cannot be sold. The settlement, now approaching \$1 billion, continues to grow in an interest-earning account (Howe, Soldier, and Lee 2011). Today home to the mining, logging, ranching, and tourist industries, the Black Hills remains contested, unceded treaty territory to which Native and non-Native peoples, with very different understandings of and relationships to the federal government, economic development, and the land, lay claim. The politics of uranium mining in the region must be understood in this complex context.

Uranium was discovered in the southern Black Hills region in the 1950s and quickly boomed as prices rose dramatically with the advent of nuclear power. Much of the arid land in this region was public land, and prospectors could lodge mineral claims and drill test boreholes with little investment. As more uranium was found in the region, Edgemont, SD, was chosen for a uranium processing mill, promising jobs and wealth to local residents. Little regard was given to the lives of miners and uranium workers, or to those surrounding the operations. Tailings piles were left uncovered and grew to heights of 50 feet or more. In addition to the daily erosion from wind and sometimes rain and the communication of water between aquifers allowed by abandoned boreholes and smaller mines, a number of particular events would impact the region's future toxicity. In 1962, 200 tons of tailings broke through an earthen dam and washed into Cottonwood Creek and subsequently the Cheyenne and Missouri Rivers, which provided drinking water for thousands of people downstream, largely Lakota. But when the uranium boom was growing, these events were not treated with any particular notice (Grossman 2002, Halder 2002, Jarding 2011, LaDuke and Churchill 1985, Thunder Hawk 2007, Young 1996; on remaining effects of abandoned uranium mines on the Cheyenne River, see Sharma et. al., 2016).

It wasn't until the 1970s that the health effects of uranium mining began to be noticed by people in the region. A South Dakota Department of Health study in 1976 already found elevated cancer rates around Edgemont (Tupper 2015). Downstream on the Pine Ridge reservation, WARN was conducting the first water tests, which found elevated levels of radioactive elements consistent with toxicity from uranium mining. It would be more than 25 years before an alternative water source was finally in place. Throughout the 1980s, WARN, the Black Hills Alliance, Defenders of the Black Hills, and other Native and non-Native led groups sought to connect treaty rights to environmental justice in a meaningful way based on their histories of contamination, activism, and experience with the EPA and other federal institutions as well as private corporations.

Since the initial wave of activism in the 1980s, groups such as Owe Aku and the Black Hills Clean Water Alliance have been working to amplify both Native and non-Native concerns related to uranium mining into advocacy for clean water. Just as these groups' organizing and advocacy strategies are built upon previous iterations of the environmental justice movement in the Black Hills, so too are their concerns with potential environmental harm from the proposed Dewey-Burdock project grounded in and made more significant by past and ongoing experiences of contamination from historic uranium mining activities. The cumulative effects of past uranium mining, which remain in South Dakotan waterways, bodies, communities today, have been

repeatedly cited by the public as one of the most meaningful reasons that contemporary uranium mining is seen as an environmental injustice. The lack of understanding of this history of local and regional environmental justice movements and their connection with the fight for treaty rights (Ostler 2011) is one of the most troubling aspects of the EPA's draft EJ analysis.

#### **4. Meaningful involvement and consultation**

Adequate attention to this history would further require the EPA revisit its existing approach to meaningful involvement and tribal consultation with regard to the proposed Dewey-Burdock project. While the EPA docket detailing the draft Class III and Class V permits for the project contains a draft document detailing plans for compliance with the National Historic Preservation Act (NHPA), including plans for tribal consultation, these plans do not feature as part of the EJ analysis, which we strongly feel they should. In this draft NHPA compliance document, the EPA details its plans to first conduct "inform and educate" sessions with tribes prior to beginning government-to-government consultation. The EPA notes in this document that after meeting with Oglala Sioux Tribal leaders, the EPA "was informed that the Tribe considered these meetings to be "inform and educate" meetings rather than government-to-government consultation." Such a difference in interpretation cannot characterize a legitimate consultation process, and we are left wondering why it is that meetings which the EPA considered to be consultative were instead considered to be informational by the Tribe.

At the public comment sessions in Rapid City on May 8-9, Lakota testifiers reminded the EPA that those public hearings do *not* qualify as meaningful tribal consultation. We urge the EPA to remember this, along with the EPA's own definitions of EJ, articulated in EO 12898 and the EJ 2020 Action Agenda, which state that people, and particularly Indigenous peoples, must participate, be meaningfully involved in, and indeed influence the direction of decision-making processes related to environmental justice - not simply have knowledge of those decision-making processes. We feel that meaningful tribal consultation could result in the EPA adjusting the draft UIC permits in question as well as the EJ analysis itself, perhaps by expanding its 20-mile buffer zone of interest around the proposed project site or, for example, implementing a watershed analysis approach instead.

At the hearings in May, Ms. Valois Shea reassured all those present that the EPA permits in question would not be issued until the tribal consultation process was completed. We hope the EPA takes this promise seriously and soon embarks upon a meaningful tribal consultation process which stands up not just to the standards of Lakota and other Native EJ scholars and activists, but indeed the stated standards of the EPA itself.

#### **5. Conclusion**

Outlined above is a broad understanding of the environmental justice concerns the Dewey-Burdock raises for two scholars of environmental politics in South Dakota. Our expertise comes from being students and scholars learning from the individuals and organizations expressing concerns about the Dewey-Burdock project and from a commitment to do our part in amplifying and translating these concerns into concepts recognizable to the EPA. We have attempted to enhance the picture of what environmental justice could look like if the concerns of Lakota and



other tribal communities were properly recognized as part of the permitting process. Our brief outline is insufficient to be counted as an environmental justice analysis in its own right; we only seek to highlight the striking absences within the EPA's draft EJ analysis.

With this in mind, we do not see how the proposed permits for the Dewey-Burdock project can be issued and retain any valence of environmental justice. In addressing some of the problems highlighted above, the EPA has a chance to set a precedent for working with Native communities in a manner more consistent with the goal of creating environmental justice.

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 12, 2017 9:36 AM  
**To:** Shea, Valois  
**Subject:** Re: Uranium Mining in the Black Hills

Azarga Uranium should never be allowed to drill hazardous waste injection wells near Edgemont SD. We still have many sites that have not been cleaned up from previous uranium mining! I strongly urge the EPA to decline Azarga's UIC permits and aquifer exemption. Thank you for allowing public comments.

Sent from my iPhone

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 1:38 PM  
**To:** Shea, Valois  
**Subject:** Black Hills

No dumping uranium on Indian Land!

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[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 10:22 AM  
**To:** Shea, Valois  
**Subject:** Say No to Dewey Burdock uranium aquifer mining in the Black Hills of South Dakota  
**Importance:** High

Valois Shea  
U.S. EPA Region 8  
8WP-SUI  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

05-17-2017

Please except my written comments into record regarding the Dewey Burdock uranium aquifer mining project in South Dakota.

- I am asking for proof that the water gets returned to its original standard or baseline before permitting new in situ leach uranium operations by foreign corporations. Not just “theories”, but proof! It’s a fact - Water at an in situ leach uranium mine has never been returned to its original condition. Foreign companies benefit, NOT US!
- Don’t allow Powertech/Azarga from Canada to treat our homeland water as a scientific experiment for their monetary gain. In situ leach uranium mining must be done directly in a water-bearing aquifer. The mining solution is injected into the aquifer under pressure in order to leach the uranium out of the ground. This is not safe. Our aquifers are not safe.
- Don’t allow Cameco/Crow Butte uranium mine to dump their toxic waste into well holes in the Black Hills punched by Powertech/Azarga. Pollutants that have been left in the water at in situ leach uranium mines after “restoration” include toxic heavy metals and radioactive materials. This is dangerous and life threatening to all life forms downstream or downwind.
- Just one proposed mine – the Powertech Uranium project near Edgemont – would consume over two and a half billion gallons of water during its lifetime. This according to the company’s own figures. This water use is a bad idea for our rural communities that continually suffer from drought.
- PowerTech/Azarga must formally consult under Section 106 of NHPA with First Nations of the 1851 and 1868 Fort Laramie Treaties. The Oglala Sioux Tribe currently stands against, in opposition to uranium mining in the Black Hills. Indigenous people know it is not worth the risk!
- Uranium mining has a sordid past and present. Current and modern in situ leach mines have spilled and leaked hundreds of thousands of gallons of contaminated water both above ground and underground. These leaks have entered both above ground and underground water bodies. Why would we trust them to clean up future operations? Why would we want to poison our homelands?

Protect our aquifers! Say No to the Dewey Burdock uranium project! No uranium mining in Treaty Territory! Keep it in the ground! People before Profits!

Thank you for protecting our environment!

[REDACTED]

[REDACTED]

[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 5:41 AM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock

I, [REDACTED], would like to say "NO" to the Dewey Burdock Uranium Aquifer Mining.

thank you, [REDACTED]



**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 10:51 PM  
**To:** Shea, Valois  
**Subject:** no on exemption from safe drinking water regulations in SD

Dear Shea Valois,

In regards to the below, I am against both the uranium mining and most especially exempting the company from regulations on safe drinking water. That sounds like a bad idea for public health. Thanks.

Sincerely,

[REDACTED]

"EPA seeks public comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota"

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Thursday, May 18, 2017 10:15 AM  
**To:** Shea, Valois  
**Subject:** RE: Powertech permits

I'm writing to you today to oppose the issuance of permits to Powertech allowing the drilling of thousands of wells within the 14 different fields through the aquifer. We don't want disposal wells - - we don't want Uranium mining! There is no part of uranium mining that is life-sustaining. Uranium mining devastates our land and water. It makes water poisonous for all living beings.

Water is a finite resource - - all the water that is on earth today is all the water that we will have for all of time.

The indigenous communities have treaties to this land. Please honor our shared resources and the sacred treaties.

Our word is our honor.

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:18 PM  
**To:** Shea, Valois  
**Subject:** Uranium in SD

I absolutely oppose allowing Uranium mining waste disposal in SD aquifer. We must protect our environment.

[REDACTED]  
[REDACTED]

June 19, 2017

Valois Shea ([shea.valois@epa.gov](mailto:shea.valois@epa.gov))  
U.S. EPA Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

EPA Regional 8.  
Regarding:  
Deep Injection Well Area Permits  
Dewey-Burdock Uranium In-Situ Recovery Project  
Custer and Fall River Counties, South Dakota

Greetings Ms. Shea.

My Name is [REDACTED]. I am a resident of Rapid City, SD. I am also a enrolled member of the Cheyenne River Sioux Tribe (however, this is my own personal statement and not to be a part of any "official" Tribal consultation). I am a mother and grandmother and I am deeply concerned about what future we are leaving for our future generations.

I say NO to the proposed Uranium In-Situ Recovery Project operation in the Dewey-Burdock located in the Southern Black Hills. I say NO to granting Powertech (USA) Inc. or Azarga Uranium, or any other similar mining operation any permits what-so-ever. This ISL uranium mining operation is Not in our Nation's Best Interest, nor is it in the best interest of South Dakota.

In my opinion any state or federal agencies approving such a scientific proven water contaminating operation IS WATER SUICIDE! I believe each of you know in your heart of hearts that uranium mining is BAD. It's already been scientifically proven that uranium is dangerous when brought to the surface, and is hundred times more dangerous to our water systems. Uranium needs to be keeping in the Ground. Wantonly contaminating our groundwater will leave thousands of people and their livestock without a viable water source. There are also millions of wildlife species, sacred species that depend on the aquifers and these tributaries too; what happens to them?

I say NO to the uranium mining in the Southern Black Hills. I say NO to granting deep well injection permits to use the Minnelusa and Inyan Kara underground aquifers. I say NO to granting this uranium mining company with an permit to be "exempt" from the Safe Drinking Water Act so that they can polluted this water and it will never be used for drinking water in the future.

Other Reasons I object are:

The HeSapa, or Black Hills, is Treaty Territory under both the 1851 and 1868 Ft. Laramie and under Law it is mandated to consult with tribal governments as Government to Government Relations. This includes following National Historic Preservation Act rules and regulations with the tribes. However, South Dakota and federal agencies involved in permitting this uranium mining have continuously ignored tribal nations and their expert testimony regarding cultural properties and sacred sites in the target area.

I also question the legality of the current permit application process as I believe the application by Powertech (USA) should be null and void since the official name is now

that of Azarga Uranium, and Azarga hold 100% ownership of the Dewey Burdock uranium project. However, on the EPA's public notice Powertech (USA) Inc. is listed as the operating company. If ownership has changed, shouldn't Azarga Uranium now be the "Official Company" in which Azarga would need to go through the official permit application process from the very beginning?

It is a known fact that several executives of Powertech previously worked with other uranium companies that were cited for mining violations. One company went bankrupt and left tons of radioactive mill tailings along the Colorado River in Moab, Utah. That mill is now a superfund site whose cleanup is funded by your tax dollars. Why should we trust them to clean up future operations? Is this why they want to send their waste water deep underground; Out of sight, out of mind?

And what about past mining operations that took place in the Dewey Burdock back in the 1950s, which still have not been cleaned up, or from my understanding are not even part of the Super Fund Sites. There are over 167 old mines in one area and literally thousands of old uranium operations have been left unreclaimed in the upper Missouri River basin. And these modern uranium companies employ people who were involved in past uranium operations.

The U.S. Geological Survey reported that the Madison and Minnelusa aquifers are vital water source for Rapid City and the surrounding areas and a uranium mining company wants to dump uranium waste in the aquifers, which opens that door of nuclear waste storage in the future, since they would already be dumping their waste fluids. And where does this mined uranium go? I'm guessing to the highest bidder in some foreign country like China, Russia, or somewhere unknown? So while they get the revenue, South Dakotans get the highly toxic wastewater. this is a asinine Idea that will hold catastrophic results.

I believe it's an outright sacrilege to pollute our water systems for the all mighty dollar. Let's remember that future generations are counting on us to protect these precious aquifers and the air. Let's leave a legacy that future generations will be proud of – one that will keep them healthy – Water Is Life.

Mni Wiconi means WATER IS LIFE.

Thank you,

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, May 14, 2017 7:51 PM  
**To:** Shea, Valois  
**Subject:** [SPAM] Do not allow uranium waste on Lakota land

Ms. Shea,

In March of this year the EPA issued two draft permits to Powertech, a multinational corporation and division of Azarga Uranium Corporation of Canada. Together these permits would allow the drilling of thousands of wells within 14 different fields. These wells would bore hundreds of feet into the ground and pierce the Inyan Kara system of underground aquifers.

The second of the two permits is to allow the disposal of hazardous waste materials resulting from uranium mining. Both permits would needlessly expose the Lakota Oyate to the devastation of uranium mining and continue america's war against Red Nations' peoples.

*"The Inyan Kara, Minnelusa, and Madison aquifers are the principal sources of ground water in the northern Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming... The direction of groundwater movement is from the outcrop area toward central South Dakota."* [USGS Study, <https://pubs.er.usgs.gov/publication/wri864158>]

The proposed authorization would allow uranium waste to endanger Lakota water supplies and must not be allowed. Please rescind both of these permits.

Thank you,

[REDACTED]  
US citizen

*"All perceived problems, challenges and difficulties, are symptoms of wisdom seeking emergence"*

— James Priest

[coyotecreative.net](http://coyotecreative.net)



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:19 PM  
**To:** Shea, Valois; McClain-Vanderpool, Lisa  
**Subject:** Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc.

I don't know how this could possibly be a good idea. I know that Secretary Pruitt wants to protect business interests over the environment, but that is not the role of the EPA! The agency was developed to PROTECT THE ENVIRONMENT.

I'd like to see the science saying this is a good idea and that ground water will not be affected. And if 98% of scientists say it's fine, I would expect Secretary Pruitt to use the same criteria he uses to evaluate scientific evidence for climate change to rule against this invasive action!

[REDACTED]  
[REDACTED]



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, May 24, 2017 12:48 PM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock Uranium ISR

Dear Ms. Shea,

Please accept this communication as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.

I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.

We can live without more uranium but not without clean water and soil.

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
[REDACTED] AM  
**To:** Shea, Valois  
**Subject:** Powertech and SD and WY drilling

Please do not let them contaminate our water by doing this! I am a Wyoming native and this is wrong! Please don't let this happen.

As an enrolled member of the Oglala Lakota nation, I'm asking you to please stop letting big business destroy our resources.

Regards,

[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED].

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:45 PM  
**To:** Shea, Valois  
**Subject:** South Dakota aquifer exemption

Please do not permit Powertech an exemption to dump uranium into the aquifer system in South Dakota. Water sources must be protected from contamination.

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 6:50 AM  
**To:** Shea, Valois  
**Subject:** Aquifer exemption for uranium mining project in SW Dakota

I strenuously object to the exemption requested by the uranium mining company to permit uranium mining waste disposal in a SD aquifer. Aquifers are pristine sources of water, and contamination cannot be reversed.. The regulations already in place to prohibit this need to be followed. Our health takes priority over the financial interests of this company.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Thursday, June 08, 2017 11:34 AM  
**To:** Shea, Valois  
**Subject:** Re: Uranium Mining in the Black Hills

Please do not allow uranium mining in our sacred Black Hills!!

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Friday, April 07, 2017 4:00 PM  
**To:** Shea, Valois  
**Subject:** Power Tech/Azarga aquifer contamination concerns  
**Attachments:** Our Well report; Well Report, Plat Map and Aerial Map.pdf; Well Report for Reynars.pdf; Brown Well Report.pdf

Hi Valois,

I write to you regarding my concern for our drinking water supply, which I believe may be in jeopardy if the Dewey Burdock Uranium project is approved. I am attaching my personal well report along with just a small sample of others that I am aware of. According to Hollenbeck, Power Tech/Azarga plans on re-injecting the solution they use to extract uranium, back into the Minnelusa Aquifer. That is were so many of us get our drinking water and this is unacceptable!! I feel an urgent need to provide you with the link and person who is my 'go to pro' at the SD DENR to verify and answer any questions you have while trying to determine whether this project should be allowed. Please do your due diligence and thoroughly research the aquifer use. Even the most successful in-situ mining operations have left the water worse than it was before they started and we are not willing to run any risks with our drinking water! Hollenbeck keeps saying we have nothing to loose, but he is wrong! Thank you!

the link is

[SD DENR Wells Completion Reports](#)

You can contact [REDACTED] at 6 [REDACTED]

### SD DENR Wells Completion Reports

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

*For all of your real estate needs!*

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, April 10, 2017 3:26 PM  
**To:** Shea, Valois  
**Subject:** Re: Power Tech/Azarga aquifer contamination concerns

Thanks soo much! I just spoke to the Hot Springs City Engineer, [REDACTED], who said the city of Hot Springs, as well as many other private wells in this area, get their drinking water from the Minnelusa Aquifer. I would expect that if Power Tech/Azarga, before being seriously considered for this project, should be responsible for providing and paying for a baseline water test of the wells that provide drinking water from the Minnelusa Aquifer. Unfortunately, once the damage is done, there will be nothing that anyone can do to restore our drinking water to its original purity except to lower the standards for safe levels for the contaminants, as has been the case where contamination has occurred at other in-situ sites. Please include this to my written comments regarding this project.

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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**From:** "Shea, Valois" <Shea.Valois@epa.gov>  
**To:** [REDACTED]  
**Sent:** Monday, April 10, 2017 1:36 PM  
**Subject:** RE: Power Tech/Azarga aquifer contamination concerns

[REDACTED]  
Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.

Thanks also for taking the time to send me the well logs from your drinking water well and your neighbors' well and the link the DENR water well database. This is helpful info.

Here is the link to the EPA UIC program website that contains all the information in the Administrative Record, in case you do not already have it:

<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

The public comment period is in effect through May 19, 2017, in case you have any additional comments after reviewing this information.

Thank you!

**Valois**

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Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129

Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

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**From:** [REDACTED]  
**Sent:** Friday, April 07, 2017 4:00 PM  
**To:** Shea, Valois <Shea.Valois@epa.gov>  
**Subject:** Power Tech/Azarga aquifer contamination concerns

Hi Valois,

I write to you regarding my concern for our drinking water supply, which I believe may be in jeopardy if the Dewey Burdock Uranium project is approved. I am attaching my personal well report along with just a small sample of others that I am aware of. According to Hollenbeck, Power Tech/Azarga plans on re-injecting the solution they use to extract uranium, back into the Minnelusa Aquifer. That is were so many of us get our drinking water and this is unacceptable!! I feel an urgent need to provide you with the link and person who is my 'go to pro' at the SD DENR to verify and answer any questions you have while trying to determine whether this project should be allowed. Please do your due diligence and thoroughly research the aquifer use. Even the most successful in-situ mining operations have left the water worse than it was before they started and we are not willing to run any risks with our drinking water! Hollenbeck keeps saying we have nothing to loose, but he is wrong! Thank you!

the link is  
[SD DENR Wells Completion Reports](#)

You can contact [REDACTED] at [REDACTED]

**SD DENR Wells Completion Reports**

[REDACTED] [REDACTED]  
[REDACTED]  
[REDACTED]  
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[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 5:14 PM  
**To:** Shea, Valois  
**Subject:** Fw: Well Log Data for Fall River County SD  
**Attachments:** WellLogsSearch\_20170509023905.csv; State Veterans Home Well Report.pdf

Hi Valois,

Here are only a few of the Fall River County Well Reports that were recorded in Pierre, SD. This is only a list of the domestic wells and does not include municipal wells. I have not had enough time to thoroughly analyze the reports, but I can assure you that The Minnelusa aquifer provides water to this region and cannot be jeopardized by injecting waste water from the in-situ mining process. I am also attaching the well report for our new State Veterans Home, which is also in the Minnelusa aquifer. We cannot allow anyone to jeopardize our water supply by injecting anything into our aquifers or by depleting our, already limited supply, of water for this process. Our water is finite and must be protected!

Renewable energy is making nuclear power obsolete. The price of uranium is already going down and will continue to do so. It is not worth taking any risk knowing that these companies will eventually fold and ride off into the sunset as, is typically the case, leaving the locals with their mess. There is no amount of money that can be held to restore what we currently have when that happens....it's just a matter of time.

As you probably know, Edgemont became a super fund clean up site and the tailing were eventually buried, however, there still remain old mines that have not been reclaimed to this day, They continually jeopardize our ground water and there are no plans to reclaim those sites after all of these years. How can the EPA even begin to consider another uranium mining project without ensuring that land be reclaimed from the previous fiasco?

I lived in Edgemont in the 1980s while the tailings pile was still on the edge of town. From my home on a hill, overlooking town, I would regularly see the cloud of tailings blow into town. I called the State of SD to report it and they referred me to the Denver office of the EPA, to a gentleman named Mike Hammer. I explained the problem, He said that the tailings pile should have at least a 3 in. cover of top soil and be hosed down regularly to keep it from blowing around. He went on to empathize that our State of SD has very lax environmental oversight when it came to protecting the environment and that there was nothing the EPA could do. I called the mill and spoke to an employee to see if, in fact, they were following the guidelines to keep the tailings from blowing into town. He laughed at me and said that, "the tailings were all over his desk and that the mill was literally getting away with murder". He went on to explain that no one ever checked to make sure they were doing things that they knew they were required to do. I was horrified and began the process of moving out of town. No one has been able to ensure that our water and air are protected and I expect that will only get worse with this new administration.

They claim that In-situ mining is safe, there is no safe, clean in-situ mining. Crawford, NE had violations that were discovered by their State oversight. We can assume, from past experience, that our State of SD will not be actively involved with monitoring this project. By the time we realize there is a problem, it will be too late.

The water will never be returned to its current state. The EPA standards are merely lowered to make it OK once the water is contaminated. I understand that the EPA is already proposing to exempt the portion of the Inyan Kara aquifer in the project area from the Safe Drinking Water Act, something that is necessary for mining to occur!!!!!!!!!!

If the EPA decides to grant these permits, they will be responsible for the outcome. There will be no way to restore or replenish our water supply and that will be a sin.

[REDACTED]

*For all of your real estate needs!*

----- Forwarded Message -----

**From:** [REDACTED]  
**To:** [REDACTED]  
**Sent:** Tuesday, May 9, 2017 1:39 PM  
**Subject:** Well Log Data

The attached file contains data generated from the South Dakota Dept. of Environment and Natural Resource's Well Logs Database.

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 12:33 PM  
**To:** Shea, Valois  
**Subject:** Articles on the seismic testing south of the proposed Dewey Burdock Project

Hi Valois,

Thank you again for taking the time to hear our concerns for the Dewey Burdock project on our water last week.

As you may already know, we just learned that there is probably going to be seismic testing south of the Dewey Burdock site. These articles are timely and I believe they may be critical to the future of the Dewey Burdock project as well as the old mining sites that still remain a threat to our water and the buried weapons at Igloo. Realizing there are faults in this region, we, the residents of the Black Hills, are even more concerned with this new realization that seismic testing and perhaps eventual fracking will take place on and near the former army depot site at Igloo!!!!!!!!!!!!!! God Help us!!!!!!!!!!!!

It is common for Cascade Spring to flow red as a result of previous seismic tests, heavy machines working miles away, not to mention unknown causes for this phenomena. IT IS A DELICATE ENVIRONMENT AND WHAT HAPPENS IN A GIVEN AREA HAS AN IMPACT MILES AWAY! I cannot imagine what effect these seismic tests and/or the effect of eventual fracking may have on the Dewey Burdock site even with the best attempts at confining the toxins they will be disturbing, creating and re-injecting into the earth and our water supply, which is a bad idea without the additional issues created by the seismic testing at Igloo!!!!

Please educate yourselves on the future plans for seismic testing in this hazardous area and its possible effect on the Dewey Burdock Project!!!! The results may be catastrophic! I sincerely pray that the EPA will protect us because there will be no way to clean up the possible devastation and/or to restore what we now have. Thank you!

[rapidcityjournal.com/news/local/seismic-crews-want-to..](http://rapidcityjournal.com/news/local/seismic-crews-want-to..)  
[rapidcityjournal.com/news/local/communities/hot-springs/..](http://rapidcityjournal.com/news/local/communities/hot-springs/..)  
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[rapidcityjournal.com/former-army-depot-site-for...](http://rapidcityjournal.com/former-army-depot-site-for...)

[REDACTED]

*For all of your real estate needs!*

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 4:42 PM  
**To:** Shea, Valois  
**Subject:** Uranium mine permits and exemption -public comment re: Dewey Burdock and Region 8

Dear EPA officials,

As a citizen of South Dakota, a former scientist in the area of cell biology, a medical health professional, and more recently a mother of five young adults, I beg you to think beyond corporate business interests, and other parties who hope to benefit financially from the two Underground Injection Control Area Draft Permits and the aquifer exemptions in Region 8. The Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, is requesting an exemption from the authority of the Safe Drinking Water Act and UIC program regulations. The Dewey-Burdock site is located in southwestern Custer County and northwestern Fall River County, on the Wyoming/South Dakota border.

I hope that you will strongly consider the facts being presented by the opposition to these permits and exemption, especially as they contain the contamination risk to the region's most valuable resource: water. As an area not unfamiliar to drought, our water is our gold, our life. The risk, even if infinitesimal per the so-called experts, is not worth the benefit, which to date, has been under much debate that I need not reiterate.

Radioactive contamination of our water would not be able to be contained in an aquifer that has nondescript boundaries. That is more than obvious! And the half life of the contaminants is much longer than anyone today should consider acceptable. History has proven this fact.

Enact the will of the majority of people, for your children, and your grandchildren, and leave our earth below the surface, the one that contains the roots of all grasses and all plants, that all livestock depend on, alone, AND refuse ANY exemptions to guarantee our permanent source of clean non-radioactive water.

You hold a very, very, important power in your hands. It is more important than nuclear power, believe it or not. Please, do not abuse it. Hear us today, as tomorrow's voice will be drowned out by dollars.

We are carefully taking note of the listening capability of your organization, the EPA, that claims to "protect" the people of this fair country.

Respectfully yours,

[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, April 09, 2017 7:26 PM  
**To:** Shea, Valois  
**Subject:** In situ leach mining, Black Hills

Hello. I am writing to express my opposition to the Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota.

These aquifers belong by treaty to the Lakota Sioux people, who have been working toward the return of their ancestral lands. It is a matter of moral outrage that the lands were taken to begin with; poisoning the water there with mining waste which is inevitably left after "restoration" is unacceptable.

Thank you for your time and attention to this matter.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, April 03, 2017 4:26 AM  
**To:** Shea, Valois  
**Subject:** Oppose allowing injection of hazardous mining waste into Black Hills

The Hong Kong/China based uranium mining company, Powertech/Azarga that has been pursuing ISL (in situ leach recovery) mining permits in the Dewey-Burdock, Edgemont area of the Black Hills, is currently requesting permits from the EPA for waivers from the Clean Water Act for the Inyan Kara aquifer in order to implement UIC injection wells for mining, and for hazardous waste permanent deposition from mining activity in the Minnelusa aquifer.

Please DON'T

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, May 14, 2017 10:13 PM  
**To:** Shea, Valois  
**Subject:** OPPOSE Dewey-Burdock Uranium Mine project

To Whom It May Concern:

I am writing to voice my opposition to the Dewey-Burdck Uranium Mine project in the Black Hills, South Dakota. This project is harmful and destructive to the land, the Lakota people, and all other people who live in the Black Hills area and depend on the aquifer. Clean freshwater is essential for ALL people, and this mining project would likely contaminate this resource for not only the Lakota but EVERYONE in the vicinity. Please DO NOT allow this mining project to proceed. Thank you for your consideration.

Sincerely,

[REDACTED]



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 8:17 AM  
**To:** Shea, Valois  
**Subject:** Uranium from the Black Hills

I urge you to reject the plan to mine Uranium in the Black Hills. Please protect the Hills and the aquifer below them. Respect the Treaties.

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 12, 2017 10:27 AM  
**To:** Shea, Valois  
**Subject:** Uranium mining permit for Powertech/Azarga

Dear Valois Shea,

Yesterday I saw this article in our local newspaper. So, I wanted to give you the link, thus the email.

[http://rapidcityjournal.com/news/local/ranchers-face-tough-decisions-as-dakotas-remain-mired-in-drought/article\\_c43f5807-2b32-5a1c-82be-1df586c745d2.html#utm\\_source=rapidcityjournal.com&utm\\_campaign=%2Femail-updates%2Fdaily-headlines%2F&utm\\_medium=email&utm\\_content=2D51DB1195DBB4FF137F8663195C78196DEF84B9](http://rapidcityjournal.com/news/local/ranchers-face-tough-decisions-as-dakotas-remain-mired-in-drought/article_c43f5807-2b32-5a1c-82be-1df586c745d2.html#utm_source=rapidcityjournal.com&utm_campaign=%2Femail-updates%2Fdaily-headlines%2F&utm_medium=email&utm_content=2D51DB1195DBB4FF137F8663195C78196DEF84B9)

I wanted you to have a better understanding of why our water resources in South Dakota are so very important. Ranching and farming are our number one economic source. Along with Tourism, which is number two. Our economy suffers greatly when our agriculture operations are compromised. I have lived here for 15 years and many of those years have been during droughts. Stock dams dry up, wells need to be dug deeper, many into deep aquifers, or water must be hauled.

We cannot afford to take a chance on contaminating our water resources and we certainly cannot afford to give away 9,000 gallons of water per minute through 4,000 wells to mine uranium for ten years. That's equivalent to the water used by the second largest town in South Dakota, Rapid City. To give away that water is just down right criminal. Even if it wasn't contaminated.

I want to share this local article with you also:

[http://rapidcityjournal.com/news/opinion/forum-coming-to-south-dakota-bring-your-own-drinking-water/article\\_4d2d4783-6635-5b18-8c0d-b07229e1dda8.html](http://rapidcityjournal.com/news/opinion/forum-coming-to-south-dakota-bring-your-own-drinking-water/article_4d2d4783-6635-5b18-8c0d-b07229e1dda8.html)

Not only would ranchers suffer, but the second economic source is Tourism. If the perception of tourists is, "that it's not safe to go there." They will take their vacations somewhere that hasn't been compromised.

We have a healthy real estate market in the Black Hills as well. If the water in the Angostura Recreation Area is compromised more than it already has been, due to run off from old mines. Those people would stand to loose all they invested. They would end up with real estate prices, like you find in Edgemont. Not to mention the health risks.

It just doesn't make economic sense to risk so much water. Especially in an area that suffers from extreme droughts.

I hope the EPA uses their common sense to tell Powertech/Azarga that it cannot allow this operation to happen. it cannot take the risk for the extraction of uranium, and all the other harmful elements it extracts with it. The recovery rate is NOT 100%, so pumping this contamination down into lower aquifers only gives the company time to make their money and leave the mess for others to deal with, if they can. Contaminating a whole area of South Dakota, and risking severe health risks to innocent people is again criminal. With the price of uranium

now, it's just not worth the risk. Hopefully the price of uranium drops to below \$10 a lb. because the technology for renewables exceeds nuclear power. Which is headed in this direction.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 6:55 AM  
**To:** Shea, Valois  
**Subject:** Uranium waste disposal

My opinion - NO, Never this shouldn't even be a question. At what point would you think that an element that renders large swaths of land unlivable (plenty of examples to research) would be okay to dump into an underground aquifer where most people are probably living on well water.

Just to reiterate my answer is NO

[REDACTED]

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 4:15 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock Uranium Aquifer

Territories governed by treaty should be protected from exploitation of people and resource. The uranium mining above an aquifer under their promised tribal lands does that. This would put the country in violation of international law, and our own Constitution. It could open a state or the country as a whole to sanctions by governing bodies. Also consumer boycotts of great expense and exorbitant legal challenges that will get my consideration for support. Hope the next time we communicate it is not prior notice. Thanks, [REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 10:33 AM  
**To:** Shea, Valois  
**Subject:** Draft Permits for UIC

Dear Valois,

I am writing to you as a concerned American regarding the proposed Draft Permits to allow UIC a permit for injection wells for the in-situ recovery of uranium in the Inyan Kara Group aquifers and a permit for deep injection wells that would be used to dispose waste fluids into the Minnelusa Formation below the Inyan Kara after treatment.

As we have seen in the past, while all precautions claim to be taken, what happens when the monitoring of the underground sources of drinking water become contaminated? It's too late then.

Also with regards to the aquifer exemption of uranium-bearing portions from the Safe Drinking Water Act. I am trying to figure out what good can be gained from this exclusion?

I am respectfully requesting that the EPA, in its infinite wisdom not grant these permits or exemptions. The Safe Drinking Water Act was put in place for a reason. Our future depends on the actions of the present.

Thank you for letting my voice be counted.

Best

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 5:42 PM  
**To:** Shea, Valois  
**Subject:** Protect Out Aquifers!

Please do not provide an exemption for the uranium mining project in South Dakota. Aquifers are a water resource that many rely on for clean water. Protect the aquifer!

[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 10:22 PM  
**To:** Shea, Valois  
**Subject:** Powertech Uranium

Dear friends at the EPA,

I understand that you are seeking public comment on a project where uranium could be used on Lakota lands. As a citizen, my comments is please, please, no. This seems an egregious betrayal of too many treaties and against the common good of both Lakota nation and United States citizens. This project seems as if it could endanger important aquifers that supply water.

Thank you for you time,

[REDACTED]  
[REDACTED]  
[REDACTED]



**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:43 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining in South Dakota

Please don't destroy the aquifer in South Dakota with uranium mining waste disposal.

Thanks,

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 1:56 PM  
**To:** Shea, Valois  
**Subject:** Uranium Mining Waste Disposal

Shea,

Are you people out of your goddamn minds? No it is not okay to dump that kind of waste into an aquifer that people use to wash their clothes, cook their food, brush their teeth and serve to their families.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 8:35 AM  
**To:** Shea, Valois  
**Subject:** Aquifers

Please do not allow the aquifers to be injected with this waste. We cannot continue to contaminate resources needed for our survival.

Sent from my Sprint Samsung Galaxy S7 edge.

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Thursday, March 16, 2017 9:42 AM  
**To:** Shea, Valois  
**Subject:** UIC Permits for Edgemont, South Dakota

Dear Ms. Shea,

Please accept this communication as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.

I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.

We can live without uranium but not without clean water and soil.

Best regards,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, June 06, 2017 11:37 AM  
**To:** Shea, Valois  
**Subject:** Uranium Mining and Disposal Permit in Black Hills

I'm [REDACTED] and reside on my small ranch/farm near Spearfish in the beautiful Black Hills. It is dismaying to know that our precious aquifers are being considered as a source for uranium mining and subsequent contaminated waste water disposal. My well accesses the drinking water for my family, friends and livestock from the Minnelusa, the same formation being targeted for the deep disposal injection wells.

I find it appalling that anyone would approve disposal of waste from uranium mining activity into a potable water source for this area. In addition, the Minnelusa sits above the Madison aquifer, a major source of drinking water for many communities, therefore, hundreds of thousands of people in western South Dakota and eastern Wyoming. Since the Black Hills were formed from an uplifting of the earth, no one can guarantee that each aquifer is isolated from the one below it. Fissures are known to exist that would allow transfer of water, and in this case, contaminates, to move freely to other aquifers.

As stated in South Dakota Department of Environment and Natural Resources water regulation, the water belongs to the residents of this state. It would be a travesty for an outside agency to determine that it is alright for a foreign corporation to not only have access to a huge amount of our water for free but also be able to inject their waste stream back into our potable water.

I totally disapprove of in situ mining. However, if you are to go forward with approval, I highly encourage you to only authorize disposal into the Deadwood formation below the Madison aquifer to minimize any risk to our water supply.

As a side note, please consider that this is a foreign corporation making this request to mine our uranium and highly likely to pollute our water. They can make grandiose claims that their process is safe and their practices are sound, however this company has never performed in situ mining. I'm very skeptical of their true intentions and personally expect them to sell the entire operation once all the required permits are obtained. The Russians have already obtained ownership of 20 percent of this country's uranium. I would hate to see any more of our uranium fall into foreign hands. Additionally, too many companies grab what they want of our resources, then leave a polluted mess, which falls on the tax payers to finance the cleanup, if it is even possible.

Respectfully,

[REDACTED]

[REDACTED]

[REDACTED]

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Letter to the Editor

Tell the EPA to deny permits to pollute Black Hills water

It is dismaying that our precious aquifers are being considered for uranium mining and waste water disposal. My well accesses the drinking water for my family, friends and livestock from the Minnelusa, the same formation targeted for injecting the waste.

It appalls me that anyone would approve disposal of waste from uranium mining in our potable water source. Since the Black Hills were formed from an earth uplift, nothing guarantees that each aquifer is isolated. Known fissures could allow water and contaminants to move freely between aquifers.

It would be a travesty for an outside agency to decide that a foreign corporation can come in and pollute our supply. South Dakota regulations declare the water belongs to the residents of this state.

The company has never even performed this kind of mining. I expect them to sell the entire operation once all the permits are obtained. The Russians already own 20% of this country's uranium. I would hate to see more of it fall into foreign hands.

The company has never even performed this kind of mining. I expect them to sell the operation once the permits are obtained. The Russians already own 20% of this country's uranium. I would hate to see more of it fall into foreign hands.

Too many companies grab our resources, then leave a mess for tax payers to try and clean up. If you agree, tell the EPA to deny water permits for Azarga Uranium Corp. by June 19 at [shea.valois@epa.gov](mailto:shea.valois@epa.gov) Sincerely,

██████████

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 2:59 PM  
**To:** Shea, Valois  
**Subject:** Business

Hello, my name is [REDACTED] and I'm just curious as to why you think it's a good idea to store uranium on American Indian lands. One it's against the treaty's and 2 it's just plain wrong. Besides the history and the usual blah blah blah tell me why you think it's a good idea? I know it's awful for the environment, I know it can ruin people's lives, So is money the main push here because if it is I ask you to reconsider the actual facts not just what some government official tells you. Please reconsider may 19 to never. I mean this in the most peaceful polite way. All I ask is you research true facts! When you find those "true facts" dig deeper please think for yourself? What did you want to be as a kid? A government EPA official who destroys the world? No, im sure you saw trash and wanted to help the environment well now you are just plain destroying it. Please shut the whole operation down. Thank you! Peace love and light to you. ♥ ☀ .



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 8:29 PM  
**To:** Shea, Valois  
**Subject:** Public comment for draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

I oppose both permits related to the proposed uranium recovery project in the southern Black Hills region in Custer and Fall River. Injection wells for disposing of waste fluids into aquifers is a bad idea be it trested or not. How much control or manpower is available to oversee that the injections do not include toxic chemicals being purged into our precious water supply. The companies that dispose this way have not been overly forthright in listing the chemicals that are used in their processes. Slow moving aquifers would not be able to cleanse toxics for decades or more endangering those that rely on the water for life.

Removing these aquifers from the safe drinking water act just exasperates the problem. We need more safe water not less. Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 6:09 PM  
**To:** Shea, Valois  
**Subject:** Uranium Mining in SD

Hello, please enter my formal comments as NO! I do not think it's ok for mining waste to be injected into underground aquifer's.

<https://www.epa.gov/newsreleases/epa-seeks-public-comment-draft-permits-and-aquifer-exemption-uranium-mining-project>

Thank you.



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 7:57 AM  
**To:** Shea, Valois  
**Subject:** Inyan Kara Aquifers

I would like to comment on exemption request to inject uranium-bearing waste water into Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. I object and wonder how can this even be considered. What in the world is going on with EPAULETS to even consider this.

[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 2:47 PM  
**To:** Shea, Valois  
**Subject:** Black Hills Uranium Mining

Dear Valois

I have read that I can email comments about the EPA's plan to allow Azarga/Powertech to mine Uranium near the Black Hills of SD to you such that they will be considered during the approval process.

While serving in the Air Force many years ago, I worked in a radio lab collecting and detecting information on who was doing what around the world as far as developing nuclear arms. It was exciting and fascinating work. While I understand that this proposed mine would be to gather material for peaceful means, it is painfully obvious to me that doing so puts clean water at risk. Furthermore, permitting a foreign company a permit to ship in and inject waste material from other places is totally unacceptable.

Later in my career with the Forest Service part of my duties were to survey and catalog the many abandon mines around the area. It is obvious that mining companies care little about what they pollute and what they leave behind. The EPA nor any other governmental agency seems to be able to protect the American citizens from mining companies. When all the old mines and dumps are cleaned up and programs to monitor and enforce rules against the mining companies such that the companies and their share holders can be held responsible for what they destroy, I maybe can understand a time when we could consider such actions, but that time has never happened yet and seems to be a long ways off before we get there.

I am very against the proposed Uranium mining and disposal of waste in this area. I do not feel that government currently has the power to protect the American people and our unrecoverable resources such as fresh water.

I hope that the EPA will do all it can to deny any and all proposed Uranium mining and waste disposal projects that would affect such aquifers as the Inyan Kara and the Minnelusa or any other water source. I value clean water more then off shore profits of off shore mining companies. Politicians may be swayed by payoffs and the promises of jobs in the area, but I expect the EPA to decline these permits because they clearly cannot monitor them therefor should not allow them to proceed.

If the waste that is to be pumped into the Minnelusa aquifer is so safe, let the owners and shareholders of Azarga/Powertech pump it into the ground in their own backyard for their children to enjoy.

Sincerely,

[REDACTED]  
[REDACTED] —  
[REDACTED] [REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 10:29 PM  
**To:** Shea, Valois  
**Subject:** re aquifer exemption for uranium mining project

Hi,

No. Just, no.

Thanks,

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 2:54 PM  
**To:** Shea, Valois  
**Subject:** permits and aquifer exemption for uranium mining

I am writing in regards to the draft permits and aquifer exemption for uranium mining project in South Dakota (<https://www.epa.gov/newsreleases/epa-seeks-public-comment-draft-permits-and-aquifer-exemption-uranium-mining-project>)

Clean and safe drinking water need to be the preeminent concerns. The proposed mining could do irreparable harm to the drinking water and should not be granted an exemption.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 8:27 AM  
**To:** Shea, Valois  
**Subject:** Opposition to Powertech Aquifer Exemption

Hello,

I'm sure your inbox has been inundated since the story went on twitter, so I'll keep this brief.

I am a citizen of the United States and the State of California. I feel that drinking water is going to grow significantly in importance in the near future, so I oppose any measures that threaten the safety and cleanliness of said water. I request that you deny any aquifer exemptions requested by Powertech.

Thank you for your time.

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[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Saturday, March 18, 2017 5:16 PM  
**To:** Shea, Valois  
**Subject:** No Mining

There should not be any mining in the Black Hills. US Treaty clearly states this is Native land. A Sovereign Nation,



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, March 17, 2017 8:09 AM  
**To:** Shea, Valois  
**Subject:** No uranium permits please!

Dear Ms. Shea,

Please accept this email as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.

I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.

We can live without uranium but not without clean water and soil.

Best regards,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 9:02 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock Azarga Project Permitting

Dear Ms. shea,

As a former council woman for the city of Hot Springs, and as a current resident of Fall River County, I strongly oppose anything that would pose potential harm to our water. Insitu mining of uranium and the depositing of toxic mining waste into our aquifers and ground would contaminate our water.

Furthermore the NRC ordered Powertec Azarga company to plug the more than 7600 test drilling bore holes in Fall River and Custer counties. This was ordered two years ago and not one hole has been filled.

Having attended the state of South Dakota tourism meetings, we in hot springs in Fall River County have more to offer in tourism than any other part of the Black Hills. Hot Springs was the only city in the Black Hills that got its start in tourism rather than mining as in the other cities.

We have great possibilities for being an extensive organic farming and ranching area. A few years ago the city of Hot Springs purchased Evans Plunge, a world-famous natural spring mineral water pool. The city has invested millions. The Evans Plunge would be damaged beyond use if the powertec Azarga permits would be given. This area would be unfit to live in due to the fact of having unsafe water quality for human, livestock and farming purposes. I say start up a Superfund Site in the Dewey Burdock site instead.

Thank you,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 10:46 AM  
**To:** Shea, Valois  
**Subject:** Drilling for drinking water

If accessing this water will be for profit then you will just be adding to the stresses of mankind.  
If you get it done in a not for profit manner i can agree with it, otherwise my answer will be no

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:01 AM  
**To:** Shea, Valois  
**Subject:** No uranium

Please no uranium in the Black Hills . They have the most pristine aquifers in the world . We can't afford to kill them it's not right! This is treaty territory for our natives and it's against treaties to destroy this area for uranium.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, June 15, 2017 3:48 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining in Edgemont South Dakota

I am totally against uranium mining in Edgemont, South Dakota. I live in Hot Springs, SD and have a well that services my house, my livestock, and my business which is a campground.

If water is allowed to be reinjected back into the ground there is a very good chance my water will be contaminated and unusable. I beg you to not allow any uranium mining in Fall River County in South Dakota. If any used water from mining is allowed to be spread on the surface of the ground it is my understanding that hazardous waste will be left behind that will be blown up into the air as dust and will contaminate our air.

I do not want our land and water contaminated by anyone, much less a foreign company which absolutely cannot guarantee that this will not happen. The aquifers here can all be connected by cracks and splits and no one has any idea what really goes on underground.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 6:32 PM  
**To:** Shea, Valois  
**Subject:** quifer exemption for uranium mining project in southwestern South Dakota

I find this shocking. No, the uranium bearing portions of the Inyan Kara Group aquifers **SHOULD NOT BE EXEMPT** from protection under the Safe Drinking Water Act.

What in the world is going on? Please, do your job and protect our drinking water.

[REDACTED]  
[REDACTED]  
[REDACTED]

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[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 10:28 AM  
**To:** Shea, Valois  
**Subject:** My comments on Uranium mining in the Black Hills.

*Dear EPA, Region 8:*

*Here are my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:*

*"The Madison and Minnelusa aquifers are two of the most important aquifers in the Black Hills area because of utilization for water supplies and important influences on surface-water resources resulting from large springs and stream-flow-loss zones." – United States Geological Survey: Geochemistry of the Madison and Minnelusa Aquifers in the Black Hills Area, South Dakota*

*It will be impossible to adequately oversee the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells, our groundwater is likely to be irreversibly contaminated. There are well documented faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged in the area of proposed mine and deep disposal wells . It will be impossible to contain mining fluids or waste liquids, contamination of our groundwater is highly likely.*

*The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather than relying on imperfect protection and clean-up processes.*

*As an RN, I find the health issues related to the risks exposure of uranium contamination at any level are deeply concerning. Even one death or illness as a result of uranium mining is totally unacceptable.*

*The Black Hills are a semi arid area prone to regular drought. The vast quantities of ground water needed for*

*the mining and the potential for contamination are unacceptable. Aquifers are not replenished overnight. Water IS life! Please do not risk it just for money.*

*We do not inherit the earth from our ancestors, we borrow it from our children and our grandchildren. Let us leave the Black Hills as a safe, enduring, beautiful area for those who follow us without risk of contamination in our water supply. Once this contamination is present, it can never be removed. The purity of our water can never be resolved. Is this to be our legacy to our children and our grandchildren?*

*Sincerely,*

██████████

██████████

██████████



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 10:18 PM  
**To:** Shea, Valois  
**Subject:** NO to Uranium MINE

Please, please consider NOT ALLOWING a Chinese owned company to come into our state , mine out the uranium, take it to China to perhaps use against the Americans, and then contaminate our water in South Dakota. Can't imagine what you are thinking to even consider this. I was raised in South Dakota and I love this state. Don't give it to a foreign government!!!!!!!!!!!!!! Our people are worth more than money. Hopefully this isn't about some corruption. Vote NO to uranium mining by a foreign owner. Only look to what happened to the gold mining near Lead S.D. A Canadian company defaulted and left the people of S.D. to pay for clean-up. Please think smart. Thank you. [REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Friday, March 17, 2017 6:12 PM  
**To:** Shea, Valois  
**Subject:** NO to Uranium Mining

Uranium mining of the Black Hills is not only an assault on Native sovereignty over a religious, cultural, and historic site for many Nations, but uranium mining is an environmental disaster itself, even if it all goes as intended.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 10:52 PM  
**To:** Shea, Valois  
**Subject:** Comment on Dewey-Burdock Class III and V Injection Wells

I voice strong opposition to this uranium mining project. As a private landowner I incur extra expense to comply with strict septic regulations that protect our water sources in the Black Hills. Our homeowners association encourages water conservation for the longevity of our well source. But I understand the premise - clean water is that vital - and such a basic right. And all this effort by state and local governments to protect water sources could be negated quickly and tragically if the federal government permits PowerTech to proceed with this project. Please don't allow it to proceed. Thank you for the opportunity to comment.

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, March 09, 2017 9:57 AM  
**To:** Shea, Valois  
**Subject:** Comments for the record: Dewey-Burdock / Application for ISR and UIC permits

Comments for the record:

It is time to stop injecting poisons into our earth for the sole purpose of a business venture to extract minerals for profits.

The future cost of poisoning aquifers is beyond calculation.

Once injected, those poisons are at the mercy of geologic forces which humans cannot control and will eventually contaminate clean water.

The benefit to one business enterprise is simply not the risk to the human race, the plants, the animals, the water and the air.

No method of containment can insure protection.

The simple answer is "NO MORE POISON SHALL BE INECTED INTO THE EARTH."

[REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

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**From:**  
**Sent:** Tuesday, March 07, 2017 7:44 AM  
**To:** Shea, Valois  
**Subject:** Comment FW: Exemption on Aquifer Requirements for Uranium Mining

I guess this is a public comment.

**From:** [REDACTED]  
**Sent:** Monday, March 6, 2017 8:15 PM  
**To:** McClain-Vanderpool, Lisa <[REDACTED]>  
**Subject:** Exemption on Aquifer Requirements for Uranium Mining

[REDACTED]

Without doing a thorough assessment of the draft permits, just the concept of any exemption on aquifer requirements for Uranium mining seems crazy! As far as the details of the regulations I hope they are based on solid science and the need to protect our environment (and especially drinking water) from long term hazardous contamination, but not knee jerk "anti-nuke" sentiments. In the past I've trusted the EPA to make sure judgements, hopefully this is still the case.

Respectfully,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 10:14 AM  
**To:** Shea, Valois  
**Subject:** Reject Permits for Dewey-Burdock Uranium Mine

Dear EPA,

I am commenting on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells.

The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of groundwater resources is very likely.

I am also concerned that groundwater is likely to be contaminated due to inadequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells.

Uranium mining cannot be done without creating and leaving contamination. Groundwater has never been returned to its original condition at any existing leach uranium mine in the U.S.

I urge you oppose these permits until it can be proven that groundwater resources will be protected.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 8:09 PM  
**To:** Shea, Valois  
**Subject:** Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells

In the 1980s I researched the Dewey Burdock area for the Technical Information Project. TIP was involved in several contested case hearings in before the South Dakota Board of Minerals and Environment and its predecessor board. We were also involved in several appeals before the US Forest Service for previous attempts to explore and/or mine uranium in this area. I also was involved in the research TIP conducted at the Gilt Edge Mine, operated by Brohm Mining Company. TIP sued EPA to get proper NPDES permitting for that mine, but soon acid rock drainage would overwhelm the site. It is now a Superfund site, and EPA is spending a lot of money to bring the problems there under control.

I am concerned a similar fate awaits Powertech's Dewey-Burdock uranium operation if it allowed to proceed. Dewey-Burdock area has thousands of boreholes drilled through the upper confining layers of this proposed ISR operation, and perhaps nearly as many through the lower confining layer. Laws at the time required surface capping only, not fully cemented holes. Further, inspections of the cementing of the holes was extremely haphazard, with, at most, 10 percent of the holes actually inspected. Many of these holes have probably collapsed by now, but they still have punctured the confining layer(s) in multiple places. My concern is that operating an in-situ project in this area will be a disaster.

I am very concerned that continuous oversight of the mine and the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible. If this is allowed to proceed, there must be a qualified third-party monitor who is continuously on-site during operations.

Thanks for this opportunity to comment.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, April 27, 2017 4:20 PM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock ISL uranium mine (SD)

**Follow Up Flag:** Follow up  
**Due By:** Monday, May 01, 2017 9:00 AM  
**Flag Status:** Flagged

Dear Ms. Valois,

As a Black Hills resident and retired pathologist, I am strongly opposed to any attempt to mine local aquifers for uranium. I have carefully reviewed as much data as I can find on the reliability of prevention of cross-aquifer contamination by lixiviant and liberated heavy metals using current techniques. I find no assurance that a mined aquifer can be returned to a pre-mining condition. I'm also concerned by the vast volumes of water required by this process, considering that we live in a semi-arid environment.

I am a proponent (and an experienced user) of renewable-energy generation of electricity. Given the current economics and feasibility of renewable energy plus storage for our electricity needs, I find no justification for potential environmental and public-health risks inherent in further reliance on nuclear power.

Thanks for your consideration of these comments.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]



# Uranium and the Winters Doctrine

by [REDACTED]

The Winters Doctrine, which I discussed at the Edgemont hearings, was just upheld by a June 14, 2017 court decision for the Standing Rock Sioux Tribe in the latest North Dakota Pipeline decision. This reaffirmed their rights against water pollution. The Winters Doctrine mentioned in this case is a cornerstone of Native American Law. This confirmed their rights to an ancestral home, which implies original water rights dating from the original treaty agreement. This allows for present and future water needs along with things like hunting and fishing.

It did not matter that Dakota Pipeline was upstream from the reservations: any potential disasters were still a threat to a basic concept of a livable reserved homeland.

In the Edgemont, South Dakota hearing I presented 11 pages on the Winters Doctrine. This doctrine provides a legal framework to hang all testimony in defense of a reserve homeland by the Tribes. These concepts have just been upheld in court.

These concepts have grown wider in application over time, and now apply reserve rights to things like National Grasslands, National Parks, and National Recreation Areas as well as tribal reservations.

The Rapid City Journal notes rancher John Sides of the Fall River County Conservation District says a uranium exemption and development could devastate 125 wells. "It would turn communities into ghost towns and ranches into wastelands."

In applying the Winters Doctrine to National Grassland ranching, it does not matter that contaminated wells for leases would be located just outside the Grassland boundary. It is still the same aquifer and the effect is still disastrous on the federally reserved resource, hence unallowable.

The same applies to all federally reserved lands from the time of their inception. The Standing Rock decision brings this water law doctrine into the 21<sup>st</sup> century for Native American issues.

Even if amounts are not easily quantifiable, a usable homeland cannot have zero usable water. Left overs and contaminated dregs destroy the concept of a reservation.

Original treaties were based on what was understood at the time, not on some rules, policies, executive actions, or laws made up decades or centuries later. In the years following 1950 the government and President Nixon made a decision that areas of the country would be considered sacrificial areas mandated by atomic pollution. This decision and the resultant succeeding culture spawned countless decisions that were damaging and poisonous to the Cheyenne River and Sioux homelands. Just like the pipeline decision these were considered inconsequential since they were outside the reservation boundaries. A poor minority would receive the negative results while the powerful got rich.

How well would a poor minority be able to defend themselves anyway? This totally ignores that the federal government holds these rights in trust for the Tribes. The

government must defend these rights as their own and all decisions must be in the Tribes' favor.

For decades or more uranium decisions have not been made in the Tribes' favor, or even in the favor of other federally reserved areas, such as the Badlands National Park, where the Cheyenne River flows.

The issue of uranium is not just whites versus Indians. The Winters Doctrine applies to at least nine local federally reserved areas, including the two reservations. Edgemont water quality analysis shows above acceptable radiation limits, and uranium near the limits in two categories. It is time for the EPA to reopen investigation and enforcement of suspect private uranium mines and gain physical entrance, as per multiple tribal and non-tribal requests at the hearings.

Such questions under investigation should not allow further questionable, likely damaging, and possible irreversible actions to the environment to be made. It is time for the federal government to stand up to their trust responsibilities under the Winters Doctrine.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 3:53 PM  
**To:** Shea, Valois  
**Subject:** No to Azarga-

Here are my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:

I live in and own property in the Black Hills. I work in the tourism industry and know that the economic impacts of hosting millions of tourists and being a premier retirement area far outweigh any economic and environmental promises a poorly-funded company like Azarga/Powertech (Stock at .28 a share on Jun 16, 3:46 PM EDT) might have made over the years.

I am alarmed by their expansion of a plan to drill 4,000 in situ leach mining wells instead of the original 1,500. These toxic wells would be drilled into the Inyan Kara aquifer on the southwest edge of the Black Hills, which is used by families for their drinking water. After mining, the company's plan is to pump uranium mining wastes back underground into the Minnelusa aquifer through as many as four deep disposal wells, endangering yet more communities water and well-being.

Assurances that their mining and pumping processes are safe are totally based on the word of company officials with sparse scientific data. On the other hand, the history of uranium mining here in South Dakota indicates that uranium mining cannot be done without creating and leaving contamination. Cancer rates in areas where uranium was mined are alarmingly high. A poorly-financed company without a proven track record, Azarga cannot guarantee that it will be responsible for costly safety measures, for accidents, and for prompt and thorough cleanup. Azarga/Powertech's record at the Dewey-Burdock site is poor even as they know they must prove to the public that they are a good corporate citizen.

For health and economic reasons, I urge that the Environmental Protection Agency deny a permit.

It IS in our national interest to have safe water and soils for generations to come. It IS in our national interest to protect our citizens' health. It is NOT in our national interest to issue permits to a company with a problematic environmental record.

Respectfully submitted,

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Thursday, May 18, 2017 2:31 PM  
**To:** Shea, Valois  
**Subject:** Uranium Mining

Why would anyone think that it should be allowed to issue permits that would needlessly expose the Lakota Oyate to the devastation of uranium mining and continue America's war against Red Nations' peoples.

Powertech, is a multinational corporation and division of Azarga Uranium Corporation of Canada, a foreign corporation. Why should the U.S. take the radioactive tailings and deposit them in the Inyan Kara system of underground aquifers? What part of NO does a Canadian corporation not understand?

Keep the U.S. out of your equation of ridding your operations of radioactive materials.

NO. NO. No.

I'll even leave you my phone number so you can call me. I dare you. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, March 16, 2017 8:52 AM  
**To:** Shea, Valois  
**Subject:** Uranium mining and our groundwater

Dear Ms. Shea,

Please accept this email as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.

I strongly urge the EPA to deny both of these permits and stand up for the American people. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.

We can live without uranium but not without clean water and soil. How will our children and grandchildren survive without clean water. I believe that the EPA's existence is to protect our environment for future generations. Science has proven that mankind has abused our resources and has given us a path forward to ensure we all have clean water and air. Please stand up for us. We already have been let down by the EPA allowing the pipeline to proceed.

Regards,

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, June 04, 2017 12:52 PM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock Class III & V Injection Wells

Dear Madame,

We are writing to ask you to REJECT the two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.

While we understand uranium is naturally occurring in our environment and that waste products generated from extraction, etc needs highly effective containment, we shudder to think the EPA would allow any risk of contamination of our finite water resources with said waste fluid injection. Even a slight risk of contamination to the aquifer at the Minnelusa Formation is too much of a risk.

WATER IS LIFE and its purity must be protected at all costs.

Thank you for placing my comments into the record opposing these permits to Powertech (USA) Inc..

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 4:23 PM  
**To:** Shea, Valois  
**Subject:** uranium injection

I strongly oppose injecting, any material, into or around any aquifers. Particularly waste materials from uranium clean up projects. I request public hearings on this issue before any funds are diverted to those ends.

Thank you

[REDACTED]



May 15, 2017

TO: Environmental Protection Agency EPA

FROM: [REDACTED]  
[REDACTED]

SUBJECT: **HAZARDOUS WASTE MATERIAL.**

I am a resident of Oglala, SD and I lived here most of my life. I grew up drinking water from Makizita Wakpa (White River) that runs through the western end of the Pine Ridge Indian Reservation. The water was naturally drinkable at that time, today it is contaminated with sewage, chemicals, medical waste, pesticides, herbicides, oil, trash, etc. and unsafe for drinking today and causes cancer. I am a cancer patient, I may have contracted the disease from working at Igloo, SD moving houses to the Pine Ridge Indian Reservation.

There are 37 test holes at Slim Buttes, SD north of Chadron, NB. In 1981, there was a sudden breakout of SIDS and took the lives of many new born Indian children. Doctors at the IHS Indian hospital did report that it was caused from something in the air, perhaps radium – radon from the open test holes, so authorities transferred out the doctors. At that time, it was not clear if those test holes were capped, they sure did have lids. Capping is when cement is used to seal off each layer of sediment (rock, oil, natural gas, uranium etc.)

When I was small Hoksila (boy) my parents told me that someday we will be asked if we are Christians. If you say yes then you will be punished or killed. Native Americans had their own spiritual beliefs like the cannunpa that a spirit woman brought to the Lakota Dakota Nakota people, 500 years before Christians came to turtle island, an anti-Christ followed them here, like another church called free mason, and 13 colonies formed a united constitution and declared themselves an independent government. Every U.S. president since has been a mason, native Americans were neither Christian nor mason, with the power of the \$\$\$\$ they ruled turtle island by their application of federal laws on everything, then they said we are citizens, but we are Ikce wicasa (natural people) and we have right to live this way because we have our own laws, spiritual or otherwise.

Now it is threatened with the contamination from radio-active hazard material. I am opposed to fracking and mining of yellow cake uranium at Crow Butte, in Crawford, Nebraska that threatens our Oglala, Mniluzahan aquifers, Inyan Kara, etc. aquifers.

What is underground in the underworld must remain forever. Pro Dewey/burdock people believe that it is perfectly safe for hazardous mining waste deposition in the Mniluzahan aquifer. A speaker at Edgemont E.P.A. hearing quoted a story, "Bible creation story tells of Eve take an apple from forbidden tree and gave it to Adam. They were driven away from the garden, in shame Adam took the apple and buried it in

the ground to remain forever. The apple represents the underworld where the oil, the uranium, and other evil things are. They are not to bring these up to the upper world or it would destroy all life."

Told uranium mines in the Dewey-Burdock area should be fully reclaimed before new mining is permitted.

Adequate oversight of the quality of liquid wastes pumped into the Mniluzahan Formation through the proposed deep disposal wells will be impossible, and our groundwater is likely to be contaminated.

A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected.

The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is very likely.

The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather than relying on imperfect protection and clean-up processes.

**"URANIUM IS NOT SAFE, IT NEVER WAS, AND NEVER WILL BE.**

Sincerely,

\_\_\_\_\_

\_\_\_\_\_

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 6:44 AM  
**To:** Shea, Valois  
**Subject:** No uranium mining in the Black Hills

We must stop depredations of the earth and the waters on which we all depend for life.

Thank you for your attention and restraint.

[REDACTED]  
[REDACTED]  
The Maeve Chronicles are available as hardcovers, paperbacks, ebooks, and audiobooks  
*So Ecstasy Can Find You* is my latest collection of poetry  
Available now: hardcover, paperback and ebook: *Murder at the Rummage Sale*

*don't dim your joy  
you might be a star  
in someone's dark night*

*-from So Ecstasy Can Find You*

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 12:15 PM  
**To:** Shea, Valois  
**Subject:** Do not support Dewey Burdock uranium aquifer mining

Ms Valois,

I am writing to express my concern about the effects on the environment and very real health risks of the proposed uranium aquifer mining at Dewey Burdock location in the black hills. I do NOT support this and demand that such be denied to go forward. Given that the current administration is also cutting back on health care coverage it is even more imperative that uranium mining be stopped as it will be a health hazard and most will not be able to cover cancer costs and lose life. This is not good for people of the black hills areas.

Thank you for your voting against this initiative.

Sincerely,  
[REDACTED]

Sent from my iPhone

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 8:10 AM  
**To:** Shea, Valois  
**Subject:** Public comment on uranium mining in the Black Hills

Dear Dr. Shea,

In considering uranium mining in the Black Hills, I urge the EPA to clean up old mines before any new permits are issued, to consult with the Sioux nation before any action, to conduct tribally approved archeological and cultural surveys, and to have a Lakota translator/transcriptionist present at all hearings.

Thanks,

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 7:50 AM  
**To:** Shea, Valois  
**Cc:** [REDACTED]  
**Subject:** <https://www.epa.gov/uic/uic-epa-region-8>

Absolutely no! This is completely insane!

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 7:54 AM  
**To:** Shea, Valois  
**Subject:** EPA public comment: Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

Dear Valois Shea,

Here are my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:

- Old uranium mines in the Dewey-Burdock area should be fully reclaimed before new mining is permitted.
- Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible, and our groundwater is likely to be contaminated.
- A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected.
- Tribally defined consultation, Lakota translator/transcriptionist at hearings.
- The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is very likely.
- The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather than relying on imperfect protection and clean-up processes.

Thank you for your consideration,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 8:21 PM  
**To:** Shea, Valois  
**Subject:** NO to Dewey Burdock Uranium Aquifer Mining

Hello,

Sending public comment on Dewey Burdock Uranium Aquifer Mining. Don't allow mining there. No uranium on treaty territory.

Thank you,

[REDACTED]  
Chicago, IL



Virus-free. [www.avast.com](http://www.avast.com)



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 9:38 PM  
**To:** Shea, Valois  
**Subject:** Don't Allow Uranium Waste Storage on Lakota Land

Dear Valois Shea,

I'm writing to ask that the EPA deny the permits for the proposed Dewey-Burdock Uranium Mine project. This proposed mining project is likely to contaminate aquifers of the Black Hills and put the health and safety of those drinking that water at risk. In addition, the mining project is next to the Black Hills, and is within the boundaries of an area set aside for the tribes of the Great Sioux Nation by treaties signed in 1851 and 1868. The Black Hills are sacred to the Lakota Nation. These tribes oppose this mining project; it violates their 1851 & 1868 Treaty Rights and they did not give up their water rights or mineral rights to these areas. The EPA must deny these permits.

Thank you very much for your time.

All best,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 1:30 PM  
**To:** Shea, Valois  
**Subject:** NO mining in the Black Hills

I am writing to submit my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:

I deeply oppose mining in the Black Hills for a number of reasons. I am from Pennsylvania, where the water on my parents' property is still undrinkable, 40 years after the strip mining contaminated the water supply. They have been actively remediating the water and soil for my entire life, and it is much improved over the surrounding areas which have not been remediated in any capacity, but it is still unsafe for drinking, and unsafe for growing food.

It is impossible to mine -- especially uranium -- without contaminating the water. Even if someone chooses to disregard the importance of native and settler relationships and the criticality of leaving sacred spaces unmolested, geological impacts of mining are extremely widespread.

Thank you for your consideration,

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 10:48 PM  
**To:** Shea, Valois  
**Subject:** Draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

I think the job of EPA is to protect aquifers, not provide exemptions to companies that want to extract hazardous substances near water supplies. This is a continuation down the path of environmental degradation and a lack of concern for local drinking water. Please don't issue the permits.

--

[REDACTED]

"If one way be better than another, that you may be sure is nature's way." - Aristotle

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 8:23 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock uranium project

Dear Ms. Shea,

I am writing in regards to the proposed Dewey-Burdock uranium project. It is absolutely absurd that we are even considering ANOTHER uranium mine, when the disaster that occurred on June 11th, 1962 has yet to be cleaned up properly. The discussion we should be having is about what to do with the uranium tailings still present on the Pine Ridge Indian Reservation and in Edgemont, as a result of Total Mine Development's failed project.

Uranium tailings, as you are well aware, are no joke. According to Robert Pole, physics professor at Cornell University, the estimated deaths as a result of uranium mining may be grossly underestimated. I, on some level, can understand why some people, in this day and age, might be fighting for crude oil pipelines, but uranium mines?!? - who, except for the numbered people who will directly profit from this venture, could possible be in support of this project? White moms in Rapid City, native grandmothers on the reservation, ranchers who's cattle depend on ground water, republicans, democrats, independents, all say no to radioactive waste.

As a resident of Rapid City, I am concerned with the impact this project will have on my family's well being, on our drinking water, air quality and my children's future. As the wife, and mother, of enrolled members of the Oglala Sioux Tribe, I am even more concerned what impact this project will have on the well being of my native brothers and sisters. It is clear, if history is any indicator, that this proposed project will leave them most vulnerable.

I understand that your organization is currently facing opposition, due to the current Administration's total disregard for science and the well being of humanity in general, but I beg you to do what you can to not allow this project to move forward. Short term-private wealth is not worth the cost of radioactive waste.

Thank you so much for hearing me out and the work that you do as a public servant.

Sincerely,  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 5:12 PM  
**To:** Shea, Valois  
**Subject:** Re: Thank you for your comments

Awesome, thank you Valois and bless the critical work of the EPA!

On Mon, May 15, 2017 at 4:03 PM, Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)> wrote:

Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.

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[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 8:28 AM  
**To:** Shea, Valois  
**Subject:** Aquifer exemption for uranium mining

RE: EPA has issued two draft Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota.

Ms. Shea,

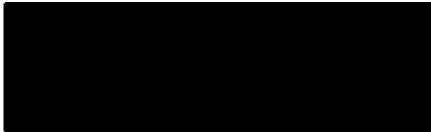
I am writing as a concerned citizen regarding the recently announced application for exemption from what can only be called sensible guidelines for the protecting of a water aquifer. The potential for water contamination by uranium must be taken very seriously, particularly given the long term threat posed to not just human life, but all life, such as the increased rates of cancers due to increases in mutation rates. As I am sure you know, this potential for environmental damage is exacerbated by the presence of nitrates, which are practically ubiquitous in just about every region of the US.

I strongly urge the EPA, the guardians of our environment, not to approve such a blatantly dangerous exemption.

Kind Regards,

[REDACTED]

MAY 11 2017  
SA



Region 8  
U.S. Environmental Protection Agency  
1595 Wynkoop Street  
Denver, CO 80202

Re: Dewey Burdock Uranium Mining Proposal from Azarga  
Uranium Mining Co., formerly Powertech Uranium  
Mining Co., and Superfund Investigation brought by  
The Wild Horse Sanctuary, Hot Springs, SD

Dear 

It has come to my attention that a request for a full blown investigation of the Dewey Burdock mining area and surrounding areas mined in the 1950's and 1960's near Edgemont, SD was denied by the EPA because various owners of the huge open pit mines abandoned by uranium mining companies would not allow access to the EPA for testing of water and to observe erosion.

There are over 200 open mines in the Dewey Burdock area, both within and adjacent to the 10,400 acre Azarga proposed mining area. Of these there are four huge mines which are over a mile across and which have estimated depths of at least 90 feet. The water in these open pit mines is extremely toxic, containing highly radioactive water and heavy metals, including high concentrations of arsenic, plus dissolved solids and other contaminants resulting from the previous mining activities.

I own property in both Custer and Fall River Counties. I feel that the environmental health of both counties is at stake and that this area should long ago have been designated a SuperFund Site.

By this letter I am requesting that the EPA reopen the investigation into the problems being caused by the mining of the 1950's and 1960's and suspend the Powertech Azarga permit application currently being heard by Region 8 EPA for 4000 deep well injection wells.

In July of 2014 and subsequent to that I flew over the Dewey Burdock and photographed the old mines and the drainage of the site which flows into Pass Creek and Beaver Creek. These creeks then combine and the water flows into the Cheyenne River near Edgemont. The



Cheyenne flows into Angostura Dam, the largest fresh water irrigation and recreation dam in western South Dakota. This dam leads into the Missouri River.

It is my contention from observing the drainage patterns of the site towards these creeks and the Cheyenne that substantial leakage from the mining areas is occurring and contaminating Beaver and Pass Creeks and then the Cheyenne River, and Angostura Dam with the potential to contaminate the Missouri River.

With this letter I am submitting a CD of 92 pictures taken from the air which illustrate the drainage patterns, substantial erosion, and evidence of vegetation anomalies which belie the extreme toxicity of the water held in the larger open pit mines.

Within the 2014 and 2015 time frame there was a major rain incident which sent a 4 foot high wall of water toward the railroad tracks in the Dewey Burdock which derailed at least 4 railroad cars. This was documented in the Edgemont Herald Tribune at the time.

The continued pollution of the Cheyenne River will continue to impact the Wild Horse Sanctuary and other lands that border the Cheyenne River as well as the town of Edgemont.

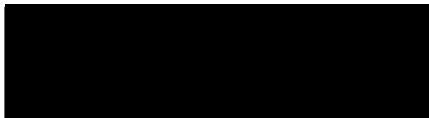
I specifically call your attention to the following image numbers on the enclosed CD which show various aerial views of the Dewey Burdock area. These are: 2385, 2388, 2392, 3091, 3095, 3096, 3097, 3099, 3103, 3124, 3136, 3140, 3142, 3143, 31144, 3150, 3154, 3156, 3162, 3163, 3164, 3165, 3134, and 817. Images 3162 and 3163 show massive erosion areas on one of the open mines that is typical of many of the mines.

Please advise me as soon as possible as to what action you intend to take regarding the reopening of this SuperFund Investigation of the Dewey Burdock Area and the Cheyenne River.

I stand ready to provide further information as needed. You have only to call me for assistance.

In closing, please evaluate this site more carefully. It is only going to get worse and will ultimately result in an ecological disaster of massive proportions. We need your help.

Very truly yours,

A large black rectangular redaction box covering the signature area.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 27, 2017 8:58 AM  
**To:** Shea, Valois  
**Subject:** Injection wells at Dewey Burdock

Dear Shea Valois:

As this issue has been extended for quite a while now, I will not start from scratch in detailing how unacceptable is the EPA consideration to allow injection of toxic waste into usable aquifers here in south west South Dakota. I will simply bring to your attention the fact that the EPA stands for Environmental Protection Agency not "Environmental Destruction Agency". It is sad enough to consider uranium mining when there is no profit available, no safety from radiation exposure and no protection from drainage into surrounding watersheds. To purposely ruin usable, potable and important local aquifers and state water supplies is mindless at best.

Now we learn that there will be no uranium mining in the foreseeable future but rather the foreign company plans on accepting toxic wastes from outside the area to make their profits at the expense of local population and necessary water supplies.

Please. Please. Protect our environment from these profit mongers.

Thank you for your time and consideration.

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:**  
**Sent:** Thursday, May 25, 2017 8:59 AM  
**To:** Shea, Valois  
**Subject:** Re: PowerTech/AZARGA

Dear Ms. Shea:

Recently, I sent along a request asking the EPA to consider reviewing the Dewey/Burdock site and the surrounding area of Edgemont with an eye towards designating that area as a SuperFund Site. I believe Susan Henderson did as well. You may have also received a water sample from an Edgemont resident from the Madison aquifer showing contamination of that water source. ( You may already be aware of the contamination in the Cheyenne River from the area runoff through the Wild Horse Sanctuary, the Angostora reservoir, through Pine ridge Indian reservation and on to the Missouri River.)

My question is simply whether you or your office has received said mailings and if anything is planned to deal with it.

Sincerely,

[REDACTED]

On Tuesday, April 25, 2017 9:51 PM, "Shea, Valois" <Shea.Valois@epa.gov> wrote:

Hello [REDACTED]

Thanks for sending me a copy of the statement you will be presenting at the Hot Springs public hearing. I appreciate your effort in providing me with the information ahead of time. I look forward to meeting you at the Hot Springs hearing.

It would be helpful if you provide a printed copy of your statement at the time of the hearing.

Thanks!

**Valois**

Valois Shea

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[REDACTED]

My name is [REDACTED] and my wife and I live on a small ranch south of Pringle and have been there for 26 years. Thank you for this opportunity to comment on Deep Well injection and uranium mining. My comments here were given at an earlier public meeting opposing the mining. injection

I am not a scientist nor an engineer nor do I receive payment of any kind for being opposed to the permits in question.. I am not a for profit corporation. I have no loyalties or any responsibilities to show a profit to any stockholders. I am free to do the right thing.

When commissioned as an officer many years ago, I swore an oath to uphold and defend the Constitution. The Constitution and the Bill of Rights of course support a prime directive: Clarify the responsibilities of the government and the rights of the people. Not businesses nor corporations' rights but citizen's rights. Our governments' responsibility is to the health and welfare of those citizens. Every civil servant, every citizen's board, every governor is accountable to the citizens who have allowed them to serve and if they do not protect the health and welfare and the rights of the people then they have abrogated their prime directive.

My references for this talk are the Power Tech/AZARGA permit application available from the South Dakota DENR most of which I have read, as well as the website of the NRC and the state laws regarding water and mining. I hope to bring your attention to what I believe are discrepancies and contradictions which should provide reasons for the denial of this permit application.

Despite P/T's repeated assertions that this operation would be safe, that is simply untrue. Nor is it true that radiation is actually good for you, nor that one can destroy radiation contamination by washing it

off. PT spokespersons have been willing to freely state that scientific truths are nonsense apparently comfortable in saying anything that will support their cause regardless of it's falseness. This alone should force a denial of the permit. There are several issues that could interfere with the ability of P/T to actually perform this requirement not the least of which is that no ISL mining operation has ever remediated the land, waters and aquifers to baseline. Exemptions are asked for and usually given. This just provides the excuse to contaminate and not remediate. This obviously does not a safe operation make. If P/T actually cleans up and remediates the land and waters to a clean uncontaminated state, it will be the first operation to do so in the history of in situ mining. This is well known and incontrovertible.

First: 5.6.2.1 of the application states that the slope of the permit area is 2 to 6 degrees to the SW. Due to the location of Pass Creek and Beaver Creek, this slope will force any drainage from leaks and spills and land applications of contaminants plus precipitation to flow SW into these creeks and thus to the Cheyenne River and to Angostora, the Pine Ridge and the Missouri River. This is especially true during heavy downpours such as we experienced this summer which created a 4 foot wall of water that derailed dozens of RR cars and the damaging flooding in the Boulder area which released gallons and gallons of contaminants. These floods will happen again. When they do, there will be precious little to prevent damage to the mining area, not to mention a flooding of the contaminants on the ground. As indicated in 3.39 of the application, and I quote, "the hazard for wind and water erosion... varies from negligible to extreme" "to extreme"! This obviously should be of "grave concern" to quote the Rapid Clty Council. And if the rainfall from our own downpours can cause a train derailment then it can cause other erosion as well. This indicates that the promises of safe containment should be considered questionable.

Second: PT will tell you that there is no communication between aquifers because of confining layers. However, in 3.4.1.4 it states that the Madison aquifer is 200 feet thick in the southern Hills up to 1000 feet regionally and could be connected to or communicate with the Minnelusa and the Deadwood aquifers which are the chosen repositories for the contaminated waste water, which will be injected under pressure. This communication could prove to be unsafe for obvious reasons. Additionally, in 3.4.1.7, P/T states that “no evidence of karsting has been observed”. (erosion due to dissolution producing fissures and sinkholes) This is a below ground phenomenon and simply because something has not been observed at this time does not mean it will not occur later or that it is not there now. As the cave system in the Hills is known to be everywhere, it is only logical that there are fissures everywhere which will allow for “communication” between aquifers as stated above.

Third: Figures 3.4-17 and 3.4-20 show the open pit mines, the number of well holes and the down gradient and how the ore bodies on the east will flow directly into Pass Creek, and thence to Beaver Creek while the ore bodies on the west side will flow directly into Beaver Creek. In 3.4.5.3.9 P/Ts plans will account only for a 100 year flood. This plan does not take in account global warming, mega storms, floods, tornadoes, droughts etc. and plan to stop the flooding with a few well placed hay bales and ditches and berms. A 4 foot wall of water will not be controlled by these meagre efforts. In 5.4.2.3.2 PT simply states that the runoff will be managed with no indication of how they will actually do it beyond the attempts mentioned.

Fourth: In 3.6 P/T anticipates the potential for problems from winds and wind erosion with Fig 3.6-39 showing the wind directions and speeds in the mining and land application areas. The evapotranspiration will leave contaminated residue on the land to be blown away with the winds or washed away by the rains. In 3.11 “The landscape comprising the permit area is erosional in nature.”

This admits to the problem outright and taken at face value should indicate the inappropriateness of the area for the mining project. Additionally, we are told that radium will be the main contaminant and will simply sink to the bottom of the ponds ( where it will sit up to 18 months with no covers before being removed or injected) but Table 3.4-10 shows the other dangerous byproducts of this type of mining. These include thorium, arsenic, cadmium, mercury, thallium, polonium and radon in addition to the uranium and radium. These dangerous by-products of ISL mining on the land and in the water cannot possibly be considered safe for wildlife, livestock or humans. In fact, P/T in 5.4.1.1.3, goes only so far as to say that the lead and thorium will be “treated as necessary” but fails to provide the details. In fact, how does one treat radon, or radioactive cadmium or arsenic??? These poisons will become concentrated due to the re-injection and recirculation of the water into and from the IK making the IK more contaminated rather than less. PT will tell you that the IK will get cleaner due to the bleed. I believe this is illogical nonsense.

Fifth: In 5.0 it states that “potential environmental impacts will be minimized”. There are two problems with this statement: a) It admits that environmental impacts will occur and b) it accepts the fact that they have no intention or do not have the ability to actually remediate these impacts just minimize them. This is not in the public interest and indeed violates state law regarding non-contamination of public waters. Of interest is 6.3.4.2 where it states that P/T will provide “95% confidence that the ...units”... will...” meet the cleanup guidelines or action levels”. Minimum? 95% confidence? 95% of the cleanup guidelines is unacceptable and if that is the best they can do, then the permit needs to be denied. Indeed, P/T makes no offer to do anymore than what they decide is reasonable. Additionally, in 5.5, “Solid wastes such as pond sludge; soils contaminated by leaks; spills of loaded or spent IX resin; filter sand...parts; equipment...will be disposed of at an NRC...

facility". This a very general statement which lacks specifics as to the method of gathering up all this radioactive contamination which will have drained into the soil in and outside of the permit area. The fact that they know about the leaks, (such as the dozens of leaks at Crowe Butte in Nebraska,) but cannot or will not prevent them must be cause for alarm. The public needs more assurance than this. 5.3.9.2 states only that erosion of disturbed areas will be minimized. There are three problems with this assurance. a) P/Ts admittance of the disturbed areas in the first place, b) they will not try to prevent any erosion outside of the disturbed areas only minimize the erosion inside the disturbed areas and c) they admit that they will not even attempt to repair the erosion to its original state. Public health is not served by this cavalier attitude towards runoff prevention. In 5.3.4.4 it admits that "all grades will provide for natural runoff" which as we have seen only further guarantees the flowing of contamination into the creeks and rivers. In 5.4.2.2, In reference to hazardous waste and "used oil"? "it is likely that this project will be classified as a conditionally exempt small quantity generator". CESQG This classification allows for up to 1000kg of hazardous waste a month or 12000 kg a year. What if it isn't so classified? Well, then, P/T simply assumes that they will obtain "the appropriate approvals or permits". This expectation of creating hazardous waste that needs yet another permit or approval due to its dangerous qualities should cast additional doubt as to the viability of this company to properly handle the responsibilities of this kind of operation. Another concern is in 5.5.1.2.3, where it states that excursions must be reported within 24 hours but the permit allows for a delay in correction of the excursion up to 30 days. 30 days!!! This is not a minimization of contamination. With the DENR no longer authorized to monitor and inspect the mining operation due to SB158, the danger of failure to correct and the allowance of the problem to continue is very real.



Sixth: 5.6.2.1 Potential soil impacts: Two to six % slopes will cause rain and wind erosion. Impacts to disturbed areas include: compaction, loss of productivity, loss of soil, salinity, soil contamination caused by clearing, excavation, leveling, stock piling, and redistribution of soil. "Due to the use of heavy machinery and high volume..... ..some soils have the potential of compaction." This can "lead to decreased infiltration, thereby increasing run off". This compaction "will be restored as possible following use." (Ten to twenty years later!!!)

The hazard for wind and water erosion vary between negligible and severe. Severe!!! P/T admits to the danger of compaction and erosion and then PT admits to build up on land of disposals of waste, salts, radionuclides, metals, metaloids, and the loss of soil fertility. This is not 95%clean or minimized or reasonably achievable or even a best effort. This is simply not proper and responsible work. Page 5-118

lists all the problems with spraying multiple contaminants on land, which I won't belabor as it has been covered by others. 5.6.5.1.3 PT accepts the potential of accidents which could release pollutants such as bulk chemical products, uranium loaded resin, dry yellow cake, solid by-product material. PT says it will simply remove the contamination. They do not say how unless you count their claim that it will wash off clean with water.They admit that the consequences of these spills range from minor exposures to "significant". And lest there be any doubt that this area will be radioactive and dangerous to human health this sign will be posted.:

5.7. 2.4 ANY AREA WITHIN THIS FACILITY MAY CONTAIN RADIOACTIVE MATERIAL.

Seventh: Another issue is the cost of reclamation. In their socioeconomic report, P/T allows for \$9 million. The bond is only 1.5 million ( which is less than \$150 per acre or about one hour of dozer work) but it also acknowledges that the expected cost for reclamation

could be as high as 75 million if I am not mistaken. And if WY is any guide, it could be as high as 150 million. The ability of P/T to afford even the 75 amount, depends on the amount of uranium removed and therefore the amount of yellow cake produced. The other side of the coin is the price for yellow cake to support this kind of expenditure. P/Ts figures rely on the price of \$65. This of course is only a hopeful number as the current price is below \$40. But even at \$40, there will not be profit of over \$200 million available for this kind of activity but rather, if my math is approximately correct, closer to \$50 million. If the remediation is to cost upwards of \$75 million, well...you can see that this just doesn't figure or as my rancher friends like to say, it doesn't pencil. If the company can't sell at \$40 then what is to become of the remediation after the mining? if they can sell at \$40 or below then what funds are going to be available to attempt the remediation in the first place? This is a very unhealthy set of circumstances.

Eighth: As we all know, and that includes the EPA, the NRC and P/T, the USGS has stated that there has never been an ISL mining operation that has returned the soil and water to a clean, before mining status. Not WY, not TX. If P/T wants to mine uranium in the Dewey-Burdock, then it has a debt to the people of the area and should guarantee in writing that they will clean up the soil and water to a clean uncontaminated state. That is what CO wanted. The Project Manager said at his meeting at the Fall River Conservation office recently that P/T would indeed guarantee completely that it would clean up the permit area 100% with no mention of minimum, no mention of 95%, no mention of putting forth a "best effort", but a verbal guarantee to absolutely clean up the permit site and the aquifers. Let us have a contract to that effect. It is my understanding that P/T would not/could not provide that guarantee to Colorado nor could it find 5 ISL operations that had cleaned up the water and the land as proof that it could be done. That is why P/T left Colorado empty handed and came to a sparsely populated area of the Black

Hills in the hopes of trying it here. With some success I have to admit due to the state legislature having failed the citizens of this state by weakened the mining and water requirements for ISL mining and removing DENR responsibility of oversight. Not surprisingly, the bill was written by a P/T lobbyist. RCJ 22nd

Ninth: One of the serious problems I see with this operation is the lack of mining experience of the people in charge. For example, the company has yet to mine uranium. The Project Manager has never been a project manager on any other ISL and in fact has done very little “engineering” of any kind for many years. The executives have experience in the nuclear industry and in administration but not in managing and mining an ISL uranium mine. At least not according to the CVs. This is a very complicated and potentially dangerous and very expensive proposition. One of P/T spokespersons is a former Professor at the School of Mines. He has not mined any uranium at an ISL mine. The CEO has not mined any uranium at an ISL mine. They have not developed yellow cake, they have never remediated an ISL area. What they have accomplished is to file a permit application. And that after many corrections from the NRC and the DENR. I have to believe that this has to be their first filing for an ISL mining permit. So...this will be a trial run for P/T personnel, a first time operation. I am sorry but I have no faith in a lack of experience. I need to see years of experience in the ISL industry with a record of clean remediation and contamination containment. Based on their inability to produce a clean permit application without DENR and NRC assistance and their lack of experience and their public admissions that there will be leaks and spills and runoff and contamination of the soils, there is no reason to expect P/T to be able to keep the public safe from this contamination or remediate the operation to even a minimum standard. Indeed, their stock price would not be pennies a share if investors had any faith in this management and this operation. ARSD 74:29:07 clearly states that “The individual who develops the reclamation plan must

be competent in the management and planning of the specific type or types of reclamation selected.” With no prior experience in reclamation, P/T clearly fails this test.

Tenth: 6.3 The project manager told me that I could actually drink a glass of radioactive water with no ill affects, that if one were to be subjected to radiation poisoning that this could simply be cleansed by the normal body functions or washed off with no ill effects, that radioactive equipment and material could be cleansed and made neutral if you will, by a high pressure wash system. In my mind, this demonstrates a complete lack of knowledge about radioactivity and the dangers of radioactive contamination. P/T says it can decontaminate the soil yet previously stated that contaminated soil would be removed to a NRC approved site and that contaminated equipment will remain radioactive and either be taken to another site or if liquid, injected into existing aquifers. Contaminating aquifers is not minimizing that contamination. It is just putting it out of sight. We have heard about “permissible limits”, 95% cleanliness, minimized contamination, and recently a guarantee to contain the contamination within the permit boundary. The NRC allows that the permittee needs only to remove the contamination to as low as reasonably achievable (or ALARA). But we are told that it will be 100% cleaned. As mentioned previously, the NRC knows it can’t be done cleanly so it abrogates its prime directive and puts the health of the mining operation in front of the health and safety of the citizens. The ALARA is in direct contradiction to that directive. Any DENR approval of this operation is in direct contradiction of its purpose to protect the people. There seems to be no true agreement as to just exactly how far any remediation has to go to qualify for a job well done and as we know, the contamination from an ISL mining operation is not cleanable. This vagueness should be, especially at this late stage, grounds for a denial.

There are several situations that require the Mining Board to deny a permit of this kind

((They are 1-40-27:

(1) (a) If the permittee has intentionally misrepresented a fact  
If the permittee has had any permit revoked (denied) under the environmental laws of any state. (Colorado comes to mind.)

(2) The applicant substantially duplicates an application within the past 5 years that has been denied, the denial having not been reversed by a court of competent jurisdiction)))

45-6B-32:

(6) The proposed mining operation and reclamation cannot be carried out in conformance with the requirements of 45-6B-35 (grading, disposal of refuse, removal and handling of topsoil, disturbance to hydrologic balance, slides-subsidence or damage protection-fencing, and reclamation)(-38 states will not pollute surface or ground water!!!)(-41 Disturbance to hydrologic balance. Any disturbance to the prevailing hydrologic balance of the affected land and of the surrounding area and to the quality and quantity of water in surface and groundwater systems both during and after the mining operation and during reclamation shall be minimized.)

45-6B-33:

Reclamation of the affected land pursuant to the requirements of this chapter is not physically or economically feasible.

According to today's RCJ, P/T lobbyist and Program Manager "speaking at a Rapid City Council committee meeting in August, conceded that if the project goes through, the company will need to somehow fund it." "They will need a larger financier going forward", Hollenbeck said, adding that it could lead to a joint venture or selling more stock, or perhaps selling the company. "It may be a sell-out of the project," he said. "I don't know that." P/T hasn't the financing to

even start the project even with over 50 million shares being sold. How can this board approve this permit when they have financing for neither the start nor the finish.

THIS HAS BEEN SHOWN AND THE PERMIT SHOULD BE DENIED.

(2) Substantial disposition of sediment in stream or lake beds ,landslides or water pollution cannot be feasibly prevented

THIS HAS BEEN ADMITTED AND APPLIES. THE PERMIT SHOULD BE DENIED

The proposed mining operation will result in the loss or reduction of long range productivity of an aquifer, public and domestic water wells, watershed lands, aquifer recharge areas, or significant agricultural areas

AS A RESULT OF THE BILLIONS OF GALLONS OF WATER USED AND CONTAMINATED, THIS IS HIGHLY PROBABLE AND THIS PERMIT SHOULD BE DENIED.

The Board finds that any probable adverse socioeconomic impacts of the proposed mining operation outweigh the probable beneficial impacts of the operation. Contamination would affect tourism, ranching, domestic water supplies, and the future economic health of the region.

EVEN AT \$65, THIS IS NOT A VIABLE ECONOMIC UNDERTAKING. AT \$40 IT IS A FINANCIAL IMPOSSIBILITY. THIS BOARD HAS A CLEAR AND LEGAL RESPONSIBILITY TO STRONGLY OPPOSE AND DENY THIS OERMIT APPLICATION

\*\*refer to the Letter of opposition from the FR Conservation District as one example and the “grave concern” of the RC Council\*\* I also ask the Board to consider and recognize the hundreds of signatures

of people who have signed their names in opposition to this permit. As you know, these signatures represent upwards of 10 to 20 times those who are opposed. Please deny this permit.

Thank for your attention.

If time allows, I would like to read this at the May meeting in Hot Springs and will provide a hard copy if requested.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:**  
**Sent:** Friday, May 26, 2017 2:02 PM  
**To:** Shea, Valois

Dear Shea:

Another update about the lack of a Uranium market.

Sincerely yours,

[REDACTED]

**SincereSwitzerland rejects nuclear power!**

Switzerland has joined other European countries in rejecting nuclear power as the country's recent referendum returned a majority "no" vote on May 21. The outcome means billions in funding will be poured into renewable energy development to replace nuclear power. Switzerland's five nuclear plants will be decommissioned and no new reactors will be built. Germany intends to be nuclear-free by 2022 and powered at least 80% by renewable energy by 2050. Italy and Austria have also resoundingly rejected nuclear energy which is on the decline globally, due to exorbitant costs, its inherent and potentially catastrophic dangers, and the falling prices of wind turbines and solar panels. Switzerland's decision demonstrates that closing nuclear plants and rejecting new build opens the door for renewable expansion and not increased use of fossil fuel, as some pro-nuclear boosters allege.



## Shea, Valois

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**From:**  
**Sent:** Tuesday, May 30, 2017 2:29 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock

Dear Ms. Shea:

I support the Union n of Concerned Scientists and I have their most recent publication called CATALYST, Volume 16, Spring of 2017. I urge you to avail yourself of this news up-date as it affects directly any decision the EPA might make with regard the proposed Uranium mining in South Dakota.

I might also add that the 3 Mile Island nuclear facility will be closing down due to five years of losses and the absence of the billions of dollars needed to cover the funding.

Power Tech spokespersons like to claim that one: the mining area will be cleaned up and is safe and Two: the uranium to be removed will help the country's energy balance. I would say again the it will not be cleaned up because it is impossible to do so. As far as the need for U308 in this country, remember that California will be shuttering their nuclear power plants, Hawaii leads the nation in alternative energy sources and coal is being replaced by gas. Wind farms are becoming the staple of the energy system.

Switzerland is shutting their power plants down as has Germany. The EU is transforming its energy balance away from nuclear.

would you be so kind as to remind the judge of these facts.

Sincerely,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:24 AM  
**To:** Shea, Valois  
**Subject:** final comments

Dear Ms. Shea:

Allow me a few minutes to summarize my concerns regarding the Dewey Burdock mining proposal.

- 1). There is no market for uranium
- 2). The price of yellow cake is about 30 dollars below break even
- 3). The US has years and years of uranium and doesn't need anymore
- 4). There is no clean up known for ISL mining contamination
- 5). The UNC is not requiring P/T to decontaminate, only that it gets that contamination as low as reasonably achievable
- 6). The mine sight is already radioactive as are the creeks that flow into the Cheyenne River, thence to the Wild Horse Sanctuary, Angostora reservoir and on to the Missouri River
- 7). The water requirement exceeds the water usage of Rapid city at no cost to the company. The desire to use upwards of 9000 to 15000 gem could also water tens of thousands of cattle
- 8). The injection of contaminants will further the process of ruining the area's aquifers (such as the main four in the area: Inyan Kara, Deadwood, Minnelusa and the all important Madison) for human or animal usage unless The EPA requires Super Fund designation
- 9). Linsey McLean, Susan Henderson, Dr. Stone from SDSMT and Dr. LaGarry from Nebraska have presented you with chemical, biological and data information proving the terrible danger of allowing this mining to continue
- 10). Before any approval is considered for additional contamination, the area must be placed in a SuperFund status.
- 11). The slope of the eastern mining area is a decline of a few degrees from NE to SW and any flowing from surface spraying, rainfall or other spills, which are endemic to the operation will simply flow in that direction to the creeks and rivers not to mention leaking piton the underlying aquifers. The western reacts the same as the east but runoff and drainage decline from NW to SE. If this operation is allowed, then it will only be a matter time before all surrounding waters will be unfit for consumption
- 12). Previous mining operations, such as the TVA some decades ago found no further viable sources of uranium
- 13). The Igloo compound has a history of contamination by such dangerous poisons as lead, sarin gas and radioactive elements. Government chemical weapons and testing have made that area ready for Super Fund status. The sarin contamination is held in 50 to 60 year old 55 gallon barrels, which are stored underground in burial trenches where leakage is not that rare. Any seismological activity in this area will risk a: fracturing of the sarin tunnels and release of the poison as well as fracturing of the cave network that connects to all the underground caves and aquifers.
- 14). Some polls indicate that upwards of 80% of South Dakotans are against this mining and their opinions should hold sway.

There is more of course but maybe this email will support denying any permits in this regard. After all, would you feel comfortable with this business in your back yard?

If I can be of any further support please let me know.

Sincerely,

[REDACTED]

**Shea, Valois**

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**From:**  
**Sent:** Sunday, April 02, 2017 9:05 AM  
**To:** Shea, Valois  
**Subject:** Re: Injection wells at Dewey Burdock

Thank you for your response regarding deep well injection into usable and used aquifers.

It is disheartening to realize how simple it is to save the water from contamination yet witness the refusal of those responsible for that water to safeguard it.

Sadly, The EPA has just allowed the continuation of a poisonous herbicide/pesticide rather than remove it from use.

I look forward to the hearings.

Sincerely,

[REDACTED]

On Wednesday, March 29, 2017 9:38 AM, "Shea, Valois" <Shea.Valois@epa.gov> wrote:

[REDACTED]

Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.

Here is the link to the EPA UIC program website that contains all the information in the Administrative Record, in case you do not already have it:

<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

The public comment period is in effect through May 19, 2017, in case you have any additional comments after reviewing this information.

Thank you!

**Valois**

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Valois Shea

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**From:** [REDACTED]  
**Sent:** Monday, March 27, 2017 8:58 AM  
**To:** Shea, Valois <Shea.Valois@epa.gov>  
**Subject:** Injection wells at Dewey Burdock

Dear Shea Valois:

As this issue has been extended for quite a while now, I will not start from scratch in detailing how unacceptable is the EPA consideration to allow injection of toxic waste into usable aquifers here in south west South Dakota. I will simply bring to your attention the fact that the EPA stands for Environmental Protection Agency not "Environmental Destruction Agency". It is sad enough to consider uranium mining when there is no profit available, no safety from radiation exposure and no protection from drainage into surrounding watersheds. To purposely ruin usable, potable and important local aquifers and state water supplies is mindless at best.

Now we learn that there will be no uranium mining in the foreseeable future but rather the foreign company plans on accepting toxic wastes from outside the area to make their profits at the expense of local population and necessary water supplies.

Please. Please. Protect our environment from these profit mongers.

Thank you for your time and consideration.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:**  
**Sent:** Sunday, April 23, 2017 9:34 AM  
**To:** Shea, Valois  
**Subject:** Re: Injection wells at Dewey Burdock

To: The Environmental Protection Agency  
From: [REDACTED]

Re: Azarga plan for deep well injection

Please include the following to your comments about the Deep Well Injection. Thank you.

There are many reasons why the EPA should deny Azarga any permit to mine uranium and/or inject toxic fluids into currently used aquifers in the Dewey Burdock area of South Dakota. The following will bring to your attention, once again, some of the most obvious.

1: The only reason this approach ( 4000 new bore holes for toxic waste disposal.) is being considered is the fact that the original plan to mine uranium In Situ is now irrelevant due to the low value of the material, the lack of demand worldwide, the lack of verifiable amount of uranium, a lack of verifiable funds to actually mine the radioactive product and of course the reality that alternative energy sources such as wind and solar are now employing more new workers than the oil and gas industries. These realities beg the question: "Why are we even considering this permit."?

One of the reasons for Azarga giving up on the mining was it's inability to clean up the waste from the mining effectively and intentionally poisoning the underlying aquifers and land surfaces. The injection wells will create the same problems of toxicity except in the injection scenario, the toxins will be forced into already necessary and utilized aquifers as opposed to the ruination of aquifer quality by transmissivity. The injection directly into these usable aquifers will simply accelerate the contamination of the aquifers.

3. Professional geologists and chemists from the South Dakota School of Mines,

Chadron State and private practice have testified most effectively as to the danger of this plan for all the residents in the area due to the irreparable damage done to the water supply including the Deadwood, Minnelusa, Inyan Kara aquifers and the most important aquifer of all, the Madison.

The misuse or contamination of the aquifers in the Black Hills flies in the face of good judgment due to the increasing importance of usable water not just in drought affected South Dakota but the nation and the world. We are depleting our water supplies by allowing the very kind of destruction envisioned by Azarga and the EPA. With the demand for water ever increasing due to continued world population increases, it is imperative that the protection and careful usage of our water supplies be our guiding light. To actually embrace the opposite behavior is to violate the EPA stated purpose of actually protecting the environment. It is no longer possible to deny the threats to our remaining water supplies driven by In Situ mining and water ruination. Recent articles in several scientific publications have clearly demonstrated the danger to our water quality and supply posed by this mining and bore hole toxicity. It is your responsibility to make sure the water remains safe and by even considering a permit to allow this is a violation of your responsibility.

The fact that Platinum Partners, which is Azarga's largest share-holder, is being charged with a variety of misdeeds which if convicted could provide prison terms for the guilty, should be a wake-up call to the EPA as the kind of people who are running the show for Azarga. With the company based in China, overseeing a Canadian company with offices in Colorado, one can easily guess how Azarga feels about the long term health of the citizens in this area when compared to the greed for profit.

This a boom/bust scenario which if approved will provide 100 or so temporary jobs for a year or so and then only a handful of maintenance/mining operators. Whatever gain there might be for the employees and towns and counties will be more than offset by the cost for cleanup which will be borne not by Azarga but by those same towns and counties to the tune of scores of millions of dollars. The sad truth is that it cannot be remediated as it is well known that no In Situ mining operation, whether in Texas, Nebraska, or Wyoming or any other place, has ever been cleaned to original condition. It is not difficult to imagine that real estate values will drop, tax revenues for the towns and counties will drop if this ill- conceived rape of the land and aquifers is approved by the EPA.

Thank you for your attention. I hope this has been of some value in making your decision and I can only hope that you will make the right one.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED]

On Wednesday, March 29, 2017 9:38 AM, "Shea, Valois" <Shea.Valois@epa.gov> wrote:

[REDACTED]

Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.

Here is the link to the EPA UIC program website that contains all the information in the Administrative Record, in case you do not already have it:

<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

The public comment period is in effect through May 19, 2017, in case you have any additional comments after reviewing this information.

Thank you!

Valois

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

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**From:** [REDACTED]

**Sent:** Monday, March 27, 2017 8:58 AM

**To:** Shea, Valois <Shea.Valois@epa.gov>

**Subject:** Injection wells at Dewey Burdock

Dear Shea Valois:

As this issue has been extended for quite a while now, I will not start from scratch in detailing how unacceptable is the EPA consideration to allow injection of toxic waste into usable aquifers here in south west South Dakota. I will simply bring to your attention the fact that the EPA stands for Environmental Protection Agency not "Environmental Destruction Agency". It is sad enough to consider uranium mining when there is no profit available, no safety from radiation exposure and no protection from drainage into surrounding watersheds. To purposely ruin usable, potable and important local aquifers and state water supplies is mindless at best.

Now we learn that there will be no uranium mining in the foreseeable future but rather the foreign company plans on accepting toxic wastes from outside the area to make their profits at the expense of local population and necessary water supplies.

Please. Please. Protect our environment from these profit mongers.

Thank you for your time and consideration.

[REDACTED]  
[REDACTED]  
[REDACTED]



**From:**  
**Sent:** Sunday, April 23, 2017 9:52 AM  
**To:** Shea, Valois  
**Subject:** PowerTech/AZARGA

My name is [REDACTED] and my wife and I live on a small ranch south of Pringle and have been there for 26 years. Thank you for this opportunity to comment on Deep Well injection and uranium mining. My comments here were given at an earlier public meeting opposing the mining. injection

I am not a scientist nor an engineer nor do I receive payment of any kind for being opposed to the permits in question.. I am not a for profit corporation. I have no loyalties or any responsibilities to show a profit to any stockholders. I am free to do the right thing.

When commissioned as an officer many years ago, I swore an oath to uphold and defend the Constitution. The Constitution and the Bill of Rights of course support a prime directive: Clarify the responsibilities of the government and the rights of the people. Not businesses nor corporations' rights but citizen's rights. Our governments' responsibility is to the health and welfare of those citizens. Every civil servant, every citizen's board, every governor is accountable to the citizens who have allowed them to serve and if they do not protect the health and welfare and the rights of the people then they have abrogated their prime directive.

My references for this talk are the Power Tech/AZARGA permit application available from the South Dakota DENR most of which I have read, as well as the website of the NRC and the state laws regarding water and mining. I hope to bring your attention to what I

believe are discrepancies and contradictions which should provide reasons for the denial of this permit application.

Despite P/T's repeated assertions that this operation would be safe, that is simply untrue. Nor is it true that radiation is actually good for you, nor that one can destroy radiation contamination by washing it off. PT spokespersons have been willing to freely state that scientific truths are nonsense apparently comfortable in saying anything that will support their cause regardless of it's falseness. This alone should force a denial of the permit. There are several issues that could interfere with the ability of P/T to actually perform this requirement not the least of which is that no ISL mining operation has ever remediated the land, waters and aquifers to baseline. Exemptions are asked for and usually given. This just provides the excuse to contaminate and not remediate. This obviously does not a safe operation make. If P/T actually cleans up and remediates the land and waters to a clean uncontaminated state, it will be the first operation to do so in the history of in situ mining. This is well known and incontrovertible.

First: 5.6.2.1 of the application states that the slope of the permit area is 2 to 6 degrees to the SW. Due to the location of Pass Creek and Beaver Creek, this slope will force any drainage from leaks and spills and land applications of contaminants plus precipitation to flow SW into these creeks and thus to the Cheyenne River and to Angostora, the Pine Ridge and the Missouri River. This is especially true during heavy downpours such as we experienced this summer which created a 4 foot wall of water that derailed dozens of RR cars and the damaging flooding in the Boulder area which released gallons and gallons of contaminants. These floods will happen again. When they do, there will be precious little to prevent damage to the mining area, not to mention a flooding of the contaminants on the ground. As indicated in 3.39 of the application, and I quote, " the hazard for wind and water erosion... varies from negligible to

extreme” “to extreme”! This obviously should be of “grave concern” to quote the Rapid Clty Council. And if the rainfall from our own downpours can cause a train derailment then it can cause other erosion as well. This indicates that the promises of safe containment should be considered questionable.

Second: PT will tell you that there is no communication between aquifers because of confining layers. However, in 3.4.1.4 it states that the Madison aquifer is 200 feet thick in the southern Hills up to 1000 feet regionally and could be connected to or communicate with the Minnelusa and the Deadwood aquifers which are the chosen repositories for the contaminated waste water, which will be injected under pressure. This communication could prove to be unsafe for obvious reasons. Additionally, in 3.4.1.7, P/T states that “no evidence of karsting has been observed”. (erosion due to dissolution producing fissures and sinkholes) This is a below ground phenomenon and simply because something has not been observed at this time does not mean it will not occur later or that it is not there now. As the cave system in the Hills is known to be everywhere, it is only logical that there are fissures everywhere which will allow for “communication” between aquifers as stated above.

Third: Figures 3.4-17 and 3.4-20 show the open pit mines, the number of well holes and the down gradient and how the ore bodies on the east will flow directly into Pass Creek, and thence to Beaver Creek while the ore bodies on the west side will flow directly into Beaver Creek. In 3.4.5.3.9 P/Ts plans will account only for a 100 year flood. This plan does not take in account global warming, mega storms, floods, tornadoes, droughts etc. and plan to stop the flooding with a few well placed hay bales and ditches and berms. A 4 foot wall of water will not be controlled by these meagre efforts. In 5.4.2.3.2 PT simply states that the runoff will be managed with no indication of how they will actually do it beyond the attempts mentioned.

Fourth: In 3.6 P/T anticipates the potential for problems from winds and wind erosion with Fig 3.6-39 showing the wind directions and speeds in the mining and land application areas. The evapotranspiration will leave contaminated residue on the land to be blown away with the winds or washed away by the rains. In 3.11 “The landscape comprising the permit area is erosional in nature.” This admits to the problem outright and taken at face value should indicate the inappropriateness of the area for the mining project. Additionally, we are told that radium will be the main contaminant and will simply sink to the bottom of the ponds ( where it will sit up to 18 months with no covers before being removed or injected) but Table 3.4-10 shows the other dangerous byproducts of this type of mining. These include thorium, arsenic, cadmium, mercury, thallium, polonium and radon in addition to the uranium and radium. These dangerous by-products of ISL mining on the land and in the water cannot possibly be considered safe for wildlife, livestock or humans. In fact, P/T in 5.4.1.1.3, goes only so far as to say that the lead and thorium will be “treated as necessary” but fails to provide the details. In fact, how does one treat radon, or radioactive cadmium or arsenic??? These poisons will become concentrated due to the re-injection and recirculation of the water into and from the IK making the IK more contaminated rather than less. PT will tell you that the IK will get cleaner due to the bleed. I believe this is illogical nonsense.

Fifth: In 5.0 it states that “potential environmental impacts will be minimized”. There are two problems with this statement: a) It admits that environmental impacts will occur and b) it accepts the fact that they have no intention or do not have the ability to actually remediate these impacts just minimize them. This is not in the public interest and indeed violates state law regarding non-contamination of public waters. Of interest is 6.3.4.2 where it states that P/T will provide “95% confidence that the ...units”... will...” meet the cleanup guidelines or action levels”. Minimum? 95% confidence? 95% of

the cleanup guidelines is unacceptable and if that is the best they can do, then the permit needs to be denied. Indeed, P/T makes no offer to do anymore than what they decide is reasonable. Additionally, in 5.5, "Solid wastes such as pond sludge; soils contaminated by leaks; spills of loaded or spent IX resin; filter sand...parts; equipment...will be disposed of at an NRC... facility". This a very general statement which lacks specifics as to the method of gathering up all this radioactive contamination which will have drained into the soil in and outside of the permit area. The fact that they know about the leaks, (such as the dozens of leaks at Crowe Butte in Nebraska,) but cannot or will not prevent them must be cause for alarm. The public needs more assurance than this. 5.3.9.2 states only that erosion of disturbed areas will be minimized. There are three problems with this assurance. a) P/Ts admittance of the disturbed areas in the first place, b) they will not try to prevent any erosion outside of the disturbed areas only minimize the erosion inside the disturbed areas and c) they admit that they will not even attempt to repair the erosion to its original state. Public health is not served by this cavalier attitude towards runoff prevention. In 5.3.4.4 it admits that " all grades will provide for natural runoff" which as we have seen only further guarantees the flowing of contamination into the creeks and rivers. In 5.4.2.2, In reference to hazardous waste and "used oil"? " it is likely that this project will be classified as a conditionally exempt small quantity generator". CESQG This classification allows for up to 1000kg of hazardous waste a month or 12000 kg a year. What if it isn't so classified? Well, then, P/T simply assumes that they will obtain "the appropriate approvals or permits". This expectation of creating hazardous waste that needs yet another permit or approval due to its dangerous qualities should cast additional doubt as to the viability of this company to properly handle the responsibilities of this kind of operation. Another concern is in 5.5.1.2.3, where it states that excursions must be reported within 24 hours but the permit allows for a delay in correction of the excursion up to 30 days. 30

days!!! This is not a minimization of contamination. With the DENR no longer authorized to monitor and inspect the mining operation due to SB158, the danger of failure to correct and the allowance of the problem to continue is very real.

Sixth: 5.6.2.1 Potential soil impacts: Two to six % slopes will cause rain and wind erosion. Impacts to disturbed areas include: compaction, loss of productivity, loss of soil, salinity, soil contamination caused by clearing, excavation, leveling, stock piling, and redistribution of soil. "Due to the use of heavy machinery and high volume..... ..some soils have the potential of compaction." This can "lead to decreased infiltration, thereby increasing run off". This compaction "will be restored as possible following use." (Ten to twenty years later!!!)

The hazard for wind and water erosion vary between negligible and severe. Severe!!! P/T admits to the danger of compaction and erosion and then PT admits to build up on land of disposals of waste, salts, radionuclides, metals, metaloids, and the loss of soil fertility. This is not 95%clean or minimized or reasonably achievable or even a best effort. This is simply not proper and responsible work. Page 5-118

lists all the problems with spraying multiple contaminants on land, which I won't belabor as it has been covered by others. 5.6.5.1.3 PT accepts the potential of accidents which could release pollutants such as bulk chemical products, uranium loaded resin, dry yellow cake, solid by-product material. PT says it will simply remove the contamination. They do not say how unless you count their claim that it will wash off clean with water. They admit that the consequences of these spills range from minor exposures to "significant". And lest there be any doubt that this area will be radioactive and dangerous to human health this sign will be posted.:

5.7. 2.4 ANY AREA WITHIN THIS FACILITY MAY CONTAIN RADIOACTIVE MATERIAL.

Seventh: Another issue is the cost of reclamation. In their socioeconomic report, P/T allows for \$9 million. The bond is only 1.5 million ( which is less than \$150 per acre or about one hour of dozer work) but it also acknowledges that the expected cost for reclamation could be as high as 75 million if I am not mistaken. And if WY is any guide, it could be as high as 150 million. The ability of P/T to afford even the 75 amount, depends on the amount of uranium removed and therefore the amount of yellow cake produced. The other side of the coin is the price for yellow cake to support this kind of expenditure. P/Ts figures rely on the price of \$65. This of course is only a hopeful number as the current price is below \$40. But even at \$40, there will not be profit of over \$200 million available for this kind of activity but rather, if my math is approximately correct, closer to \$50 million. If the remediation is to cost upwards of \$75 million, well...you can see that this just doesn't figure or as my rancher friends like to say, it doesn't pencil. If the company can't sell at \$40 then what is to become of the remediation after the mining? if they can sell at \$40 or below then what funds are going to be available to attempt the remediation in the first place? This is a very unhealthy set of circumstances.

Eighth: As we all know, and that includes the EPA, the NRC and P/T, the USGS has stated that there has never been an ISL mining operation that has returned the soil and water to a clean, before mining status. Not WY, not TX. If P/T wants to mine uranium in the Dewey-Burdock, then it has a debt to the people of the area and should guarantee in writing that they will clean up the soil and water to a clean uncontaminated state. That is what CO wanted. The Project Manager said at his meeting at the Fall River Conservation office recently that P/T would indeed guarantee completely that it would clean up the permit area 100% with no mention of minimum, no mention of 95%, no mention of putting forth a "best effort", but a verbal guarantee to absolutely clean up the permit site and the

aquifers. Let us have a contract to that effect. It is my understanding that P/T would not/could not provide that guarantee to Colorado nor could it find 5 ISL operations that had cleaned up the water and the land as proof that it could be done. That is why P/T left Colorado empty handed and came to a sparsely populated area of the Black Hills in the hopes of trying it here. With some success I have to admit due to the state legislature having failed the citizens of this state by weakened the mining and water requirements for ISL mining and removing DENR responsibility of oversight. Not surprisingly, the bill was written by a P/T lobbyist. RCJ 22nd

Ninth: One of the serious problems I see with this operation is the lack of mining experience of the people in charge. For example, the company has yet to mine uranium. The Project Manager has never been a project manager on any other ISL and in fact has done very little “engineering” of any kind for many years. The executives have experience in the nuclear industry and in administration but not in managing and mining an ISL uranium mine. At least not according to the CVs. This is a very complicated and potentially dangerous and very expensive proposition. One of P/T spokespersons is a former Professor at the School of Mines. He has not mined any uranium at an ISL mine. The CEO has not mined any uranium at an ISL mine. They have not developed yellow cake, they have never remediated an ISL area. What they have accomplished is to file a permit application. And that after many corrections from the NRC and the DENR. I have to believe that this has to be their first filing for an ISL mining permit. So...this will be a trial run for P/T personnel, a first time operation. I am sorry but I have no faith in a lack of experience. I need to see years of experience in the ISL industry with a record of clean remediation and contamination containment. Based on their inability to produce a clean permit application without DENR and NRC assistance and their lack of experience and their public admissions that there will be leaks and spills and runoff and contamination of the soils, there is no reason to



expect P/T to be able to keep the public safe from this contamination or remediate the operation to even a minimum standard. Indeed, their stock price would not be pennies a share if investors had any faith in this management and this operation. ARSD 74:29:07 clearly states that “The individual who develops the reclamation plan must be competent in the management and planning of the specific type or types of reclamation selected.” With no prior experience in reclamation, P/T clearly fails this test.

Tenth: 6.3 The project manager told me that I could actually drink a glass of radioactive water with no ill affects, that if one were to be subjected to radiation poisoning that this could simply be cleansed by the normal body functions or washed off with no ill effects, that radioactive equipment and material could be cleansed and made neutral if you will, by a high pressure wash system. In my mind, this demonstrates a complete lack of knowledge about radioactivity and the dangers of radioactive contamination. P/T says it can decontaminate the soil yet previously stated that contaminated soil would be removed to a NRC approved site and that contaminated equipment will remain radioactive and either be taken to another site or if liquid, injected into existing aquifers. Contaminating aquifers is not minimizing that contamination. It is just putting it out of sight. We have heard about “permissible limits”, 95% cleanliness, minimized contamination, and recently a guarantee to contain the contamination within the permit boundary. The NRC allows that the permittee needs only to remove the contamination to as low as reasonably achievable (or ALARA). But we are told that it will be 100% cleaned. As mentioned previously, the NRC knows it can’t be done cleanly so it abrogates its prime directive and puts the health of the mining operation in front of the health and safety of the citizens. The ALARA is in direct contradiction to that directive. Any DENR approval of this operation is in direct contradiction of its purpose to protect the people. There seems to be no true agreement as to just exactly how far any remediation has to go to qualify for a

job well done and as we know, the contamination from an ISL mining operation is not cleanable. This vagueness should be, especially at this late stage, grounds for a denial.

There are several situations that require the Mining Board to deny a permit of this kind

((They are 1-40-27:

(1) (a) If the permittee has intentionally misrepresented a fact  
If the permittee has had any permit revoked (denied) under the environmental laws of any state. (Colorado comes to mind.)

(2) The applicant substantially duplicates an application within the past 5 years that has been denied, the denial having not been reversed by a court of competent jurisdiction)))

45-6B-32:

(6) The proposed mining operation and reclamation cannot be carried out in conformance with the requirements of 45-6B-35 (grading, disposal of refuse, removal and handling of topsoil, disturbance to hydrologic balance, slides-subsidence or damage protection-fencing, and reclamation)(-38 states will not pollute surface or ground water!!!)(-41 Disturbance to hydrologic balance. Any disturbance to the prevailing hydrologic balance of the affected land and of the surrounding area and to the quality and quantity of water in surface and groundwater systems both during and after the mining operation and during reclamation shall be minimized.)

45-6B-33:

Reclamation of the affected land pursuant to the requirements of this chapter is not physically or economically feasible.

According to today's RCJ, P/T lobbyist and Program Manager "speaking at a Rapid City Council committee meeting in August, conceded that if the project goes through, the company will need to

somehow fund it.” “They will need a larger financier going forward”, Hollenbeck said, adding that it could lead to a joint venture or selling more stock, or perhaps selling the company. “It may be a sell-out of the project,” he said. “I don’t know that.” P/T hasn’t the financing to even start the project even with over 50 million shares being sold. How can this board approve this permit when they have financing for neither the start nor the finish.

THIS HAS BEEN SHOWN AND THE PERMIT SHOULD BE DENIED.

(2) Substantial disposition of sediment in stream or lake beds ,landslides or water pollution cannot be feasibly prevented

THIS HAS BEEN ADMITTED AND APPLIES. THE PERMIT SHOULD BE DENIED

The proposed mining operation will result in the loss or reduction of long range productivity of an aquifer, public and domestic water wells, watershed lands, aquifer recharge areas, or significant agricultural areas

AS A RESULT OF THE BILLIONS OF GALLONS OF WATER USED AND CONTAMINATED, THIS IS HIGHLY PROBABLE AND THIS PERMIT SHOULD BE DENIED.

The Board finds that any probable adverse socioeconomic impacts of the proposed mining operation outweigh the probable beneficial impacts of the operation. Contamination would affect tourism, ranching, domestic water supplies, and the future economic health of the region.

EVEN AT \$65, THIS IS NOT A VIABLE ECONOMIC UNDERTAKING. AT \$40 IT IS A FINANCIAL IMPOSSIBILITY. THIS BOARD HAS A CLEAR AND LEGAL

## RESPONSIBILITY TO STRONGLY OPPOSE AND DENY THIS OERMIT APPLICATION

\*\*refer to the Letter of opposition from the FR Conservation District as one example and the “grave concern” of the RC Council\*\* I also ask the Board to consider and recognize the hundreds of signatures of people who have signed their names in opposition to this permit. As you know, these signatures represent upwards of 10 to 20 times those who are opposed. Please deny this permit.

Thank for your attention.

If time allows, I would like to read this at the May meeting in Hot Springs and will provide a hard copy if requested.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:**  
**Sent:** Sunday, May 14, 2017 10:07 AM  
**To:** Shea, Valois  
**Subject:** Permits

Dear Ms. Shea:

I would like to add some last minute observations regarding an EPA's decision about water safety in the Dewey/Burdock mining area.

Comments by those few people who expressed their support of the mining and disposal permits require enlightenment. Comments about the need for uranium for our own energy matrix are incorrect based on the reality that the US has 200 years of U308 on hand for any of its uses and needs none now or in the foreseeable future. Also, Germany, leading the way, has changed to alternative energy sources for 100% of its energy and will no longer need nuclear fuel, and California is closing its nuclear power plants, and the Fukushima radiation is traveling north to the coast of Russia, the Aleutians, south along coastal British Columbia and on down to California and Baja . All this and more it painfully obvious that the U308 from this endeavor is a failed endeavor. With the possible exception of the interest that China may have in using nuclear power for the short term while it changes over to solar and wind and water, there is no market for the yellow cake in the US and elsewhere. The price of yellow cake is so low as to preclude any profit from being made. It costs about \$65 per pound to produce, but the market is paying no more than about \$25 per pound. In addition, Power/Tech stock is now, and has been for several years, a penny stock meaning that investors know of the lack of viability of this company. Existing investors have seen their investment drop precipitously. One can easily see that there is no market and no money. Reason enough to deny the final permits.

There was mention of the NRC not finding any reason to deny the mining, meaning that the operation will be safe and non-polluting. This is true depending on how one defines "safe". The NRC, and states where In Situ mining is active or ended, have received complaints by the mining companies that they cannot meet the clean up requirements set by the NRC and the states and asking these entities to lower the required standards of clean up, which those entities have allowed. Power/Tech along with the State of South Dakota, the NRC and the EPA know that the clean up of the radioactive waste created by this mining is impossible and therefore has no intention of trying to do any clean up beyond getting the toxins "As Low As Reasonably Achievable, or ALARA. With this level of cleanup, the NRC can dismiss the danger of not being able to clean up the poisons and declare that the operation meets all requirements. It is common knowledge that there has been no ISL return to baseline by any mining companies. Each one has been and is being contaminated. One can see that there is no safe level of contamination. Reason enough to deny the final permits beyond repair.

There are four main aquifers in the southern Hills and all of them are at risk of contamination by radioactive nuclides. This will come in the form of deep injection wells and transmissivity of the waters in the aquifers. PowerTech denies any risk of contamination despite the reality of all other ISL mining operations. The EPA has been denied access to the mining area which precludes being able to actually inspect the site which precludes EPA's actual approval for obvious reasons. PowerTech has refused to reveal the constituents of the Lixivient or the actual cleaning process of the Lixivient. The EPA cannot possibly approve this mining and water contamination because of EPA ignorance of PowerTech operation. This is more than enough reason to deny the final permits.

The proponents suggest that the opposers lack intelligence, lack scientific standing and approach this issues with an over abundance of emotion. This is misdirection at it's best. Professor Stone of the SDSM & T is a scientist and teacher of impeccable credentials has studied this area extensively is quite clear as to the possible dangers of this mining operation. Professor LaGarry from Chadron State College has studied this area as well and has the same conclusions. Ms. Linsey McLean is a highly qualified chemist who has testified before you and her background, studies and knowledge of chemistry and chemical effects of mining Uranium is an expert witness and is well known in many areas of the country. These scientists are not on a payroll and answer only to scientific truth rather than a paycheck or a promise of future gains. PowerTech representatives on the other hand, have little to no experience in ISL mining, have used intimidation techniques and physical threats to browbeat mining opponents. They have continuously erred in filing the permit applications due to their ignorance of the mining process and have had to be hand led through the process. I don't blame the Lakota for being emotional, however, because their water from the Cheyenne River and their wells is already contaminated as are the Beaver Creek, Pass Creek, the Wild Horse Sanctuary and Angostora Reservoir. Because of all of this and the danger of the contamination of Igloo, (Sarin gas and high levels of radiation in the whole are,) the EPA should seek a status of SUPERFUND rather than authorize additional mining on top of the existing poisons. Please remember that the EPA 's reason for existence is to protect the environment not serve the interests of a corporation whose purpose is to violate your protection. These are major reasons to deny these permits.

It is my understanding that monies for the NRC budget and the EPA budget are derived from the very operations that they are supposed to oversee which supports the idea that the EPA and NRC actually work for the mining companies and not the public. I noticed at the recent hearings that the EPA provided handouts explaining the ISL process but had little to say about the dangers, the leaks, the incursions or the contamination of aquifers. Your presentations represented only half the truth. Yet another reason to deny these permits.

I want to thank you for your efforts in presenting these venues for public input. I leave you with a question. Would you want to allow known contamination into your water supply?

Sincerely yours,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

---

**From:**  
**Sent:** Sunday, May 14, 2017 10:23 AM  
**To:** Shea, Valois  
**Subject:** Fw: REPORT ON EPA PUBLIC COMMENT HEARINGS

Dear Ms. Shea:

I forward this to make sure you realize the size of the opposition. The voices of the proponents are few (7%) in comparison to the opponents (93%). This has been true of every hearing I have attended going back to 2010 or so. In fact, unofficial polls have indicated that this ratio holds steady across the state.

Sincerely,

[REDACTED]

[Show original message](#)

On Friday, May 12, 2017 8:26 PM, [REDACTED] wrote:

**Greetings,**

212 people spoke out at the public comment hearings held by the EPA to gather input on the plan to mine uranium and dispose of mining waste in our aquifers. 197 of those people spoke against mining and waste disposal (93%).

Now if only the EPA will do what people want and DENY the permits!

Wopila to native people who braved a bad situation in Edgemont last night, especially the children.

And to all who worked to get public input, fed people, set up and took down tables, raised awareness, raised money, had good conversations with new allies, and all that goes into a project like this -- GOOD JOB!

More discussion on how things went and a chance for your input at the CWA meeting tomorrow (Saturday) morning at 9 am at the Rapid City Public Library upstairs.

[REDACTED]



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**From:**  
**Sent:** Wednesday, May 17, 2017 2:31 PM  
**To:** Shea, Valois  
**Subject:** The Nuclear power no envisioned by PowerTech

Dear Ms. Shea:

This article on NPR internet news should be a wakeup call for all those who support uranium mining and nuclear power.

Thank you for your attention,

██████████

PS: The Hot Springs city council passed a resolution against PT and its excessive use of water. The Conservation District did as well. The County Commissioners, with one or two recusals because of ownership of PT stock and one or two not voting at all because they were "not scientists" and had not even tried to listen to the evidence on both sides, did not even entertain a vote.

## Struggling Nuclear Industry Lobbies State Governments For Help

3:01 Just like coal companies, America's nuclear power industry is having a tough time. It faces slowing demand for electricity, and competition from cheaper natural gas and renewables. And now, touting itself as a form of clean energy, the nuclear industry is lobbying state legislatures with a controversial pitch for help.

"Nobody's in the mood for a bailout," says anti-nuclear activist Eric Epstein, as he considers where to put up a poster in the Amtrak station in Harrisburg, Pa. It has the iconic image of Uncle Sam pointing at the viewer, and saying, "I want you to stop the bailout of nuclear power in Pennsylvania."



### ENERGY

#### Unable To Compete On Price, Nuclear Power On The Decline In The U.S.

Epstein has been a nuclear watchdog since 1979, when one of the reactors at the nearby [Three Mile Island plant](#) partially melted down, bringing the industry's growth in the U.S. to a standstill. Four

decades later, Epstein says nuclear power is just too expensive, and he doesn't want his state to do what New York and Illinois already have.

Both states recently agreed to give billions in subsidies to the nuclear industry by essentially broadening the definition of clean power. Supporters say the move will help combat climate change, since nuclear plants don't emit carbon.

"The system we have today is designed around 'How do I deliver the cheapest megawatt-hour of electricity in the next hour?' says John Kotek of the Nuclear Energy Institute, "without reflection of the environmental impacts, for example or the importance of fuel-supply diversity, or reliability."

Around the country, five nuclear plants have retired in the past five years, and another five are scheduled to close within a decade. In Pennsylvania, the Three Mile Island plant — which still has one functioning reactor — is having trouble selling its power because it's more expensive than other sources, like natural gas.



## ENERGY

### Lessons Learned From Three Mile Island's Meltdown

But the bailouts are facing opposition from those competing power producers, especially the booming natural gas industry.

"We are not anti-nuclear," says Stephanie Wissman, head of the Pennsylvania division of the American Petroleum Institute. Her group is part of a new coalition opposing nuclear subsidies, a coalition that includes gas trade groups, manufacturers, and the AARP. They argue the subsidies are unfair, and will lead to higher energy bills.

Wissman says nuclear plants are "an important part of the energy mix. However, they've got to play by the same rules as every other energy source."

The debate has put environmental groups in a tough spot, and left them divided. Climate change is a big priority for many of them, and they've traditionally supported subsidies for renewables. But Jackson Morris, of the Natural Resources Defense Council, says nuclear power is neither clean nor renewable.



There are about 100 commercial nuclear reactors licensed to operate. [Link to a full list.](#)  
*U.S. Nuclear Regulatory Commission*

"We do recognize that it does have low-carbon attributes," he says. "But it's by no means on the same playing field as truly renewable resources, like wind, solar, and energy efficiency."

NRDC has been willing to go along with some nuclear bailouts, but only when they also included more support for renewables.

The nuclear industry is ramping up lobbying efforts in several states, including Ohio. There, a group of scientists, business and community leaders are appealing to Amazon to back the subsidies, given its support for renewable energy. [In a letter](#) to owner Jeff Bezos, they write: "If Ohio's nuclear plants are allowed to close they will be replaced overwhelmingly by coal and other fossil fuels."

But in New York, a group of opponents are [challenging the subsidies](#) to nuclear plants, saying they have "the potential to unravel U.S. power markets altogether."

[Marie Cusick](#) reports for *StateImpact Pennsylvania*. NPR's *Jennifer Ludden* contributed to this report.

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<iframe src="https://www.npr.org/player/embed/528657268/528657269" width="100%" height="290"
frameborder="0" scrolling="no" title="NPR embedded audio player"></iframe>
```

May 16, 2017 4:30 PM ET

Heard on [All Things Considered](#)



**Shea, Valois**

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**From:**  
**Sent:** Wednesday, May 17, 2017 5:28 PM  
**To:** Shea, Valois  
**Subject:** Fw: Fwd: Featured in Sunday's Paper - It's Now or Never!

On Sunday, May 7, 2017 3:50 PM, [REDACTED] wrote:

I hope I am not over-loading you.

Thanks for for your attention.

[REDACTED]

**Subject:**Featured in Sunday's Paper - It's Now or Never!

**Date:**Sun, 7 May 2017 21:36:04 +0000

**From:**[REDACTED]

**To:**[REDACTED]



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***Dear*** [REDACTED],

***This is it.*** Years ago, it became clear that if we are to stop Powertech/Azarga Uranium from polluting Black Hills water, we need heavier hitting social media advertising than ever before.



Last week, we released a [video ad on Facebook](#) explaining how the company wants to get paid by other companies to haul in hazardous waste, from other states, and possibly even other countries, to inject it straight into our Minnelusa aquifer - which naturally intermingles with all surrounding aquifers including the Madison (where the majority of us get our drinking water).

They applied for 8 hazardous waste injection wells because they want to start pumping and trucking in mining waste before they even start mining.

Our video has received 9,000 views, and was even [featured in the Rapid City Journal](#) this morning. However, our projections show that we need a lot more people to see it before the EPA hearing tomorrow - if we are to inspire enough people to attend.

### ***Contribute Now***

Pushing this video into Facebook news feeds requires your contribution and sharing. ***Every dollar donated to our organization*** between now and Tuesday will go directly into making this video as unavoidable as possible to the right people within a 40 mile radius of Hot Springs and Rapid City.

Share our video with everyone you know! Time is of the essence!

Thank you for being part of the most important grass roots movement in South Dakota! Please attend an EPA hearing and/or submit a written testimony about how dangerous this toxic waste project really is. Of course, it is

best to testify in person, but you can submit your testimony via email at: [shea.valois@epa.gov](mailto:shea.valois@epa.gov) or you can drop it off in person at either EPA hearing.

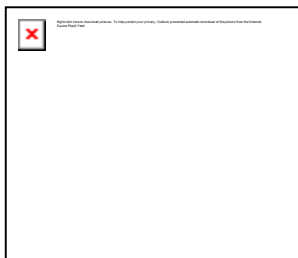
Everyone needs to submit testimony! It's either now or never!

[REDACTED]

[REDACTED]

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Donations are not yet tax deductible as we are awaiting 501c3 approval.



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Council for Responsible Mining Political Action Committee  
840 Husker Place  
Rapid City, SD 57701

[knowmining.org](http://knowmining.org)

Do you want off our email list? [opt-out here](#).

ERED BY [PHPLIST](#)

## Shea, Valois

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**From:**  
**Sent:** Wednesday, May 17, 2017 5:35 PM  
**To:** Shea, Valois  
**Subject:** PowerTech

Dear Ms. Shea:

I have sent this reference information for your interest. It is a very long packet of information describing the types of serious mistakes those who are opposed to the mining and abuse of water supplies are concerned about.

Thanks you for your interest.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 7:33 PM  
**To:** Shea, Valois  
**Subject:** Uranium injection activities

Hello,

I am writing to you as a believer in the epas mission BEFORE your new boss ever stepped in the building. And that is to provide quality control on the environment and to protect us, the citizens of this country from corporations and their profits over my health and neighbors well being.

It doesn't take a rocket scientist to understand the implications of what is being sought after. Your job is to preserve the land for generations to come. Including the natural inhabitants of a given area. Human, or wildlife. We are all inhabitants of this earth and we are demanding that obvious dangers are unavoidable and cannot be maintained by humans should something go awry. And save the retort about the safe guards in place. We have seen time and time again that these "safeguards" are faulty by design or corners are cut to save time and money.

Do not allow this to go through. Unless you all are willing to drink the potentially at risk water that is subject to contamination by this would be effort. It reminds me of a scene from the Erin brokovich film where the folks from PG&E were given the water they sweared was not contaminated in mediation to drink but once that little detail was mentioned, nobody wanted to touch let alone drink the water.

Profits are not to be placed above people. Period. Push these companies to abide by new regulations and hold them accountable for damaging our country, our welfare and overall quality of life.

- A concerned American citizen

Sent from my HTC on T-Mobile 4G LTE



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 02, 2017 2:29 PM  
**To:** Shea, Valois  
**Subject:** FW: EPA Region 8 Underground Injection Control Program-Permits for Proposed Dewey-Burdock In-Situ Recovery Site

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 2, 2017 9:19 AM  
**To:** 'Shea, Valois'  
**Subject:** RE: EPA Region 8 Underground Injection Control Program-Permits for Proposed Dewey-Burdock In-Situ Recovery Site

Thank you Valois and I'm sorry that I missed your call.

I would very much like to tell you why I'm interested in this area , but first I would like you to know that I'm not running for office , nor do I want to pull a Erin Brockovich...take on a big corporation ...win ...and then have a movie made about me. I just want to help. The Dewey\_Burdock in-situ recovery site is here , and even if God came down and shut the operation down...we would still have to put everything somewhere else. I would like to learn as much about the history and the current conditions as I can to see if there is anything that I can do to help. If you know of a good archive...if you know of a good contact , I would appreciate getting them . As far as you are concerned , what needs to be done there ?

Thank you very much

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**From:** [REDACTED]  
**Sent:** Monday, May 01, 2017 2:51 PM  
**To:** Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)>  
**Subject:** EPA Region 8 Underground Injection Control Program-Permits for Proposed Dewey-Burdock In-Situ Recovery Site

Valois Shea,

This email is in response to the notice received for comments on the EPA Region 8 Underground Injection Control Program-Permits for Proposed Dewey-Burdock In-Situ Recovery Site.

I am requesting proper 106 consultation. We are currently reviewing all documents that are available online.

If you have any questions, please contact me.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Saturday, March 11, 2017 7:07 PM  
**To:** Shea, Valois  
**Subject:** No TO FRACKING FOR URANIUM OR ANYTHING ELSE!!! from Geralynn Barner

Sir or Madam,

## **USGS FINALLY ADMITS THAT FRACKING CAUSES EARTHQUAKES**

Posted by [REDACTED] | Mar 2, 2017 |

NO, I SAY A THOUSAND TIMES NO! NO FRACKING TYPE ACTIVITY!  
PERIOD!

Underground Injection Control

## **USGS FINALLY ADMITS THAT FRACKING CAUSES EARTHQUAKES**

Posted by [REDACTED] | Mar 2, 2017 | Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota. NOT- BIGLY!!

No permits, exceptions whatever! Water is life. I was alive during the time of the Times Beach Dioxin pollution, EXXON MOBIL Valdez and Deep Horizon. I also am a student of the problem with Chevron extracting oil, Etc in the previously pristine Ecuadorian Forest 30 years ago and leaving those poor natives with a mess from that process. The natives of had an ongoing legal dispute to get remedies for 25 years!!! Please stop insulting our intelligence!!

I am a retired RN I have a BSN from major University and I practiced in Healthcare Management for 30 years. Don't reinvent the wheel. Healthcare has proven that PREVENTION is a million times better than trying to treat the disease once you get it.

Don't let these big companies make profit by destroying our public resources such as water in the aquifers and above ground on the land and in the water and the air.

What don't you get? Your grandchildren and great-grandchildren are going to be around during this time in the future and they'll be the ones having to deal with this if we don't stop it before it starts.

You cannot eat, drink and breathe CASH 💰 💰 💰 💰.

Do you not remember the rivers being on fire back in the sixties and seventies and the Erie Lake almost being dead from pollution? REMEMBER SMOG?????

I belong to the Intelligentsia. The half life of uranium is 4.5 billion years! You cannot bribe us with short-term job security!!!

The white men from Europe have already stolen the whole of America from the original Aborigines who lived here and almost committed genocide on their population. Now you want to go and commit more pollution and ravage their land so it's uninhabitable forever. Have you no conscience?? Even considering this proposal is absurd!

██████████  
██████████

Sent from my Verizon, Samsung Galaxy smartphone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Saturday, March 18, 2017 7:46 PM  
**To:** Shea, Valois  
**Subject:** Fw: Fw: New Hazardous Waste Dump in the Black Hills?

Valois,

I got this email and it says Powertech/Azarga is applying for 8 injection wells at the Dewey-Burdock site in South Dakota. It also says that the company can pull "in mining wastes from other regional mines and/or sell those waste disposal rights to another company later on."

Are these things true??

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

---

**From:** [REDACTED] on behalf of [REDACTED]  
[REDACTED]  
[REDACTED]  
**To:** g [REDACTED]  
**Subject:** New Hazardous Waste Dump in the Black Hills?

*Dear* [REDACTED]

You are receiving this email because you have shown interest in fighting **Powertech /Azarga Uranium** in the Black Hills. You also have friends who are connected to our common efforts.

Right now, we need to keep this **Chinese Corporation** from installing up to **8 Deep Water Hazardous Waste Injection Wells** in the Black Hills.

***See Our Position  
Statement***

These wells are claimed to be a component of a larger uranium mining project which many outstanding local volunteers and organizations have been fighting for many years. Today, things are really coming to a head.

Because so many sensible, dedicated folks have fought so long and hard to stop Powertech /Azarga, today, our combined success and very low uranium prices on the world market has made it uncertain if the company could ever begin mining uranium in the Black Hills. However, **NOW they are trying to ram through** approval on hazardous waste deposition wells so if they end up unable to mine in Edgemont, they can at least make a profit by pulling in mining wastes from other regional mines and/or sell those waste disposal rights to another company later on.

The EPA (**Environmental Protection Agency**) is Holding Local Hearings in late April and May to receive public opinion - on how residents of the Black Hills area feel about companies hauling in hazardous waste from mining sites outside of South Dakota, and injecting it into an aquifer that so many people have grown to depend on.

### **Bottom Line:**

Our organization is going to run **ads on social media, radio and even local TV** - to publicize the need for local residents to attend one or more hearings - just long enough to express your grave concerns for your Black Hills water. High attendance at the hearings will boost local leverage with the EPA and complement the total effort in the most effective way.

Please read our full [Position Statement](#) and **Share** it with everyone you know - in every way that you can.

Thank you for being part of the most important grass roots movement in South Dakota!

***See Our Position***

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Donations are not yet tax deductible as we are awaiting 501c3 approval.



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Council for Responsible Mining Political Action Committee  
840 Husker Place

June 19, 2017

Valois Shea  
U.S. Environmental Protection Agency, Region 8  
Mail Code 8WP-SUI  
1595 Wynkoop Street  
Denver, CO. 80202-1129

Sent via e-mail to Shea.valois@epa.gov

Dear Ms. Shea:

Thank you for making the trip to Rapid City in May to speak to concerned citizens. What I learned from your presentation, comments made by Mr. Douglas Minter, EPA staff person, and comments of the members of the public make me even more concerned about the proposed ISL uranium mine in Custer and Fall River Counties in South Dakota.

At the beginning of the first hearing in Rapid City, I chatted with Mr. Minter about the proposed mine. While he was explaining the project he said since the Minnelusa aquifer is not used for drinking water, there are no concerns about waste injection into the Minnelusa.

Your presentation gave me the impression that the EPA thinks that the Minnelusa aquifer is not used for drinking water.

As I mentioned in my spoken testimony in Rapid City, the Minnelusa aquifer is a drinking water source for many people according to our state Department of Environment and Natural Resources. I recall hearing one member of the public standing at the podium and saying that said her grandson is drinking Minnelusa water.

It is appalling to realize that EPA staff members are unaware of the indisputable fact that the Minnelusa aquifer is indeed a drinking water source for many South Dakotans.

This part of South Dakota is particularly dry. How dry? Cacti, sage and yucca thrive in our sunny, dry climate. We cannot afford to risk contamination of the Minnelusa aquifer. Please do not issue any further permits to Powertech/Azarga for any portion of their proposed project, including permission for other companies to inject their waste into Powertech/Azarga's proposed injection wells.

Thank you for the opportunity to comment.

[REDACTED]

[REDACTED]

[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 5:02 AM  
**To:** Shea, Valois  
**Subject:** Protect the aquifer!

Please don't allow uranium waste to be injected into the aquifer. Don't we have enough environmental problems already? Isn't it bad enough that Scott Pruitt is now head of the EPA?

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 10:59 AM  
**To:**  
**Subject:** NO to Uranium mining at Dewy Burdock

Please add my voice to those opposing this project. Please think of our long term environmental and public health. Do not approve this project.

- Old uranium mines in the Dewey-Burdock area should be fully reclaimed before new mining is permitted.
- Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible, and our groundwater is likely to be contaminated.
- A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected.
- The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is very likely.
- The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather than relying on imperfect protection and clean-up processes.

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 9:41 PM  
**To:** Shea, Valois  
**Subject:** Save Sacred Black Hills - NO Uranium Mining in Treaty Territory

Dear Ms Valois,

I am writing as a concerned citizen to urge you to **deny any and all permits relating to in-situ recovery of uranium within the southern Black Hills region of Custer and Fall River counties.**

If passed, this invasive and potentially toxic mining project has the potential to permanently contaminate the aquifer. With massive cuts to EPA funding, I'm terrified by the possible repercussions one small error could have on this very important water supply. As a scientist yourself, I'm certain you know much more about this than I do.

Not to mention, the Black Hills are sacred ground to the Lakota people. After everything that happened at Standing Rock, the brutality and the suppression of our fellow people, please help our country learn from past mistakes.

These short-term risks our country is taking with the environment are not worth the detrimental effects they will have for decades.

I know you pursued your career to make a change for the greater good. You have the chance to take a stand against environmental catastrophe. **Please deny the Dewey-Burdock permit.**

Thank you,

[REDACTED]  
Concerned citizen, writer, activist

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:42 PM  
**To:** Shea, Valois  
**Subject:** Comment: uranium mining permit in SD

Good evening:

I am writing to oppose the proposal to allow infection of waste products from uranium mining near underground aquifers in South Dakota.

This proposal is dangerous and threatens clean drinking water for a large number of people. The benefit from the proposal is negligible.

Thank you,  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 11:36 AM  
**To:**  
**Subject:** PROPOSED URANIUM MINING AND STORAGE PLANS ON LAKOTA LANDS

Hello Valois,

My name is [REDACTED] and I am writing you to convince you to search for a better more sustainable solution to this problem.

Since white men began colonizing the US, proud Native Americans have been treated like second rate humans, killed, rapped, butchered, and drove from their lands. This seems to still be the case. We should be coexisting with Native Americans not ruling over them. Please find a alternative that does not put FRESH WATER and HUMAN LIFE in harm's way.

In closing, if you can't find a place to put this uranium, then we as a society should not be using uranium AT ALL. Please remember that human life and our water sources are in your hands.

Best Regards

[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 11:20 AM  
**To:**  
**Subject:** Uranium in Aquifer

I oppose the EPA proposal that would allow for depositing uranium waste in drinking water. It is dangerous.

[REDACTED]

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, May 18, 2017 3:33 PM  
**To:**  
**Subject:** In Regards to the Dewey-Burdock Uranium Project

Dear Shea,

Thank you for the opportunity to exercise my freedom of speech.

Please take into consideration my concerns regarding the Dewey-Burdock Uranium Project that is currently under question in Black Hills (South Dakota).

It has come to my attention that this project will entail drilling into locations that are sacred to the Sioux people. Since 2015, the Sioux people have been voicing their concerns about the Uranium Project and for good reason!

Azarga Uranium states multiple times throughout their official report that "potential impacts" are "small". It took thousands of years for these natural landmarks to form and their structural integrity will be compromised by these intrusive drilling methods. Although the structures will still exist and there is a high chance that everything will work out as "planned" it doesn't necessarily mean that we should go through with the project. Just because one can doesn't mean that one should. Furthermore, injecting radioactive materials into the earth near a source of clean water leaves room for potential contamination. Clean water is a resource that should not be taken for granted.

It is not only a matter of damaging lands that can't be replaced. We must also take into consideration the negative effects that the project can have on the surrounding populations. There are several risks listed in the official report, two of which stand out to me. The first is stated as follows:

Because there will have been no well field scale pilot testing completed prior to construction of a full production facility, there is a risk that the total resource recovered, presently projected based on laboratory studies, may be overestimated. (133).

It is not worth risking our health and earth for something that might see results. If they are going to compromise sacred lands and increase the chance for health risks of individuals they should make sure their output is going to be worth it.

Second, "accidents" and "product spillage" was also a concern. Accidents happen, and we cannot have our lands polluted with toxic waste. Especially lands that are visited and honored regularly. Nuclear waste has the ability to cause major damage to the human body resulting in death.

It is now that we must come together and work towards creating a better world that relies on alternative forms of energy. There are alternatives to uranium that are safer and just as profitable.

We need to protect our resources not only for their cultural and historical relevance but out of respect for what a gift it is to be alive and for our future generations.

Thank you again for your time and please feel free to contact me if you have any questions!

[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:50 PM  
**To:** Shea, Valois  
**Subject:** Disposal of uranium mining waste in SD aquifer

Hello:

I just wanted to express my opinion on the above subject.

I think it would be a horrible idea with an adverse impact on the ground water. I also believe it would be detrimental to the environment of Black Hills.

Please do not permit this and thank you for being interested in the public's opinion.

Best regards,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 12:32 AM  
**To:** Shea, Valois  
**Subject:** UIC

Please do not permit injection of uranium recovery waste.

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 5:29 PM  
**To:** Shea, Valois  
**Subject:** Proposed Dewey-Burdock Uranium In-Situ Recovery Site near Edgemont, SD

I am opposed to this project.

--

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:**  
**To:** Shea, Valois  
**Subject:** Fw: EPA draft permits to Powertech, a division of Azarga Uranium Corporation of Canada

----- Forwarded Message -----

**From:** [REDACTED]  
**To:** "shea.valois@epa.gov" <shea.valois@epa.gov>  
**Sent:** Wednesday, May 17, 2017, 3:20:39 PM CDT  
**Subject:** EPA draft permits to Powertech, a division of Azarga Uranium Corporation of Canada

"The Inyan Kara, Minnelusa, and Madison aquifers are the principal sources of ground water in the northern Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming. The aquifers are exposed in the Bear Lodge Mountains and the Black Hills and are about 3,000 to 5,000 ft below the land surface ... The direction of groundwater movement is from the outcrop area toward central South Dakota." USGS Study, <https://pubs.er.usgs.gov/publication/wri864158>

Three public hearings were held, one each in Rapid City, Hot Springs, and Edgemont.

This is a FACT. The USGS advises against going ahead and yet you issue these permits to endanger the public. You have been found out. Cease and desist.

Thank you for your attention

[REDACTED]

> We do not write because we want to;  
> we write because we have to.  
> > Somerset Maugham

[REDACTED] says:

<http://en.gravatar.com/helgaleena>

<http://helgaleena.blogspot.com>

<https://rainydayreadspublishing.com/>

<https://paper.li/f-1322418561>

the Healing Line 608-255-0504 USA

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 3:00 PM  
**To:** Shea, Valois  
**Subject:** No uranium waste storage on Lakota land

Dear Valois Shea,

I'm writing to ask that the EPA deny the permits for the proposed Dewey-Burdock Uranium Mine project. This proposed mining project is likely to contaminate aquifers of the Black Hills and put the health and safety of those drinking that water at risk. In addition, the mining project is next to the Black Hills, and is within the boundaries of an area set aside for the tribes of the Great Sioux Nation by treaties signed in 1851 and 1868. The Black Hills are sacred to the Lakota Nation. These tribes oppose this mining project; it violates their 1851 & 1868 Treaty Rights and they did not give up their water rights or mineral rights to these areas. The EPA must deny these permits.

Thank you very much for your time.

Take care,

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 2:22 PM  
**To:** Shea, Valois  
**Subject:** comment on permits for Powertech

Dear Ms. Valois,

Please do not move forward with the granting of permits to Powertech and Azarga Uranium Corporation of Canada. The Inyan Kara aquifers are too important and the risks are too high. All over the United States fresh water sources are at risk of contamination and pollution. The purity of our water must be made a top priority.

Yours sincerely,

[REDACTED]

[REDACTED]

[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:56 PM  
**To:**  
**Subject:** Uranium injection disposal

I am writing to comment on this proposal. I am a tax paying citizen who works hard as does my husband to provide a safe living environment for our children to grow. It is not much of a stretch to infer that there are thousands of others just like us in the area where you propose to inject radioactive waste near the fresh water aquifers. Yes, I know the mines are required to treat the waste & continue to monitor it after its disposal, but that is absolutely unacceptable. Absolutely, 100% UNACCEPTABLE. The material in question will certainly impact the groundwater as well as all the living things in the immediate area. The proponents of this action live nowhere around such toxins & frankly do not care who is affected... especially since the residents are Indians, poor, & sorely disenfranchised, & poorly educated for the most part. This proposal is a disgrace to the country & evidences a deep disregard for the citizens in general, not just the Black Hills residents.

Sincerely,

[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Thursday, March 16, 2017 6:10 AM  
**To:** Shea, Valois  
**Subject:** Underground Injection Control (UIC) Draft Area Permits

Dear Ms. Shea,

Please accept this communication as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.

I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.

We can live without uranium but not without clean water and soil.

Best regards,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
  
[REDACTED]



**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Wednesday, May 24, 2017 6:37 AM  
**To:**  
**Subject:** Underground Injection Control (UIC) Draft Area Permits

Dear Ms. Shea,

Please accept this communication as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.

I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.

We can live without more uranium but not without clean water and soil.


Best regards,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]


[REDACTED]

Shea, Valois

From: [REDACTED]  
Sent: Friday, April 21, 2017 5:26 PM  
To:  
Subject: No Uranium Mining in Black Hills



**NO URANIUM IN TREATY TERRITORY**



Protect thee most pristine Aquifers in the world, OUR HOME IN UNCI MAKA = THE BLACK HILLS AQUIFERS

**SAY NO TO THE DEWEY BURDOCK URANIUM AQUIFER MINING**

4 WAYS TO SUBMIT PUBLIC COMMENT: ENDS MAY 19.

1. MAIL:  
U.S. EPA Region 8  
Mail Code: SWP-SUI  
1595 Wynkoop Street  
Denver, Colorado 80202-1129


2. EMAIL:  
([shea.valois@epa.gov](mailto:shea.valois@epa.gov))


3. FAX:  
**303-312-6741**


4. SUBMIT WRITING  
TO ANY OF THE  
HEARINGS


**(4) EPA PUBLIC COMMENT HEARINGS**  
**APRIL 27 @ 4-830 PM NIOBRARA LODGE in VALENTINE NE**  
**-2 PM RALLY & FEED**  
**MAY 8-9 @ 1-8 PM RAMKOTA in MNILUZAHAN RAPID CITY SD**  
**- 11 AM PRAYER WALK, RALLY & FEED @ MOTHER BUTLER**  
**MAY 10 1-8 PM MUELLER CENTER in MNIKATA/HOT SPRINGS SD**  
**-MARCH RALLY FEED TBA**  
**MAY 11 1-8pm ST JAMES CHURCH EDMONT SD**  
**-MARCH RALLY FEED TBA**  
**67 PASSENGER CARAVAN FROM PINE RIDGE TO RAPID CITY EACH DAY OF HEARING IS AVAILABLE.**  
**7am Depart -9am Return at Billy Mills Hall Pine Ridge, SD**  
**PLEASE COME JOIN US MITAKYEPI**

**Contact: (605)415-0115**  
**Look for us on FB for any updates**

 4

 98

 85



Pls stop.

Thanks

Sent from my iPhone

1

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 4:52 AM  
**To:** Shea, Valois  
**Subject:** Uranium mining by PowerTech

Dear Ms. Valois,

I am writing to express my concern about allowing PowerTech to drill for uranium mines in the Black Hills area. These mines could put the aquifers in the area at extreme risk for the entire region.

We need to do everything possible to protect our waterways for the protection of our citizens.

Please reconsider this permit.

Thank you  
[REDACTED]

## Shea, Valois

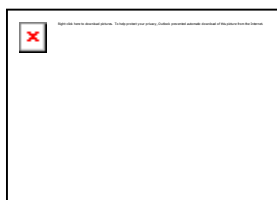
---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 3:17 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining

NO NO NO, it is not OK to mine uranium. Do your job EPA and start protecting people and the environment. It is treason to put corporation profits ahead of the job you are supposed to be doing.

--

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]



**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 9:58 AM  
**To:**  
**Subject:** Comments on uranium mining

Hello,

I am writing to express my concern about the proposed uranium mining in South Dakota.

I am very much AGAINST this idea and urge you not to proceed! This is very dangerous for our environment.

Thank you,

[REDACTED]

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 4:05 PM  
**To:** Shea, Valois  
**Subject:** Powertech for uranium mining

These Lands belong to the Native Tribes, they are Sacred and/or Treaty Lands. This proposal will deface and pollute and contaminate the land. Why is this necessary? We need clean water & land more than we need uranium. After doing some research, most of the uses are for military situations. The half-life is 4.5 BILLION years--really, you want to pollute/contaminate the land & water for the next 4.5 billion years? The world has some really innovative scientists who, I am sure, can come up with better ideas which won't destroy our Blue Planet. Next , you want to force the ugly waste back into the earth where it can devastate the aquifers--boy, you are just full of great ideas. Would you take that water back to your family & friends to drink or wash in or swim in or water your plants in? If you don't want this kind of stuff for your neighborhood, WHY, do you think it is a good idea for others? Please re-think this, it is NOT good for the land or people.  
In serious doubt,  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:33 PM  
**To:** Shea, Valois  
**Subject:** Nuclear waste

Why not just force feed that waste to the people. Cut out the middle man as it were.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, May 18, 2017 9:44 PM  
**To:** Shea, Valois  
**Subject:** Black hills uranium mining

Please please to whom this may concern the permit for mining uranium in the black hills must be denied. We can not take chances with our most precious resource water. Water is life and We can not allow the future of this most precious resource to be put at risk. If u have to make exceptions to clean water rules to allow a foreign company to dump poison into this finite resource that tells u right there that it is not a goood idea. I don't under stand how the tribe can b water protectors only when politics allow. This mining and poison disposal can not b allowed to go forward please use common sense in this matter and protect out drinking water from being ruined for profit of greedy Hippocrates.

[REDACTED]  
Piedmont South Dakota  
Tax payer  
Land owner  
Black hills resident

Sent from my iPhone



[REDACTED]

May 20, 2017

Ms. Valois Shea  
U.S. EPA Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop St.  
Denver, CO 80202-1129  
Fax: 303-312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

Re: Powertech/Azarga Uranium Corp, Dewey Burdock  
Comment for the Class III and Class V Injection Well  
Permits and the Ivyan Kara aquifer exemption.

Dear Ms. Shea:

I am a retired U. S. Naval Captain (06) who served in Naval Intelligence and worked in concert with the Central Intelligence Agency during the Desert Shield/Desert Storm War with Iraq. I headed up a unit which tracked Saddam Hussein's chemical warfare capabilities and interdicted technology and critical materials to keep Hussein from deploying his arsenal of war gasses on coalition troops. I hold graduate degrees in Biochemistry and Health Care Administration. I am qualified and considered an expert in chemical warfare weapons.

I have long been concerned about the Black Hills Army Depot (BHAD) which is a 21,000-acre-site, just south of the Dewey Burdock area where Azarga wants to have an in situ leach uranium mining operation and a huge waste disposal program using underground injection wells. They wish to dispose of radioactive and very toxic waste from other uranium mining sites and oil and gas fracking sites.

The BHAD which operated from 1941 to 1968 was the world's largest chemical warfare agent storage site, handling such lethal agents as sarin, soman, toban, GB, VX, German top secret chemicals recovered after WWII, mustard gas, Lewisite, and phosgene and others. The US chemicals were brought to the BHAD in preparation for WWII by the thousands of tons. Some were in canisters and others were in the form of rockets or other delivery systems. These agents are extremely lethal, and are gaseous at temperatures above 55 F.

These agents are soluble in water and oil and cannot be neutralized in their present storage configuration at the BHAD. Many were dumped in over 200 miles of trenches or stored

underground. Most are now unstable and some have explosives attached, which are decomposing and have a great tendency to auto ignite. They are too dangerous to move.

Some agents are percolating down through the shale that covers the site, and most are sitting in cave structures under the depot. The Wind Cave structure extends under the Dewey Burdock area and under the BHAD.

**Any significant disturbance to the underground area including the Dewey Burdock area has a great potential to release large quantities of lethal chemical warfare agents into the air and local creeks. There would be no way to control these releases or minimize their effects. A toxic and lethal cloud could spread from the BHAD killing every living thing within its path.**

The drilling of 4000 wells to support the uranium mining operation would create tremendous geological stresses. Azarga has admitted that they will inject water and CO<sub>2</sub> under pressure along with lixiviants (as yet unidentified) designed to dissolve the underground rock strata containing the uranium. Water and CO<sub>2</sub> create the highly caustic carbonic acid. They then propose to pump the dissolved uranium several miles under pressure to a processing plant where they will leach out some of the uranium. The resulting toxic sludge, which will still be highly radioactive and laden with heavy metals such as arsenic, the carbonic acid, the lixiviants and the dissolved rock, will then be forced back into the well fields, again under pressure.

This process will create a plume of pressurized toxic dissolved rock which will spread out from the well field area, contaminating everything in its path, destroying valuable water aquifers, and eventually reaching the BHAD. To date, there has never been an in situ leach uranium mining operation which has not destroyed underground water. DESPITE SERIOUS ATTEMPTS TO CONTROL THE PLUMES, NO SITE HAS BEEN TOTALLY CONTROLLED TO DATE.

It is my conclusion, based on available documentation, that these plumes will adversely affect and destabilize the chemical warfare agents below the BHAD. Thus, there is the potential for setting off a disaster of unprecedented magnitude.

There is no way to control the chemical warfare agents under the BHAD. We do know that the Wind Cave structure is huge and contains 300 foot deep caverns in some places. The water aquifers are mingling with the Madison aquifer in the Wind Cave structure. Pressurizing these wells could cause these chemicals to move, dissolved in the large amounts of water already underground in the area.

Azarga also proposes to dump radioactive toxic waste from other areas into the Class V wells also under pressure, adding to the problem. They have now requested a water permit from the state of South Dakota for 15,000 gallons per minute, indefinitely.

I understand that Azarga has increased their water permit request from 9,000 to 15,000 gallons per minute to accommodate the huge amount of toxic waste and they intend to haul in from

out of area locations and dump into the well sites. These actions would result in contamination of the aquifers.

Indeed, they also want a permanent exemption for the Inyan Kara aquifer from the Safe Drinking Water Act. This aquifer is a drinking water, household water use, and livestock water source in the immediate area. This should not be allowed.

By this letter, I wish to strongly advise against permitting any part of this permit application. We can only speculate about the actual status of the chemical warfare agents underground in the BHAD. We know that these agents if disturbed will create a hideous release of toxic chemicals from weapons of mass destruction.

I am also aware that the Russians through Uranium One and the Chinese through the Azarga connections to Hong Kong own a substantial part of Azarga Uranium Corp. Neither of these nations are considered allies of the United States.

The operation of this project will cause hundreds of trucks and truck convoys, carrying potentially lethal cargoes to move through the Black Hills and the Edgemont/Hot Springs area. These trucks, if a wreck occurs could cause a "dirty bomb" type of accident, in which radioactive material would be spread throughout the area. It would be impossible for local law enforcement to monitor these trucks or effectively keep their cargo (yellow cake) from heading north toward the porous Canadian Border.

Uranium One has a financial interest in Azarga's Dewey Burdock Project, which is least 30%. The Russian mining company, Uranium One which is owned by Vladimir Putin, now has at least 20% and some say 50% of the uranium mining leases in the United States. Thus, if permitted, Azarga will be in a legal position to mine uranium in the United States, and ship it to its trading partners, including Iran, Syria, and a host of other bad actors. China has been trading heavily with North Korea, which has stated its desire to build nuclear weapons, capable of attacking US-Asian allies, and the United States.

THE ACTUAL OWNERSHIP OF POWERTECH/AZARGA IS INIMICAL AND SHOULD PRECLUDE THIS COMPANY FROM BEING GIVEN ANY PERMITS AT ALL BY THE UNITED STATES GOVERNMENT.

I trust you will consider this letter carefully and deny all permit requests. Please call me at [REDACTED] if you have further questions.

Sincerely,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:27 PM  
**To:** Shea, Valois  
**Subject:** Inyan Kara Group aquifer injection wells

I strongly oppose the proposition to allow injection of "process waste fluids" into the Inyan Kara Group aquifer. I am not confident in the safety of such an action under ideal circumstances. Our current administration's lack of interest in environmental issues only deepens those concerns.

I am not comfortable with this action. The presence of monitoring is an admission that contamination can take place. If such contamination occurred, it would not be possible to thoroughly remove it. The aquifer would be tainted.

Drinking water is one of our most valuable resources. There are already too many dangers facing our current sources. Deliberately and consciously endangering these resources any further is simply ludicrous. The dangers are too real and too costly. This cannot be allowed to happen.

Sincerely,

[REDACTED]

[REDACTED]

[REDACTED]

March 25, 2017

Valois Shea  
U.S. EPA Region 8  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

**Docket No. 40-9075**

**RE: the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits**

Dear Ms./Mrs. Shea,

My name is [REDACTED] and below you can find my comments on the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits. On paper, the Dewey-Burdock project seems like a reasonable idea that could create potential benefits for particular groups of individuals, but not the common good. This Dewey-Burdock project is a multi-faceted issue that can threaten the environment and groundwater, take control of tribally significant lands, and create an unnecessary potential for an accident.

The EPA should not move forward with the Underground Injection Control permits and exemptions for the Dewey-Burdock site. The potential costs and consequences that could arise from this project are simply not worth the benefits it claims to produce. It seems that groundwater continues to pop up as a reoccurring theme that can be found at the center of many environmental conflicts these days. Especially, as climate change continues to advance and makes issues such as drought more prominent; water (particularly potable groundwater) has become a valuable resource that shouldn't be compromised. Surface water continues to be polluted, rain is becoming more infrequent and unreliable as a source of drinking water (particularly in arid regions), and this has created a further need for these groundwater sources and reserves.

Native Americans have been consistently exploited in our nation and have had sacred lands taken from them to allow for the extraction of resources too many times. The Dewey-Burdock project would continue and encourage this trend, whether it is intentional or not. Uranium mining and the technologies associated with this process also create a danger and risks for an accident or mistake to be made along the way. A lot can go wrong, particularly when injecting wastewater from uranium mining back down into aquifers. There are preventative measures put into place to avoid and deal with accidents, but when it comes down to it, there is no way to guarantee safety.

There are issues that arise when evaluating the safety and potential consequences of tampering with uranium, especially within/close to these aquifers. One major concern is that these deep injection wells are supposed to place this wastewater into the Minnelusa Formation where it will hopefully continue to remain and prevent any harm, but the threat is still there (EPAa, 2016). The water isn't guaranteed to stay within the Minnelusa Formation as the USGS has identified that, "Fracturing from folding and brecciation near the outcrop may have increased the permeability of the lower part of the Minnelusa a considerable, but unknown, amount" (Kyllonen, D. P., & Peter, K. D., 1987). This is obviously concerning to know that this wastewater may not remain within the Minnelusa Formation and permeate through, especially considering how many other aquifers are in the surrounding areas. It even states on EPA's UIC website that, "This disposal can pose a threat to ground water quality if not managed properly," and "The different types of Class V wells pose various threats" (EPAa, 2016). While precautionary measures can be taken, there is absolutely no guarantee that Powertech will be able to properly manage and avoid potential accidents/threats from occurring.

In regards to legal discrepancies, there seems to be many that are associated with this project. The fact that an exemption from the Safe Water Drinking Act is needed to proceed with this uranium extraction says a lot in itself (EPA, 2016). This Safe Drinking Water Act was enacted to protect our nation's potable water sources, and therefore, should continue to do this instead of allowing exemptions that compromise the safety of the water within these aquifers.

When considering the wellbeing and interests of Native American tribes, the Dewey-Burdock project oversteps onto the rights and important lands that these tribes cherish. There are still plenty of agreements that must, but may not be reached with these tribes and as the Nuclear Regulatory Commission states, "The NRC identified 23 Native American tribes that attach historical, cultural, and religious significance to sites within the Dewey-Burdock ISR Project area" (NRC, 2014). Twenty-three is a very large number and they should all have a voice that is heard and acknowledged by our democratic system to prevent this project from occurring. The value of historic land and loss of culture cannot be made up with money.

The Dewey-Burdock project is not a reasonable investment to move forward with because of all the different issues and threats that it creates. Red flags continued to appear the further I researched these plans to allow ISL uranium mining, and the implications that would arise as a result. Groundwater is a resource that should be conserved instead of wasted to allow for mining and the storage of the wastewater afterwards. Significant Native American lands should be respected and left alone especially when the degradation of it is a certain consequence. Lastly, accidents happen all the time and there is no precaution that can exempt this project from failures and the detrimental

consequences that would be afflicted. The cons discreetly but surely arise in regards to this project, and it seems like an obvious decision to abandon this project and not allow the permits & exemptions that are needed to progress.

**Contact info:**

[REDACTED]

[REDACTED]

[REDACTED]

Cordially,

[REDACTED]



## Works Cited

EPA (2017). Class III Injection Wells for Solution Mining. (2016, November 07). Retrieved March 27, 2017, from <https://www.epa.gov/uic/class-iii-injection-wells-solution-mining>

EPAA (2017). Class V Wells for Injection of Non-Hazardous Fluids into or Above Underground Sources of Drinking Water. (2016, October 31). Retrieved March 28, 2017, from <https://www.epa.gov/uic/class-v-wells-injection-non-hazardous-fluids-or-above-underground-sources-drinking-water>

NRC (2014). *Environmental impact statement for the Dewey-Burdock Project in Custer and Fall River Counties, South Dakota: supplement to the generic environmental impact statement for in-situ leach uranium milling facilities, final report*. Washington, D.C.: United States Nuclear Regulatory Commission, Office of Federal and State Materials and Environmental Management Programs. Retrieved March 28, 2017 from <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1910/s4/v1/>

Kyllonen, D. P., & Peter, K. D. (1987). *Geohydrology and water quality of the Inyan Kara, Minnelusa, and Madison aquifers of the northern Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming* (pp. 1-58) (United States, U.S. Geological Survey, Department of Interior). Rapid City, SD: Dept. of the Interior, U.S. Geological Survey.

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, June 13, 2017 1:41 PM  
**To:** Shea, Valois  
**Subject:** PUBLIC HEARINGS – Protect Water for Future Generations.

<https://bhcleanwateralliance.org/public-hearings/>

*Proposed*

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 11:34 AM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock Permits

Please deny exemptions and permits to Powertech Inc. for uranium mining in Custer County.

1. The Inyan Kara aquifers hold viable drinking water. While not pristine, the water is usable as is. A local rancher was using the water for his livestock until Powertech bought him off and closed his well so they could meet the requirement that no one was using the aquifer. We need to protect all viable drinkable water.
2. Powertech is an unproven foreign company that has no vested interest in keeping the area safe. The uranium produced will be sold to foreign markets, the jobs created will be minimal and mostly short term. This mine will not benefit the US or its residents and can only harm our environment.
3. There is nothing in the permits that prevents Powertech from selling "space" in the injection wells to other companies for waste disposal of toxic materials. Since the price of uranium is so low, is this their prime objective and who regulates what may be disposed?
4. The "best guess" is that the aquifer won't leak but there is no proof! With possible gas/oil exploration in the area, there is the possibility of future fracking which could lead to earthquakes/fissures. The Madison aquifer which lies below Inyan Kara is the source of water for residents in multiple states. This aquifer should NEVER be put at risk.
5. Because of the rural nature of this project, you will not receive thousands of protests but please consider the percentage of people from the area who are against this. If this were to take place outside of Denver, you would receive thousands of emails but 50 people from the area could be 90% of the area population!

Please remember that it is the EPA's responsibility to protect our environment, not to issue exemptions (no matter what the political climate is). You are the last hope for area residents to keep as much viable drinking water as possible for themselves and their livestock, and more importantly, for future generations. Please don't risk contamination for the benefit of a foreign company with no proven record and no benefit to the citizens of the US.

Please deny the permits and exemptions and PROTECT OUR ENVIRONMENT!

[REDACTED]  
[REDACTED]

Sent from my iPad

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 11:42 AM  
**To:**  
**Subject:** Thanks for the reminder!

Thank you for the reminder of the Dewey-Burdock comment period. I sent my comments to your email because the other contact sites seemed to route it through D.C. Hope that is okay.

Thank you for your work in protecting our environment! I'm not a "tree hugger" as my husband would say, but I believe strongly in the protection of our planet. It's the only one we have! Keep up the good work regardless of the political scene. You are doing important work!

Thanks!

[REDACTED]

Sent from my iPad

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 7:58 AM  
**To:** Shea, Valois  
**Subject:** Permission request to contaminate aquifer?

EPA:

I am appalled that anyone would think this is a good idea. I am almost speechless that it would be considered by the EPA. Please do not foul any aquifers. I would go so far as to BEG you to reject this idea. Aren't we supposed to be protecting this planet? Isn't this, in fact, our only home? Do not permit this disastrous proposal. Respectfully submitted,

[REDACTED]

"(Denver, Colo. – March 6, 2017) EPA has issued two draft Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota. EPA will conduct information sessions combined with public hearings on April 27<sup>th</sup> and on May 8 through May 11 at the times and locations detailed below. EPA will accept public comments on the draft permits and a proposed aquifer exemption associated with the project through May 19, 2017.

The draft permits issued today include a UIC 'Class III' Area Permit for injection wells for the in-situ recovery (ISR) of uranium in the Inyan Kara Group aquifers and a UIC 'Class V' Area Permit for deep injection wells that would be used to dispose of ISR process waste fluids into the Minnelusa Formation below the Inyan Kara after treatment. Under the terms of the draft permits, waste injected under the Class V permit must be treated prior to being injected and must meet all radioactive waste and hazardous waste standards. Monitoring of the underground sources of drinking water surrounding the Class III injection wellfields will take place before, during and after ISR operations to ensure the underground sources of drinking water are protected.

EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur.

Under its obligation to comply with the National Historic Preservation Act and under EPA's Tribal Policy on Consultation and Coordination with Indian Tribes, EPA has been consulting and coordinating with several interested Tribes to identify the potential effects of the proposed project on traditional cultural places, historic and sacred sites. EPA will continue to consult and coordinate with Tribes as necessary throughout the public comment period concerning these proposed permitting actions.

The public is encouraged to provide comment on these draft permits and the aquifer exemption by midnight mountain time, **May 19, 2017**. EPA's final permit decision will be based on an evaluation of comments received and a determination of whether underground

sources of drinking water are protected. The draft permits can be found at the EPA Region 8 UIC Program website: <https://www.epa.gov/uic/uic-epa-region-8>

**How to Comment:** Written comments must be received by email, fax or mail sent to: Valois Shea (shea.valois@epa.gov); Fax: 303-312-6741"

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[norsetter.com](http://norsetter.com)

## Shea, Valois

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**From:** j [REDACTED]  
**Sent:** Friday, May 19, 2017 2:33 PM  
**To:** Shea, Valois  
**Cc:** Jayme Huff  
**Subject:** No to Dewey Burdock Uranium acquirer mining

I oppose the Dewey Burdock Uranium acquirer mining. I do not want Uranium mining in treaty territory acquirers in the Black Hills. I do not want class 5 or class 3 wells in the Black Hills. I say no to any permits for uranium mining in the Black Hills.

In addition I want all of the old mines in the Black Hills cleaned up before any further permits are considered. I also want tribally defined consultation as well as full tribally approved archeological and cultural surveys done. Finally I want Lakota translators/transcriptionists at all hearings.

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Sent from my iPhone

Intro: My name is [REDACTED], 17 year resident, raising kids in the black hills. I own property along the Cheyenne River, I have animals that drink from it, I have an Inyan Kara domestic well that supplies household water and drinking water for livestock. I haul my family's drinking water from a minnelusa well. (see attached well log data from Ferguson well adjacent to Belitz 320 ft well. Belitz well log is missing) (note flowing cave in Ferguson well).

Yes, I understand the interest a mining company would have in ISL at the Dewey / Burdock location . I do, however, feel that my water and the water of my community could be irreversibly harmed. Besides inadequate standards for settling pond waste that could potentially contaminate the river and the much utilized Angostura Reservoir, today we are talking about Aquifers. The Inyan Kara and Minnelusa.

### **UIC (Underground Injection Control) Class III Area Permit for Inyan Kara Group Aquifers.**

These proposed mining activities pose a risk to my Inyan Kara water by undetected or late detected excursions as I am down gradient from the mining activity.

### **UIC Class V area Permit for deep injection wells that would be used to dispose of in situ mining waste fluids into the Minnelusa Formation.**

The Minnelusa aquifer is a high quality and well utilized aquifer in the southern black hills. In addition to the domestic Minnelusa well that we haul drinking water from, this aquifer sits approximately 1000 ft below my property making it a potential drinking water source for my family and livestock for generations to come. According to "Atlas of Water Resources of the Black Hills", the Minnelusa Aquifer flows from the proposed ISL site to my property. The contaminates injected are likely to pollute this potential drinking water source sometime in the future.

When I spoke with 4 Hydrologists at the USGS on March 29<sup>th</sup> 2017, I learned the following. Yes, the flow model (Fig. 114, pg.103 Atlas of Water Resources of the Black Hills) does indicate the Minnelusa flowing from Dewey / Burdock to the south east. However, you can not just look at this model. The water in these aquifers, can be really hard to track their flow. In cave environments such as the Minnelusa , underground water almost flows like a river. There are local and regional impacts on the flow systems that are not indicated on Fig. 114.

According to a National Water Data Base, there are a minimum of 125 wells drilled into the Minnelusa Aquifer in Fall River County. I believe there are more. My Families Well



was drilled approximately 20 years ago and there is no record of it in the current State DENR Well log data site. Speaking with a DENR employee May 9<sup>th</sup>, 2017, I was told that many well logs were not submitted especially those during or before the 1980's. We know that the Minnelusa and the Madison (a highly utilized and extremely important aquifer) mix.

The USGS Atlas of Water Resources of the Black Hills, Pg 109 Table 13 indicates Cascade Springs is mostly Madison with dissolved Minnelusa minerals. Cascade Springs is also a utilized drinking water source, Cascade falls is a highly visited swimming area attraction, and the 1880 irrigation system from this source provides water for over 1000 acres of hay, fruit and vegetable production and livestock watering ponds for area land owners including my own pond, hay fields, and apple orchard.

The Minnelusa Formation is overlain by the Opeche Shale, which separates the Minnelusa aquifer from the Minnekahta aquifer. The Minnelusa aquifer often is hydraulically separated from the underlying Madison aquifer by shales in the lower portion of the Minnelusa Formation. However, in many areas the Minnelusa aquifer is in hydraulic connection with the Madison aquifer.

(<https://pubs.usgs.gov/ha/ha745c/ha745cIntro.html>)

Potentiometric Surface of the Minnelusa Aquifer in the Black Hills Area, South Dakota

By Michael L. Strobel and Joel M. Galloway, U.S. Geological Survey; and Ghaith R. Hamade and Gregory J. Jarrell, South Dakota School of Mines and Technology  
U.S. GEOLOGICAL SURVEY

Hydrologic Investigations Atlas HA-745-C

Prepared in cooperation with the

South Dakota Department of Environment and Natural Resources  
and the West Dakota Water Development District)

#### **Information on Deep Well injection in North Dakota**

State geologist Ed Murphy says injection wells are required to be drilled into the Dakota Group zone, a layer about 5,000 feet down where the Inyan Kara sandstone formation provides a porous container for the liquid.

(LAUREN DONOVAN Bismarck Tribune Mar 31, 2016)

#### **Other requirements for the permitting process:**

- SWD's over shallow aquifers require a geotechnical analysis by a qualified, independent contractor before a proposed location will be considered. This is to determine the suitability of the shallow subsurface geology to protect the shallow aquifer.

- Injection must be into a formation with an upper and lower confining zone to prevent migration of fluids into other formations or fresh water zones. In North Dakota, the disposal zone is typically one half mile to one mile below the surface, into the Dakota Group.

(<https://www.dmr.nd.gov/oilgas/undergroundfaq.asp#mr10>)

Because of this scientific data, I believe the EPA should not even consider permitting a UIC Class V area Permit for deep injection wells that would be used to dispose of in situ mining waste fluids into the Minnelusa Formation. The Minnelusa is too shallow, it is unconfined, it is known to mix with a very important aquifer, and is itself is an important and currently used aquifer.

Thank you for protecting our water,  
Sincerely

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 12:00 PM  
**To:** Shea, Valois  
**Subject:** U.S. EPA Region 8 Mail Code: 8WP-SUI

The long term ( permanent) disadvantages of this proposal far outweigh the limited short term advantages. Please consider the future safety of Americans and our water supply before bowing down to mining companies.

The disadvantages of the in-situ leaching technology are:

the risk of spreading of leaching liquid outside of the uranium deposit,

involving subsequent groundwater contamination,

the unpredictable impact of the leaching liquid on the rock of the deposit,

the impossibility of restoring natural groundwater conditions after completion of the leaching operations.

Impacts of Uranium In-Situ Leaching  
<http://www.wise-uranium.org/uisl.html>

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 9:04 AM  
**To:** Shea, Valois  
**Subject:** Fwd: Underground Injection Control (UIC) Area Permit

Ms. Shea,

I am taking the time to voice my opinion that underground injection should NOT be allowed. Water is precious and the continuing pollution of our aquifers by corporations is criminal. This practice affects all of us and we have a right to be protected from harmful acts of a few. Please deny this practice, protect water because none of us can survive without it!

Thank you,  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 12:53 PM  
**To:**  
**Subject:** aquifer exemption for uranium mining project in southwestern South Dakota

Ms. Shea,

I am writing to comment on the uranium mining project in Edgemont, South Dakota. I am opposed to the project for a number of reasons.

You were quoted in the Black Hills Pioneer as stating, "The best permit in the world isn't a guarantee that nothing will happen," she said. "But there will be extra monitoring and remediation so if anything did happen, we would catch it early and fix it."

I find this a troubling statement especially given the current political climate where science is being dismissed in the interest of monetary gain. I by no means wish to question you personally as a scientist, but I feel that there would be a lot of plausible deniability from Powertech should something go wrong with this project and do not have confidence in the EPA as it currently exists that it would sufficiently enforce remediation should something happen.

The EPA website also claims the following: "EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur."

Why is an exemption required if nothing will happen that will affect the drinking water in this area. This seems like a CYA move on the part of the EPA.

Finally, although I do not live in the Edgemont area, I am a resident of the Black Hills and my business is dependent on clean water. I have heard (and acknowledge that I may be mistaken) that should the permits be granted for this project that Powertech would like to expand its operations to other areas of the Black Hills. If this is the case I would have a great concern over how this could affect my livelihood should something happen to contaminate the groundwater in my area.

Thank you for incorporating my comments into the public record.

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 9:18 AM  
**To:** Shea, Valois  
**Subject:** FW: Uranium injection into S.D. aquifer

**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 8:36 AM  
**To:** [REDACTED]  
**Subject:** Uranium injection into S.D. aquifer

I am adding my voice to state that the above subject is unconscionable! No, to permits to inject Uranium into aquifers. Water for the future but be kept safe!

--

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Si, se puede! jeso es!

"The Wind is Rising, we must strive to live" Jean Paul Valery and Miazaki

**Shea, Valois**

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**From:** [REDACTED] >  
**Sent:** Tuesday, March 14, 2017 1:42 AM  
**To:** Shea, Valois  
**Subject:** Inyan Kara Group aquifers

Please do not exempt anyone from regulations prohibiting the injection of uranium et al into the aquifers.

The mining company should still be subject to the regulations in place meant to protect the water. Do your job, please ( directed at the agency, not you specifically) You are the EPA for Pete's sake!

Thank you for the opportunity to comment.

Respectfully

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 9:39 AM  
**To:** Shea, Valois  
**Subject:** Permits for Dewey-Burdock Uranium Mine

EPA,

I am writing to comment on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells.

The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of groundwater resources is very likely.

I am also concerned that adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be inadequate, and groundwater is likely to be contaminated.

A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected.

The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. Groundwater has never been returned to its original condition at any In-Situ leach uranium mine in the U.S. These permits must not be issued until it can be demonstrated that groundwater resources will be protected.

[REDACTED]  
[REDACTED]  
[REDACTED]



**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 12:08 PM  
**To:** Shea, Valois  
**Subject:** COMMENT: NO Uranium Mining in the Black Hills

Good afternoon,

I am writing this email as a US citizen and tax payer who is against the Dewey Burdock mining project in The Black Hills.

I continue to be disgusted by the EPA's leadership and decision making concerning the environment. The Black Hills are scared to the Lakota people and they should not be subjected to the sickening greed that has harmed these First Americans in unimaginable ways.

Please respond to this email confirming that no mining will take place.

I thank you for your time.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:43 AM  
**To:** Shea, Valois  
**Subject:** Opposition to Dewey Burdock Uranium Aquifer Mining

I am writing with my public comment.

**RE: Dewey Burdock Uranium Aquifer Mining, specifically permits in the area of the Inyan Kara group of aquifers (in the Black Hills of Custer & Fall River counties) for uranium mining using deep-injection wells.**

We cannot put water - an essential resource - at such risk.

My key points:

- The Unci Maka are some of the most pristine aquifers in the world. Crazy Horse told his people he wanted them to remember him whenever they saw the Black Hills. This is sacred land. Visitors to this area come for contemplation, rejuvenation, and inspiration. I believe strongly in the value of our natural environment. These treasures must be protected as unique and important to our history, the people who live in the Black Hills, travelers to the area, the larger environment, and the people of the world.
- The proposal to exempt the project from the Safe Drinking Water Act is unacceptable. The EPA's duty is to improve, not endanger, drinking water access (especially on tribal lands).
- This area already experiences severe weather, and the weather is likely to be much more extreme going forward due to climate change. The proposal does not address what are likely to be seriously dangerous weather conditions.
- Because the EPA's funding has been reduced, our government's ability to monitor the project is limited. If standards are not met, the consequences are dire. Powertech failed to report that it possessed thousands of records of drilling the Tennessee Valley Authority, and then only released 34 of 6,000 borehole logs. Back in 2015, Dr. LaGarry reviewed half of the newly disclosed drilling logs and found the existence of faults in the area and that many boreholes were not properly plugged (which makes the area unsuitable for in situ leach mining because the project won't be able to control the highly toxic and carcinogenic mining fluids. For years, the industry has demonstrated that they will not be proactive and will require monitoring.
- The National Historic Preservation Act requires tribal consultation. The current administration does not respect America's indigenous people and the agreements we have with them. I have no faith that this administration will adhere to the law, democratic principles, or human decency in their handling of the Tribe's concerns.
- Contamination, if it happened, would be radioactive and effectively permanent. This is a serious consequence.

Based on these concerns, I strongly oppose this proposal.

Thank you for taking my comments.

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:57 AM  
**To:** Shea, Valois  
**Subject:** Uranium mining in the Black Hills- public comment

Please do not further destroy the environment or erode the spiritual foundation of native peoples by mining in the sacred Black Hills.

Uranium is dangerous, furthermore, and should be left in the ground.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 11:02 AM  
**To:** Shea, Valois  
**Subject:** Underground Injection Control (UIC) Area Permits to Powertech

Concerning the potential proposal of permits for uranium injection control into an aquifer, the US and the EPA should be **PREVENTING** this level of environmental damage to not only our drinking water, but the entire ecosystem. I would like to vehemently voice my **opposition** to this proposed draft permit. INj, but the water and other natural resources this area provides. It's irresponsible to knowingly allow this level of damage to occur, but it also goes against the very name of the EPA. How can you 'protect' an environment when you're proposing a permit that allows for disposing of waste fluids in the process of uranium mining.

It's astonishing to me that this permit has even pushed to draft stage. As an agency that is supposed to work for the people, for the environment and for the protection of natural resources, this flies in the face of all three.

I strongly urge the **outright rejection** of this proposed draft, as it could threaten human life and wildlife for potentially many decades to come. It's astonishing to me that the EPA has failed the American public this quickly.

Desperately,  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 23, 2017 5:59 AM  
**To:** Shea, Valois  
**Subject:** Proposed Dewey-Burdock Injection Wells

Dear Valois Shea:

I am writing to express my strong opposition to Azarga Uranium's permit application for two Underground Injection Control wells in the Black Hills.

Before I retired as editor of *South Dakota Magazine* and contributing editor of *Nebraska Life*, I wrote in-depth investigative stories about the history of the insitu uranium mining project at Crawford, NE, the continuing threat from unreclaimed mines throughout the Black Hills and the current issues involving the proposed Dewey-Burdock project.

There are many reasons to reject the Azarga permit request. First, the threat posed by injecting waste into aquifers (the out of sight, out of mind approach to a difficult problem) is unacceptable. There is no good reason to pollute deep aquifers just because they are not currently used by man, and there is no way to assure that vital aquifers would not be polluted.

Second, there is nothing besides a few low-paying, short term jobs in this for South Dakota, but great threats to our two largest industries, agriculture and tourism.

Third, Azarga is a foreign-owned entity that hopes to exploit our resources for their short-term profit, but which will have no loyalty or long-term commitment to the region.

Fourth, No further exploitation of uranium should proceed in South Dakota until the messes left by past mining are cleaned up--which realistically is not likely to ever happen.

Fifth, the long history of companies (mostly foreign companies) exploiting our resources, then declaring bankruptcy and walking away from their messes should tell us that this cycle is likely to be repeated if Azarga is allowed to proceed.

In summary, there is no good reason to approve this permit, and many valid and critical reasons to say no. Please reject Azarga's permit request.

Sincerely yours,

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Saturday, May 20, 2017 2:04 AM  
**To:** Shea, Valois  
**Subject:** public comment on uranium mining in southwestern South Dakota

Valois Shea,

If there is a risk of contaminating underground drinking water, even if it is a minimal one, I think it is too BIG of a risk to take. Is there anyway the waste can be taken where there is no drinking water to contaminate? Consider trucks or pipelines like the one used to move oil across our country. Our natural resources are being depleted and if there is a contamination of drinking water, that would be a bad thing. I was unable to make it to the hearing in Valentine, but I would have liked to go and learn more about this process and issue. It is a good idea, even with the risk involved, right up until the point when something precious and irreplaceable is damaged or lost. It is at the point (and sometimes not until that point), the point of no return, that it becomes very clear that it was a mistake.

There are so many EPA regulations that I do not understand, that are made in order to "protect the environment". How is possibly contaminating such a valuable resource as fresh drinking water any less offensive than "damaging a wetland", when someone simply wants to clean out a ditch that runs through their property so it can drain more efficiently? How is contaminated drinking water any less offensive than the idea of adding pollutants to our air by building an oil refinery closer to the Canadian border, rather than spending all the money, time, and resources to ship the product by truck or pipeline across the country to an already running refinery?

Thank you for accepting comments other than at the hearings that you had set up. It is good to have the hearings and have that resource available, but sometimes the meeting times and places make it hard for those concerned and potentially affected, who are employed, to attend. Thanks again for your time.

Sincerely,  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 5:21 PM  
**To:** Shea, Valois  
**Subject:** Black Hills

Hello Shea,

Please refrain from proceeding with the plans outlined for permits and exemptions for the Black Hills uranium project. I believe that the integrity of the sacred grounds and the safety of the surrounding area are in jeopardy and believe that preservation of the Black Hills is a priority for South Dakota.

I appreciate your consideration and concern to this matter.

Cheers,





**April 26, 2017**

U.S. EPA Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

Dear Valois Shea,

Attached for your review, please find comments on the EPA Region 8 UIC Program is issuing two Draft UIC Area Permits to Powertech (USA) Inc., Suite #140, 5575 Denver Technical Center Parkway, Greenwood Village, Colorado 80111, for injection activities related to uranium recovery.

Many know the Black Hills region of South Dakota as Mount Rushmore, but these mountains are endangered. Currently, the U.S Environmental Protection Agency (EPA) has publicized two Underground Injection Control (UIC) Area permits to company Powertech (EPA, 2017). The two pending permits that will be under review both endanger the purity of the aquifers in these mountains. The first permit is a UIC 'Class III' which would allow injection wells for the in-situ recover (ISR) of uranium in the Inyan Kara Group aquifers (EPA, 2017). In order to ensure the safety of drinking water sources, the aquifer will be monitored of before and after ISR operations (EPA 2017).

The second permit that the EPA is suggested that there would be an exemption for the aquifer. Meaning that this exemption would exclude uranium-bearing portions of the Inyan Kara Group aquifers from abided the Safe Drinking Water Act (EPA, 2017). In order for this any ISR activities to occur this exemption must be in place. The second permit is a UIC 'Class V' Area Permit for deep injection wells where the dispose of ISR process waste fluids into the Minnelusa Formations below the Inyan Kara after treatment (EPA, 2017). In addition, for the 'Class V' permit, the water being injected back into that aquifer must abided by all radioactive waste and hazardous waste standards set by the

Clean Water Act (CWA) and National Pollution Discharge Elimination System (NPDES). These two permits should not be passed due to the dangers associated it with UIC.

These permits should not be passed because for many years U.S industries have been under a misconception that underground injections have not been harming the inner core of the United States, when actually they have had extreme damages from disposes and allowing these toxins underground. Over the last few decades U.S companies have injected more than 30 trillion gallons of toxic liquid into the earth (Lustgarten, 2012). The invisible natural resources of the United States are have now become their “invisible dumping grounds” (Lustgarten, 2012). The sad part is many companies have gotten away with toxin disposal for the sheer reason that it has been underground.

If these toxins were being disposed of above ground it would be a whole different story, or even not allowed at all. A question that policy makers should be asking is if companies were to inject or dispose of these toxins above the ground what would it look like? Would people be okay with it like they are okay with underground waste? Prior to a few years ago environmentalists and scientists didn’t realize that deep layers of rock would not be able to handle these toxins as they thought especially in years to come.

These two proposed permits are not by any means perfect. These two permits have problems associated with them because of the dangers uranium in water can have. Most people wouldn’t drink bottled water or “purified water” if they knew it contained uranium or even nitrates. There are already two aquifers in the United States that contain uranium levels that exceed the U.S EPA maximum containment level (MCL) (Tasch, 2015). These aquifers are supposed to be providing clean water to almost 6 million people, with 2 million living nearly less than a mile from these aquifers (Tasch, 2015). It has been proven by the EPA and scientists that drinking high levels of uranium in which exceed EPA standards can lead to increased risks for cancer, liver damages, and reproductive complications (Tasch, 2015). These two aquifers are in the High Plains and Center Valley (Tasch, 2015).

The High Plains aquifer is the largest in the United States spanning in over eight states but is also very contaminated with uranium (Tash, 2015). The High Plains aquifer exceeds the EPA’s MCL limit for uranium by 89 times, but it is also contaminated with

nitrate levels that fall at 189 times the EPA's MCL (Tasch, 2015). Then the second aquifer is in Center Valley where the contamination level is even higher with uranium concentrations 180 times the MCL and nitrate concentration levels 34 times the MCL (Tasch, 2015). Science has proven that uranium and nitrate intake for humans as said above can pose many health problems.

At a legal standpoint looking at both permits purposed they can violate the terms of the Safe Drinking Water Act, CWA, and various of water acts that are put into place to ensure quality drinking water. Mainly though, these permits would allow for a loop holes for the Black Hills region to not have to abided by. If these permits are adopted it can infect and pose health problems to those living around the aquifers. Sometimes violations of these acts can be criminalized, or most companies face many heavy fines.

This March, the EPA issued these two draft Underground Injection Control Permits. These two permits have the ability to change how we consider dumping mining waste throughout the rest of the current Trump administration, or for far longer than the next four years. These permits do not only have the potential to further have a negative impact on health, but also on the limitations of drinking water. A population of concern is the indigenous people who live near these aquifers. It is important to not allow these permits to be put into place not only for the safety of drinking water quality but also because people depend on the natural underground water supply.

### Sources

Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits. (2017, March 06). Retrieved March 23, 2017, from <https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

Lustgarten, A. (2012, September 19). Injection Wells: The Poison Beneath Us. Retrieved March 23, 2017, from <https://www.propublica.org/article/injection-wells-the-poison-beneath-us/single#republish>

Safe Drinking Water Act (SDWA). (2017, January 12). Retrieved March 23, 2017, from <https://www.epa.gov/sdwa>

Tasch, B. (2015, August 18). 6 million U.S. residents are drinking uranium-contaminated water that could increase risk of liver damage. Retrieved March 23, 2017, from

<http://www.businessinsider.com/high-uranium-levels-of-drinking-water-in-the-central-us->

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 6:17 AM  
**To:** Shea, Valois  
**Cc:** Virginia Stewart  
**Subject:** Powertech in situ mining in SW South Dakota

Dear Valois,

I am writing to express my opposition to the proposed Powertech uranium mining project near Edgemont, South Dakota. I am out of town and was unable to attend the hearings held in Rapid City at the Ramkota motel on May 8 and 9 or I would have been there in person to express my opposition.

I live in a subdivision near Blackhawk, South Dakota which depends on the Madison and Deadwood aquifers for our water supply. Given the history of mining companies in South Dakota leaving a huge mess for state and federal government to clean up does not inspire my confidence in the Powertech proposal. I don't want to take a chance on polluting our drinking water for a few bucks in uranium mining.

If the wastewater produced by Powertech's "in situ" process is safe let's have the executives of Powertech drink a glass of that slop every morning and then I'll be convinced it really is ok for the mine to proceed. Until that day I am adamantly opposed to allowing Powertech to proceed.

Sincerely yours,

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, March 06, 2017 3:06 PM  
**To:** Shea, Valois  
**Subject:** Public Comment for Dewey-Burdock Injection Wells 8WP-SUI

I can't get on the USGS site to find the geologic maps of the relevant area; however, can you please comment on the potential for connectedness between the proposed injections into the Minnelusa Formation and the Madison formation which provides a prolific source of clean drinking water for the nearby City of Gillette.

Thanks,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 1:03 PM  
**To:** Shea, Valois  
**Subject:** SD aquifer

Absolutely NO uranium mining waste disposal in aquifer!

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 8:08 AM  
**To:** Shea, Valois  
**Subject:** uranium

please stop with these bad ideas, that only harm us all.

thank you, [REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 12:04 PM  
**To:** Shea, Valois  
**Subject:** no uranium in treat territory

I am writing to express my opposition to uranium mining in the Black Hills. We need to protect sacred spaces and our water and environment. I strongly oppose any mining or other activities that could harm the land or aquifers.

~ [REDACTED]

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Saturday, April 29, 2017 11:55 AM  
**To:** Shea, Valois  
**Subject:** Uranium Hearings RC, SD

Hello Shea,

I volunteered for Dakota Rural Action several years ago on a petition against giving the permit to Powertech for access to the aquifer for mining. I was at a couple of the hearings back then and was wondering if this time it will be the same. Will people be able to sign up to speak or is it something that has to be requested for ahead of time. Please, let me know. Your response is appreciated.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 4:42 PM  
**To:** Shea, Valois  
**Subject:** Uranium Dump

No uranium near aquifers, anywhere and certainly not in SD

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 9:40 AM  
**To:** Shea, Valois  
**Subject:** No Uranium in treaty territory

Dear Ms Valois,

The EPA is proposing draft permits for in-situ recovery (ISR) of uranium using deep injection wells within the Inyan Kara group of aquifers (southern Black Hills region of Custer and Fall River counties).

Part of this proposed draft is to exempt the project from the Safe Drinking Water Act. Such an exemption would have to be in place for ISR activities within the aquifer to take place.

As a retired environmental sciences teacher I must emphatically warn against granting such status for a number of compelling reasons.

- 1) Even with regulatory approvals that the aquifer would be 'protected', there are no guarantees that the process would not contaminate the aquifer. Companies that undertake these operations are known to cut corners and costs in order to assure their profitability. With EPA's diminished funding I fear there will be little or no oversight of the process. Any contamination of the aquifer by uranium or its radioactive daughters should be considered permanent. We cannot take that chance.
- 2) This region faces extremes in weather now worsened by climate change and such extremes could hamper the safety and efficacy of the operation. Safe water is a necessity to future generations given the hazards they will face from rapid and abrupt climate change. We cannot take this chance of contamination for their sake.
- 3) The EPA is obligated under the National Historic Preservation Act to consult with the Tribes to identify the potential effects of the project on traditional cultural places, historic, and sacred sites. As you are probably aware, this current administration is openly dismissive and even hostile towards the interests of America's indigenous peoples. We cannot expect there will be a good faith reckoning of the Tribe's concerns.

Therefore, for all these concerns, and more, I must register my opposition to the proposal for ISR activities in the area. Please deny the permit.

Yours,

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 10:39 AM  
**To:** Minter, Douglas; Shea, Valois  
**Subject:** Receipt of Powertech response on Draft UIC Class III/V draft permits for Dewey-Burdock.

Valois and Doug,

You should have received today a package from us with our entire response. (UPS shows it was delivered at 9:44). I was hoping you confirm you received everything today. I would be glad to bring down a flash stick today otherwise. Please let me know and would glad to hand deliver this if needed.

Also,

Just one note. In a few places, there are a few typos on Table 5 labeling this for cumulative effects, which it is not for. Table 5 represents our specific comments on the draft environmental justice document.

Sincerely,

[REDACTED]

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, April 18, 2017 1:48 PM  
**To:** Shea, Valois  
**Subject:** Questions about what happens at Dewey Burdock/Azaraga hearings ... John D. Taylor, Editor, Hot Springs Star

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Valois:

I'm the editor of The Hot Springs Star, a weekly paper in the heart of the Dewey Burdock project – we are the paper of record for Fall River County—and I'd like to do a preview story for this coming week's edition about what people can expect to experience at the impending hearings on Azaraga/Powertech's plans for Dewey Burdock.

Could you please answer the questions below? My deadline for a response is Thursday, April 20, at midday. Email is probably best, since I'm a one-man show here and out of the office frequently. But that doesn't work for you, I'll do my best to accommodate your schedule.

1. Take a reader through the thumbnail sketch of what happens at these hearings – You go there, various sides present their information, then there's time for Q&A?
2. What will EPA do with the comments submitted by various people? How much does this enter into EPA's decision to grant Powertech/Azarga final permits.
3. How will EPA review the comments... transcripts, video footage?
4. Anything else you want to add.... Tips for making sure comments get heard, in particular.

Sincerely yours,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 3:18 PM  
**To:** Shea, Valois  
**Subject:** permission to allow Uranium mining waste disposal in SD aquifer

"Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Under its obligation to comply with the National Historic Preservation Act and under EPA's Tribal Policy on Consultation and Coordination with Indian Tribes, EPA has been consulting and coordinating with several interested Tribes to identify the potential effects of the proposed project on traditional cultural places, historic and sacred sites."

- these are your own words in the press release and it should answer the question...NO IT IS NOT GOOD - you are unleashing the potential for another "Flynt, Michigan" debacle...and being the EPA is lead by someone who doesn't believe in CO2 emissions is actively helping climate change; Plus is planning on cutting 1/4 of the EPA's budget....NO - I can't trust the EPA to safely and effectively enforce the restrictions necessary to make the uranium retrieval safe. Please!!! Leave Native Lands Alone!!! haven't we given them the short end of the stick enough?!?

Thank you - [REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
[REDACTED]  
**To:** Shea, Valois  
**Subject:** UIC 'Class III' Area Permit/ UIC 'Class V' Area Permit for deep-injection wells in the Minnelusa Formation

Hello!

I'm responding to the EPA Region 8 draft proposals mentioned in <https://www.epa.gov/newsreleases/epa-seeks-public-comment-draft-permits-and-aquifer-exemption-uranium-mining-project>

I was particularly alarmed by the language that "EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur."

As a citizen sympathetic to my fellow citizens pursuing such activities as "drinking and otherwise using water without it increasing the likelihood of cancer and poor health" I highly object to this exemption approval. If the Class III Area Permit is in an area vulnerable enough to require such review, then such review is a vital part of the process and should not be simply discarded out of convenience.

Thanks,

[REDACTED] [REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 10:30 AM  
**To:** Shea, Valois  
**Subject:** UIC Area Permits to Powertech (USA)Inc

Dear Ms. Shea,

Please deny the permits for injection activities related to the proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota. Please do not allow uranium mining waste disposal in the South Dakota aquifer.

Thank you,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 03, 2017 3:54 PM  
**To:** Shea, Valois  
**Subject:** STOP URANIUM MINING IN THE BLACK HILLS

As a 7th generation Oglala Lakota born and raised on the Pine Ridge Indian Reservation, I grew up spending whole summers in the black hills, it is my home. Although I currently live in so called Denver, CO I consider the He Sapa and all over South West South Dakota as well as the North Eastern Parr of Wyoming my Ancestral Home. Stop Mining our Sacred Hills, leave the Uranium in the Ground. When the mother earth dies you scientists enginers and natural gas / oil field workers will all die a slow painful death. You will watch your family's and loved ones suffer from lack of clean air and die from poisoned water. This has been explained many times, there are many individuals who can attest to and bear witness the harmful destructive effects this uranium mining has had on our land, water, and health. All over the world the extraction of oil natural gases and minerals is killing our world, killing eco systems and environments that have flourished for centuries upon centuries. These eco systems are apart of what makes all life possible. Our existence depends are a very very delicate balance. When mother earth dies there will be no place for the ultra rich to hide. No bunker can withstand the Natural Powers of the Universe. No doomsday shelter will protect you. As for told by many spiritual leaders Sha men and your very own bible describes this in revelations. Please the world pleads with you to stop, stop ! Stop uranium stop big oil, stop natural gas, stop tar sands, stop coal bed methain. Stop coal .

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, May 18, 2017 12:01 PM  
**To:** Shea, Valois  
**Subject:** No Uranium in Treaty Territory

Hello,

I just wanted to submit a comment to say that I urge you to say no to the Dewey Burdock Uranium Aquifer Mining. Our future generations are depending on us. I urge you to stand up for those who can't stand up for themselves, folks without access to a computer, car, or phone to submit comments, especially children.

We need to stand up against this devastation. Uranium mining is not the way to go because Pine Ridge Reservation Oglala Sioux Tribe is being contaminated via aquifers under our home and down White River. Crow Butte Uranium is not trying to clean up anything because they are not responsible for any damages outside their mining area. We need the EPA to do their job, and protect people from contamination.

Thank you,

[REDACTED]

## Shea, Valois

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**From:**  
**Sent:** Monday, March 13, 2017 8:37 AM  
**To:** Shea, Valois  
**Subject:** FW: draft permits and aquifer exemption for uranium SD

Public comment.

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 9:39 PM  
**To:** [REDACTED]  
**Subject:** draft permits and aquifer exemption for uranium SD

This is without a doubt the worst idea ever! You put scores of thousands of people at risk without clean drinking water. The contamination of those aquifers will result in another Chernobyl in human loss. Please do not grant exemptions.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 9:10 AM  
**To:** Shea, Valois  
**Subject:** Uranium Mining Project

To whom it may concern,

I read an article that stated the EPA is potentially approving uranium mining waste to be injected into an aquifer which contains drinking water. This is one of the most absurd things that I've ever heard. This is a topic that even Commedia dell'arte would think too odd to even be considered in comedy.

Uranium eventually (over a very long term) degrades into lead. Do you remember what happened with Flint, MI? I know that Pruitt is in charge of the EPA now, but have a backbone and say no. Or, make him drink that water after waste injection.

Seriously, who thinks that this is a good idea? Is it worth it for someone to rape the earth for their own profit?

[REDACTED] [REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 3:15 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock Uranium Aquifer Mining

To whom it may concern...

The proposed mining of uranium in treaty territory will do irreversible damage to the aquifers. We all know this. This will **hurt people** and **hurt the earth**. We all know this.

**You have the power to protect people and the water. Please act honorably and help the people put an end to this.**

Furthermore this is treaty land. This mining is illegal. Help us stand up for **our children's future**. Thank you.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 11:48 AM  
**To:** Shea, Valois  
**Subject:** Mining waste

It's hard for me to believe that the EPA would for one moment consider it acceptable to allow uranium mining waste to be dumped in any aquifer.

If the EPA is not our champion and our protection against pollution of our drinking water, the air we breathe, and the God given beauty of our natural environment, then what on earth is its function!??!

Please do your job and do NOT allow the dumping of mining waste into the South Dakota aquifer, or any other act of pollution!

[REDACTED]  
[REDACTED]

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:17 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock Comment

To Shea Valois,

I am writing to express my concern over the permits and aquifer exemption decision requested by PowerTech for the Dewey Burdock ISR site. In an area such as the southern Black Hills, with so little drinking water resources, I feel that granting an aquifer exemption would be a very poor choice on the EPA's part, and not in the best interest of the area's current & future citizens. Along with the inherent drinking water risks, the increased risk of earthquakes associated with deep injection wells must also be considered. Deep injection sites in Oklahoma have exponentially increased the occurrence of earthquakes in that state. It is the responsibility of the EPA to take into consideration lessons learned from previous situations that have endangered human safety and apply them to current decisions that are being made.

It is for these reasons that I strongly feel that the EPA should deny the aquifer exemption request along with the two UIC permits.

Thank you for the opportunity to express my opinion on this matter.

Sincerely,

[REDACTED]  
Hot Springs, SD



[REDACTED]  
[REDACTED]  
[REDACTED]

April 16, 2017

Valois Shea ([shea.valois@epa.gov](mailto:shea.valois@epa.gov))

Fax: [303-312-6741](tel:303-312-6741)

U.S. EPA Region 8

Mail Code: 8WP-SUI

1595 Wynkoop Street

Denver, Colorado 80202-1129

Dear Valois Shea,

I moved to the Black Hills of SD because of clean water, air and a wonderful place to recreate outdoors. Now a foreign holding company is seeking three EPA permits to pollute the precious water tables underlying the Black Hills of South Dakota, which is the recharge area for our streams and lakes, municipal supplies, private wells, and agricultural use in the entire western state.

I have a problem with this. My house and well are not that far as the aquifer flows AND I do not want to see the beautiful Black Hills known for the tourism money that the qualities I listed above to be ruined by a number of dirty and polluting uranium mines.

The proposed min and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluid or waste liquids, and contamination of our ground water is very likely (as it has shown to be in all uranium mines in the USA).

Your agency is the United States Environmental Protection Agency. You are to protect the American citizen from this kind of pollution. Plus we are dealing with a foreign holding company and they will not think protection our water is that important. And you do not have the field personnel to monitor this mine in an adequate manner.

I urge you to not grant the permits for this mine.

Thank you for your time and consideration,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, May 14, 2017 11:45 AM  
**To:** Shea, Valois  
**Subject:** Azarga Uranium/Black Hills, South Dakota

To: Valois Shea

As a resident of Rapid City, SD and an American citizen, I implore the EPA to deny Azarga Uranium company the rights to establish an ISL uranium mine and to build a processing plant in South Dakota. This denial request is based on many reasons, the foremost being the integrity of all aquifer water supplies in the area. Clean drinking water should be nothing less than a national security issue that needs utmost protection and monitoring. No company can guarantee the safety of water supplies after in situ mining has taken place, and based on that fact alone should be cause enough to stop this project. The fact that Azaga Uranium company is heavily financed by a Chinese investment fund under investigation by the Chinese government should red flag the EPA to also investigate the company itself. The transportation of uranium is a whole other security issue that must be addressed, as are the chemicals used in the extraction process. Also, the EPA should evaluate the cleanup plans Azarga has in case of any spill, leak and/or contamination.

This project will most heavily impact the indigenous peoples on the Pine Ridge Indian Reservation and their health and rights should be an utmost priority in the decision making process.

The negative impacts far outweigh any positive ones and clearly highlights the need for this project to be shut down permanently. Please act in favor of protecting of the health of our nation, its people, wildlife and the earth.

Respectfully Yours,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Wednesday, May 24, 2017 7:14 AM  
**To:** Shea, Valois  
**Subject:** Deny both permits please

Dear Ms. Shea,

**Please accept this communication as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.**

**I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.**

**We can live without more uranium but not without clean water and soil.**

**Best regards,**

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Please excuse my spelling errors as this was sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:30 PM  
**To:** Shea, Valois  
**Subject:** Public comment on Draft Permits and Aquifer Exemption for Uranium mining project in Southwestern South Dakota

Please don't dump waste where people get their drinking water. This could hurt our environment or kill someone and bring about preventable suffering. It's supremely irresponsible and shortsighted. This kind of treatment of our water and lands makes the United States look barbaric and ignorant.

I don't support these draft permits and exemptions.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 11:46 AM  
**To:** Shea, Valois  
**Subject:** EPA seeks public comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

I would like to comment on the draft permit. I believe once an aquifer is impacted by uranium it is near impossible to clean it up. The idea that as it is in the same area as the uranium-bearing portions will lead to a legal fight that the permit holder will argue was the same levels prior to any potential release.

The contamination does not Naturally attenuate at any rate that will be successful to not have long term impact on health and human environment. Further, the type of contaminant is uniformly excluded from insurance policies that often insure these types of projects. Hence, if there is any release, the company will have to pay for the clean up and they will likely not have the financial resources to do so.

EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur.

Thank you for your consideration and please do not provide the permit with SFDA drinking water exemptions.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 5:33 AM  
**To:** Shea, Valois  
**Subject:** I oppose the UIC Area Permits and Safe Drinking Water Act exemption under consideration for Powertech Inc.

Ms. Shea,

I was distressed to see that the EPA is considering issuing UIC Class III and Class V permits to Powertech, as well as an aquifer exemption approval. Describing this permission as "ludicrous" doesn't seem sufficient. The EPA should protect the right of people to have clean drinking water and uphold the legal protections like the Safe Drinking Water Act put in place to do this. No corporation should be given an exemption to these rules, and I oppose the granting of these permits and the exemption.

Sincerely,  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Saturday, June 17, 2017 11:20 AM  
**To:** Shea, Valois  
**Subject:** Comments on Powertech Underground Injection Control Draft Area Permits, Dewey-Burdock Uranium In-Situ Recovery Site, Edgemont, SD

Dear Ms. Shea:

From 1992 through 1999, I was an environmental engineer and eventually the environmental compliance manager for the largest oil refinery in Minnesota, now known as Flint Hills Resources (formerly Koch Refining Company). When we took a large gasoline storage tank out of service for routine cleaning in September 1997, we found a nickel-sized hole in the bottom. Understanding immediately that we'd had a very large spill, we called the Minnesota Pollution Control Agency (MPCA), our regulating agency, and told them about the problem.

The MPCA came out, we drilled some exploratory wells, and found there was a large lake of product, hundreds of thousands of gallons, lying on the water table. After several meetings with regulators, we devised a plan that the MPCA agreed was the best: we'd drill more wells and pump the product off the water table, send it through the refining process again and, of course, replace the entire floor of the tank.

The following year, while we were still pumping that gasoline off the water table, the weather was very dry, and the water table dropped as a result. One afternoon when I was on call, an employee walking his dog on the shore of the Mississippi River on a Sunday afternoon called the refinery and told us his dog had come out of a swamp smelling like gasoline. The refinery called me, and I called the MPCA, and we immediately called a refinery emergency.

The gasoline lying on top of the water table had been fine until the water table dropped. Then, as it turned out, it had seeped down a fracture in the subterranean bedrock, a crack nobody had known was there, and emerged in a backwater slough of the river. The regulatory agency had brought its geologists and hydrologists to all the meetings, and they had investigated the area and concurred with our plan. Our own hydro-geologists did, too. Fortunately, the spill was caught before that gasoline made it to the river itself, but it cost the refinery millions of dollars to clean up, and the cost to that slough was that it essentially got eradicated in the cleanup. If that employee had chosen some other place to walk his dog, we might not have discovered the spill until it had reached the locks at Hastings, Minnesota, several miles downriver. By then the damage would have been much more significant.

Let me stress that the refinery did everything right, everything it was supposed to do, in dealing with the spill. But nobody knew – nobody COULD know – about that fracture in the bedrock.

And neither will Powertech. I'm sure they'll use the very best technology to try to protect our water, but because we can't see underground, we can't know with certainty how anything will behave in that environment. Is it worth it to risk Powertech's uranium-laden solution getting into our underground aquifers (not just the Inyan Kara)—where it will mix, not lie on top—and make that water unusable far into the future? We in western South Dakota cannot afford to pollute the very water we rely on, not only for agriculture and animal husbandry, but for life. I hope you agree with me that, no, it's not worth that risk.

I urge you to deny Powertech's permit for uranium mining in the southern Hills. Our water is simply too precious. Thank you.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 8:30 PM  
**To:** Shea, Valois  
**Subject:** Uranium waste in our watershed

Regarding the request to place ISR process waste fluids into the Minnelusa Formation below the Inyan Kara after treatment, please consider this a request to absolutely not allow this type of activity here or anywhere else in the country.

We know, regardless of the type of process used, that the threat to ground water is not worth the risk. The resulting contamination may be low level and long lasting. We should not be putting residents at risk and with no option but to prove some sort of poisoning after years of drinking the water.

Protect us! We need to be able to rely on our ground water!

[REDACTED] [REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 12:08 PM  
**To:** Shea, Valois  
**Subject:** Black Hills mining

Hello.

I would like to express my strong opinion that the Black Hills should not be used for mining or mining waste disposal.

This place is a very important cultural site, sacred to many in South Dakota and throughout the U.S. (not just Lakota people). And it is one of our most beautiful natural resources.

Please keep in mind those of us who would be harmed by this proposal.

Thank you,  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 2:25 PM  
**To:** Shea, Valois  
**Subject:** Comments on proposed uranium mining and storage plans on Lakota lands

Dear Valois Shea;

We are in smack the midst of a point in history where our decisions will determine whether the planet survives with humans or not. The amount of poisons we have saturated the soil, water and air with is already killing thousands of us daily, whether it be from cancer or the harsh affects of life threatening ailments induced by everything from household chemicals to fossil fuel spills and by-products. Now is the time to stop the madness and embrace the common sense and logic pointing in the direction of supporting a sustainable environment. Please consider the majority of American citizens that pay your salary as we insist the EPA stop leaning "for" corporation's that are continuously determined to annihilate and poison the water which sustains us all, by their complete lack of concern for the environment and water, our livesource.

In March of this year the EPA issued two draft permits to Powertech, a multinational corporation and division of Azarga Uranium Corporation of Canada. Together these permits would allow the drilling of thousands of wells within 14 different fields. These wells would bore hundreds of feet into the ground and pierce the Inyan Kara system of underground aquifers. The second of the two permits is to allow the disposal of hazardous waste materials resulting from uranium mining. Both permits would needlessly expose the Lakota Oyate to the devastation of uranium mining and continue America's war against Red Nations' peoples.

Since 1980 we have been depleting more resources from the earth than we are generating. As of today, the rate of "taking" vs. "replenishing" is at 50%. A path that has us destined for extinction. I am completely against these permits due to the the obvious risk and detriment to our health, mental stability and planetary regeneration these permits will allow. Uranium has only been aggressively used as a source of energy for 60 years, yet look at the continued death of the Pacific ocean as the Fukushima disaster rages on with no containment in sight. The only containment for any hazardous substances we've already generated is above ground retrievable storage will allow for containment without the risk of breaching the aquifers. To say it's OK to generate more deadly waste that we have no way of making non-toxic makes no sense.

"The Inyan Kara, Minnelusa, and Madison aquifers are the principal sources of ground water in the northern Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming. The aquifers are exposed in the Bear Lodge Mountains and the Black Hills and are about 3,000 to 5,000 ft below the land surface ... The direction of groundwater movement is from the outcrop area toward central South Dakota."

Thank you for your courage and ethical decision **NOT** to approve this permits.



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, June 08, 2017 3:47 PM  
**To:** Shea, Valois  
**Subject:** Re: Uranium Mining in the Black Hills

Good day Shea,

My family & I live in beautiful, rural southern Black Hills. We haul water for our home & animals from a nearby source. We do not want uranium injection wells to contaminate our Madison water aquifer or the lower Inyan Kara. We would like those abandoned drill sites cleaned up at the expense of those companies responsible & not tax layers. We are concerned for the health and safety of all living beings, land, air & water affected by this destructive mining and storage practices. Please help us. Stop uranium mining in the Black Hills.

Kind regards,

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:44 PM  
**To:** Shea, Valois  
**Subject:** Please reject the Powertech permits

Dear Shea,

I've read about the draft Powertech permits, and urge you to stop both. Water safety must be one of three EPA's highest priorities. Reject these permits, please.

Sincerely,

[REDACTED]

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 1:06 AM  
**To:** Shea, Valois  
**Subject:** RE: Storage of uranium in aquifer

Mr. Shea,

Thanks for the reply I appreciate it.

I after reading the entirety of the documents, I am just going to restate my comment under a Trump administration reality has gone on holiday. There is nothing but bad (you, know, long after the fact bad) to come from this, and it is the duty of the EPA to ensure the environment comes before corporate gains!

[REDACTED]  
----- Original Message -----

Subject: RE: Storage of uranium in aquifer  
From: "Shea, Valois" <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)>  
Date: Tue, March 14, 2017 4:41 pm  
To: [REDACTED]

[REDACTED]  
Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.

Here is the link to the EPA UIC program website that contains all the information in the Administrative Record, in case you do not already have it:  
<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

The public comment period is in effect through May 19, 2017, in case you have any additional comments after reviewing this information.

Thank you!  
Valois

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129

Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

-----Original Message-----

From: [REDACTED]  
Sent: Sunday, March 12, 2017 8:19 PM  
To: Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)>  
Subject: Storage of uranium in aquifer

Are you seriously considering this? I cannot believe the agency designed to protect the environment is actually asking civilians this question and not going to science...oh wait I forgot under Trump you can forget reality and be completely stupid!!!

[REDACTED]

Artist and Photographer

Sent from my iPhone



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 2:54 PM  
**To:** Shea, Valois  
**Subject:** No Uranium Waste Storage on Lakota Land

Dear Valois Shea,

I'm writing to ask that the EPA deny the permits for the proposed Dewey-Burdock Uranium Mine project. This proposed mining project is likely to contaminate aquifers of the Black Hills and put the health and safety of those drinking that water at risk. In addition, the mining project is next to the Black Hills, and is within the boundaries of an area set aside for the tribes of the Great Sioux Nation by treaties signed in 1851 and 1868. The Black Hills are sacred to the Lakota Nation. These tribes oppose this mining project; it violates their 1851 & 1868 Treaty Rights and they did not give up their water rights or mineral rights to these areas. The EPA must deny these permits.

Thank you very much for your time.

All best,

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:58 PM  
**To:** Shea, Valois  
**Subject:** Uranium waste

Allowing this into a South Dakota aquifer -- or into groundwater anywhere is pure insanity. Poisoning the earth to enrich extractive industries should be punishable by jail. Think, EPA, think!

[REDACTED]  
[REDACTED]

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 12:06 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining disposal in the Black Hills

I do not know a word that properly expresses how strongly I oppose to this act. Of course, this act should not be considered okay anywhere but, having relatives in multiple places near the Black Hills the idea of putting radioactive waste in the ground and therefore ruining the beautiful, wild Black Hills is sickening. I beg you, please do not let this happen!

- [REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 8:12 PM  
**To:** Shea, Valois  
**Subject:** Public comment for the proposed EPA actions at the Dewey-Burdock site  
**Attachments:** EPA\_PUBLIC.May17.doc; P\_TriangleDeweyBurdockBHAD.png; A\_cwa\_sec404doc.pdf; B\_Beaver Creek Final Fecal Coliform TMDL.pdf; C\_SoBlackHills.pdf; D\_The\_Black\_Hills\_Hydrology\_Study.pdf; E\_DeweyBurdock.jpg; F\_hwysdakotaDewey.jpg; G\_map\_Beaver\_Creek\_Watershed.pdf; H\_source\_of\_missouri\_river\_missouri\_basin\_map-1200.jpg; I\_Dewey Potential Wellfield.pdf; J\_Dewey Wellfield Wide.pdf; K\_GPS Drainage Though Dewey Well Field.png; L\_Dewey Wellfield Medium.pdf; M\_GPS Cls-up Dewey Well Field.png; N\_Dewey Wellfield Closeup.pdf; O\_GPS Wide Shot DeweyBurdock.png

Proposed Underground Injection Control (UIC) Program actions at the Dewey-Burdock site located near Edgemont, SD. These actions include two draft UIC permits and a proposed aquifer exemption decision.

### **PUBLIC INFORMATION SESSIONS AND HEARING**

#### **Written Statements**

### **PROPOSED DEWEY-BURDOCK PROJECT ISL MINE NEAR EDMONT, SOUTH DAKOTA**

### **ENVIRONMENTAL IMPACT STATEMENT**

#### **The SEIS Fails to Consider Connected Actions**

[REDACTED]  
[REDACTED] [REDACTED]  
[REDACTED]

PUBLIC COMMENT:

May 17, 2017

**URANIUM MINING EPA HEARINGS  
PUBLIC INFORMATION SESSIONS AND HEARING  
Written Statements**

**PROPOSED DEWEY-BURDOCK PROJECT ISL MINE NEAR EDMONTON,  
SOUTH DAKOTA**

**ENVIRONMENTAL IMPACT STATEMENT  
The SEIS Fails to Consider Connected Actions**



**Public Comment**

My concerns regarding the Dewey-Burdock Project are centered around the problems of artesian flow and, interactions with the Remediation of Buried Chemical Warfare Materiel located at the Black Hills Army Depot less than 10 miles to the south.

Furthermore, Dewey-Burdock Project experts propose land application areas on river terraces and deep well injection into aquifers within the project boundaries under the sanctions of EPA permits to be exempted from the **Safe Drinking Water Act** (SDWA 1977 & 1986). Surface water flow in channels is ephemeral except for perennial Beaver Creek. **U.S. Army Corps of Engineers permit application under Section 404 of the Clean Water Act will be required before conducting work in jurisdictional wetlands** (see Surface Waters and Wetlands SEIS Section 4.5.1.1). (see Section 404 of the Clean Water Act - exhibit A\_cwa\_sec404doc.pdf).

The Dewey-Burdock Project will transmit the applied and/or injected waste directly into the area of the Beaver Creek Watershed within the Upper Cheyenne River Watershed of the Cheyenne River to flow eastward throughout the State of South Dakota and into the Missouri River affecting the entire Missouri River Basin. (see exhibit G\_map Beaver Creek Watershed and exhibit H\_source\_of\_missouri\_river\_missouri\_basin\_map-1200).

## **Water Quality**

Other areas are dealing with primary and secondary water quality issues refer to Southern Black Hills Water System Appraisal Report (see exhibit C\_SoBlackHills.pdf).

For example, the town of Edgemont has quality concerns with primary drinking water standards relative to some category(ies) of radionuclides (e.g., alpha particles that can result in increased risk of cancer).

Edgemont has shown a test of 17 milligrams per liter (mg/L) on alpha particles, and the U.S. Environmental Protection Agency (EPA) limit is 15 milligrams per liter (mg/L).

## **The problem of artesian flow**

Artesian springs act as a “relief valve” for the aquifers and are an important mechanism in controlling water levels in these aquifers. Springflow of many large artesian springs changes very slowly in response to long-term climatic conditions. Artesian springflow could be diminished by large-scale well withdrawals near springs, thus impacting surface-water resources. Large-scale development of the aquifers has the potential to influence the balance of the unique and dynamic “plumbing system” in the Black Hills area that controls interactions between ground-water levels and artesian springflow (see exhibit D\_The\_Black\_Hills\_Hydrology\_Study.pdf).

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. Artesian flow was observed or predicted by Powertech in their 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).

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 project area boundary. Were this artesian water flow to happen with oxidant-charged lixivate, and/or the brackish fossil aquifers, the

contaminated groundwater would rust any metal-contained ordnance and release its contents into the environment.

### **Concluding Remarks**

It is very likely that the oxidants used to free the uranium and/or the brackish fossil aquifers and the connected action of artesian flow as observed by the U.S. Army Corps of Engineers will also cause the destruction of underground storage containers i.e. Buried Chemical Warfare Materiel located at the Black Hills Army Depot less than 10 miles to the south of the Dewey-Burdock Project area and release their contents into the area's ground and surface waters. This huge munitions depot handled thousands of tons of chemical warfare agents such as sarin, soman, toban, GB, and VX, plus mustard, phosgene, and Lewisite. [http://rapidcityjournal.com/news/local/seismic-crews-want-to-test-up-to-acres-northwest-of/article\\_2d670e86-f90b-5db4-8bd6-19075034e04e.html](http://rapidcityjournal.com/news/local/seismic-crews-want-to-test-up-to-acres-northwest-of/article_2d670e86-f90b-5db4-8bd6-19075034e04e.html)

## References

U.S. Army Corps of Engineers. 1992. Preliminary assessment of ordinance contamination at the former Black Hills Army Depot, South Dakota. Final Archives Search Report (Contract No. DACA-87-91-D-0037), pp.314

USACE (U.S. Army Corps of Engineers). 1992. "Final Archive Search Report, Preliminary Assessment of Ordnance Contamination at the Former Black Hills Army Depot, South Dakota.: ML13053A145. Huntsville, Alabama

USACE (U.S. Army Corps of Engineers). 2012. "Final Work Plan for Black Hills Army Depot Remedial Investigation and Feasibility Study at Fall River County, South Dakota." ML13053A152, Huntsville, Alabama

LaGarry, H. E., C. Belile, & H. Gaddie. 2012. Revised lithostratigraphic correlation of the Arikaree Group from northwestern Nebraska to southwestern South Dakota. Proceedings of the 122nd Annual Meeting of the Nebraska Academy of Sciences, pp. 92- 93.

U.S.NRC Office of Federal and State Materials and Environmental Management Programs. 2014. Environmental impact statement for the Dewey-Burdock Project in Custer and Fall River Counties, South Dakota: Supplement to the Generic Environmental Impact Statement (SEIS) for In-Situ Leach Uranium Milling Facilities. Final Report Chapters 6 to 11 and Appendices NUREG-1910 Supplement 4, Vol. 2, Summary of Environmental Impacts Table 9-1 pp 9-5 Surface Waters and Wetlands (SEIS Section 4.5.1.1)

Southern Black Hills Water System Appraisal Report  
Rural Water Supply Program Dakotas Area Office, Great Plains Region  
Dakotas Area Office  
Vaughan Gerlach, Civil Engineer

Great Plains Regional Office  
Kip Gjerde, P.E., Civil Engineer Mark Phillips, Geologist Gary Davis, Resource Management Specialist  
U.S. Department of the Interior Bureau of Reclamation Bismarck, North Dakota March 2011  
Summary of Appraisal Investigation Water Quality Section 2.3.4 pp. 9

The Black Hills Hydrology Study  
Janet M. Carter United States Geological Survey  
U.S. Department of the Interior  
USGS Fact Sheet FS-046-02 June 2002

Fecal Coliform Bacteria Total Maximum Daily Load (TDML) for  
Beaver Creek, Fall River County, South Dakota January 2010  
Aaron M. Larson SD DENR Water Resource Resource Assistance Program  
Introduction Figure 1-1 Beaver Creek Watershed Within the Upper Cheyenne River Watershed pp. 7

## SECTION 404 OF THE CLEAN WATER ACT

F.2. Any discharge of dredged or fill material into the navigable waters incidental to any activity having as its purpose bringing an area of the navigable waters into a use to which it was not previously subject, where the flow or circulation of navigable waters may be impaired or the reach of such waters be reduced, shall be required to have a permit under this section.



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 19, 2017 4:06 PM  
**To:** Shea, Valois  
**Subject:** draft UIC Dewey-Burdock permitting

Dear Mr Valois,

I have read the fact sheet for public comment of the two UIC Area Permits to Powertech, for injection wells for uranium recovery and aquifer exemption, for the disposal of treated ISR process waste fluids into the Minnellsusa Formation.

As expected, the EPA permitting process is very thorough. At this writing, I also find myself very aware of, and thankful for, this permitting process, and more importantly, that regulatory oversight exists! It is almost secondary to this thought that I offer my public comment on the permit!

I agree with the additional pump tests in the Burdock Area wellfields targeting the Chilson sandstone, mentioned in section 3.4.2. Also that the Fuson shale confining zone may have some areas compromised by other holes punched through it, and the wellfield pump tests will pinpoint any breaches.

Providing adequate well monitoring and maintenance programs for all the wells, including the monitoring wells, will ensure well operational efficiency and extend the life of the wells throughout the project. Among other water constituents, high TDS and sulfate levels that exist in the formations, as well as the process water, will tend to clog well screens and gravel filter packs over time without vigilance. In addition to the required step tests for fracture determination discussed in section 5.9, routine pump/step tests can be useful for monitoring well efficiencies and the need to treat the wells before problems occur. The flowing artesian wells present within the area will remain a concern and should be watched.

It is my sincere hope and desire that the EPA remains intact; that regulations such as these types of permitting processes and monitoring and remediation regulations, will remain strong and continue to provide oversight of these and other operations. Without the professionalism and dedication of you and others at the EPA, our air, water, and environmental quality will suffer to an alarming degree. Thank you for all of your hard work and diligence. This citizen is appreciative of your efforts.

[REDACTED]  
[REDACTED]  
[REDACTED]

Sent from my iPad

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 2:47 PM  
**To:** Shea, Valois  
**Subject:** Aquifer changes

In response to request for public comment regarding dumping into an aquifer, I suggest that the book, "Living Downstream" be required reading. We cannot return to the days of having our water systems polluted and damaged for the sake of corporate or personal gain.

I have lived in an area where the rivers and water systems were polluted due to chemical dumping from byproducts of manufacturing and the long term effects remain for decades.

Please do not let this happen, I am sending a resounding no.

Respectfully

[REDACTED]

[REDACTED]

Get [Outlook for Android](#)

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 10:40 AM  
**To:** Shea, Valois  
**Subject:** Stop Dewey-Burdock Uranium Mine

Dear EPA,

I wish to comment on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells.

The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of groundwater resources is very likely.

It concerns me that adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be inadequate, and groundwater is likely to be contaminated.

Further, these permits should not be issued until it can be demonstrated that groundwater resources will be protected.

[REDACTED]  
[REDACTED]  
[REDACTED]

\_\_\_\_\_

June 19, 2017 11:38 AM

Shea, Valois

uranium mining must stop

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:26 PM  
**To:** Shea, Valois  
**Subject:** Uranium

Please do not allow waste disposal in Sout Dakota's aquifer. That is ridiculous to consider contaminating the water supply with nuclear waste. Please stop!!

[REDACTED]

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 10:30 AM  
**To:** Shea, Valois  
**Subject:** Comment on black hills

I am sending an email about my concern over the potential uranium mining in the black hills and to say that this is harmful and I am against it. There should be no mining of this or any kind on native territory where it can harm the environment and pollute natural resources. I hope that this will be taken into consideration and that the right decision is made. Thank you.

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 10:02 AM  
**To:** Shea, Valois  
**Subject:** Mining waste dump

Of course citizens are against allowing toxic waste dumping into our waterways.

How can the government even ask? This is the primary reason for EPA.

Stop irresponsible actions against our natural places and resources. This effects all people in the US.

[REDACTED]

Sent from my iPhone

**Shea, Valois**

---

**From:**  
**Sent:** Tuesday, March 14, 2017 10:02 AM  
**To:** Shea, Valois  
**Subject:** Mining waste dump

Of course citizens are against allowing toxic waste dumping into our waterways.

How can the government even ask? This is the primary reason for EPA.

Stop irresponsible actions against our natural places and resources. This effects all people in the US.

██████████

Sent from my iPhone



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 6:27 AM  
**To:** Shea, Valois  
**Subject:** Permits and Exemption

Dear Ms. Shea,

It is my understanding that the EPA has issued two draft Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota.

I strongly urge you to reconsider any decision to allow permits to mine any region that impacts Native American lives. We all know how Native Americans are considered second class citizens in this country; how their lands are up for grabs; and how their health is not as important as expanding drilling for oil, uranium, copper and so on. These substances are not for consumption here (not that this would be acceptable) but to enrich the companies that sell them overseas.

Please do not continue to perpetuate these injustices and do not approve any draft permits or any aquifer exemption.

Thank you.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 06, 2017 9:21 PM  
**To:** Shea, Valois  
**Subject:** proposed Dewey-Burdock Uranium In-Situ Recovery Site located near Edgemont..SAY NO!!!

I am against this proposal, as all the caring neighbors in the Custer Highlands subdivision. We are close to the site and dont agree with the pollution associated with the mine. It would permanently contaminate the water and make surrounding properties unlivable. Most of the residents here have come from another place and gravitated toward this area because of the natural beauty and healthy wildlife. Bringing toxic waste to the surface is not what this beautiful area is all about. Please reconsider and SAY NO!!!

[REDACTED]  
[REDACTED]  
[REDACTED]  
  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 03, 2017 1:35 PM  
**To:** Shea, Valois  
**Subject:** no to black hills mining and milling..not worth the risk!

A foreign holding company is seeking three EPA permits to pollute the precious water tables underlying the Black Hills of South Dakota, which is the recharge area for our streams and lakes, municipal supplies, private wells, and agricultural use in the entire

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 12:03 PM  
**To:** Shea, Valois  
**Subject:** Please don't allow Black Hills uranium mining

Dear EPA staff:

I'm writing to urge you not to permit uranium mining in the Black Hills. Such mining would have potentially devastating effects on the region's aquifers. I urge you to adhere to the high standards of your agency and refuse this permission.

Regards,

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 4:10 PM  
**To:** Shea, Valois  
**Subject:** Comments on Dewey Burdock proposal

Clean water is nearly nonexistent in our nation, and the situation is becoming worse each year.

It has been well established historically that this type of project will (not could, but will) cause environmental contamination.

The EPA was formed with the charge with the mission of protecting the environment and human life and wellness.

I don't believe that the EPA's mission should be to experiment with how much environmental destruction can we accomplish before we all die.

You won't see this in the modern 24/7 media, but you don't have to look far to find that unfortunately this is already happening. Documented cases of cancer and other toxicity related illnesses - affecting not just older people, but young children, babies born with birth defects - are happening and are correlated with environmental impacts.

Scientists and engineers draw these maps to define boundaries. "Here is one aquifer, here is another." "Here is where they are connected", or, "they are not connected at all." As a scientist, I will say that while these analyses have their purposes, they are still only approximations of reality. This is the earth we are talking about - everything, everything, everything is connected, as multiple speakers at the hearings have already stated. The idea of containing contamination is only an optimistic dream, not reality.

We've got people willing to put their names on the line and spend hours and days out of their week attending the EPA hearings and making comments - not to mention the time spent organizing, reading the published documents and policies to put together these comments, etc.

The current story of our nation seems to be that a project is set up, the real people who are affected show up and give their voice (when they are allowed to do so), and the people with the money and power steamroll ahead anyway.

However, people young and old are coming up, getting involved, and showing up to do the work that will make the cultural shift from valuing money (which, if you ever took economics, you know is an arbitrary, imaginary concept) to valuing human life, to valuing nature, to valuing the connections between people, between people and nature, valuing what is really important to human life, to finding the meaning of life.

The meaning of life seems mysterious and out of reach to American culture - but there are plenty of people around who have a grasp of it, it's just that those people, by their exact nature, are considered to be the quiet ones, not the ones who become famous or go on TV media or whatever.

So I urge you to listen, as many of the speakers at the hearings have already said. Listen to the people here when you make your decisions. Seek the input of the native tribes who occupy and know this area, and truly listen to them. Listen to your own hearts: what matters to you? Does your children's future matter to you, or does money matter to you? Which is going to last longer? Which is something you want to look back on at the end of your life?

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██████████

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 22, 2017 10:05 AM  
**To:** Shea, Valois  
**Subject:** Uranium extraction project in western South Dakota.

Dear Environmental Protection Agency,

At the recent hearing held in Rapid City I referenced a study conducted by the U.S. Geological Service. This study was in reference to a series of earthquakes instituted by the injection of nuclear and hazardous wastes mixed with water into bore holes in the area of the Rocky Mountain Arsenal in Colorado. These incidents were in the 1960's.

Although these were deep bore holes, this unfortunate process illustrates that, in spite of any geological knowledge we have attained, we still do not have an understanding of the far-reaching effects of any possible damage we can do to the structure of the Earth.

As a lifelong resident of the Black Hills of western South Dakota and a student of the geology of this area I know from my experience and knowledge how fragile is the rock strata of the western Black Hills. Particularly the underlying limestone and sandstone.

I shall repeat some incidents that reveal the porosity of the rock strata. When I was active in drilling oil wells not far from the proposed Dewey-Burdock uranium extraction program we would often 'lose circulation'. This meant that we would drill into large cavities or fissures underground which would carry away our drilling mud or lubricant. A rancher who lives not far from the proposed project decided to drill a new water well. He actually has a water-well-drilling business. He was in the process of drilling this well when he suddenly drilled into a huge cavity. He withdrew his drilling pipe and later notified the superintendent of the nearby Jewel Cave National Monument. The Jewel Cave people came to the bore hole site with fiber optic cameras and equipment to put down the hole. When asked what they saw, they responded: "It looks just like Jewel Cave."

I am a member of the Darton Geological Society. We have guest speakers at our monthly meetings. One speaker presented professional documentation related to a study of how fluids migrate underground in limestone and sandstone strata. In addition to a bore hole in which fluid was injected they had a series of bore holes near the injection hole to monitor for the migration of fluids. They had injected harmless ionized water and it was amazing how quickly and how far the fluid had spread from the injection site. Another speaker, who was a professor from my alma mater, South Dakota School of Mines and Technology, was the project leader in a project to drill experimental bore holes through South Dakota. Many holes were drilled but the astounding knowledge gained was that it was discovered that a fault line existed either under the Missouri River or paralleling it for a great distance from the Nebraska border northward.

We are reminded that the famous Homestake Mining Company did core-drilling from the surface down to great depths to discover new ore bodies. As a result of their core drilling they decided to excavate a tunnel 2 miles in length to where they assumed the new gold ore body lay. When they got to the area they did not find the any new gold ore bodies. This was done relatively recently before Homestake gave up the gold mine after some 140 years. This work was done in hardrock, of course, and not sedimentary stone, but the fact is evident. We do not really know what lies beneath the surface.

One of the colored displays at the EPA hearings up here in the Black Hills showed a cross section of the underlying rock strata in the Dewey-Burdock area. I submit that the drawing is NOT REPRESENTATIVE of the underlying rock. Instead of solid rock displayed it should more accurately be shown to be filled with cavities, holes and fissures, Much like a sponge or Swiss cheese.

I find that the series of 'monitoring bore holes' around the perimeter of the proposed project is misleading and moot. If contaminating fluids reach these monitoring holes it is too late. The underground would already be contaminated. From maps of the proposed project area I see that the proposed 'holding dams/ponds' are in the area of possible flash flooding. A few years ago I was traveling the gravel road from Dewey to the Jewel Cave area. This would be northwest of the proposed project. As I came around a curve I encountered many burned logs, trees and debris covering the road. This debris had been swept down a basin in a flash flood from a forest fire many miles distant. A similar flash flood would destroy these holding ponds and further contaminate the environment. I submit that if the go-ahead for this uranium project was to be submitted to a vote of the local and area residents, the people would adamantly vote against the project.

We strongly urge the EPA to NOT GRANT any of this drilling and water injection to proceed. This company does not have the monetary resources to remedy any of the possible detrimental effects to our environment and peoples health. We in the Black Hills daily confront the disastrous effects of the abandoned Gilt Edge Mining project. Now a superfund site.

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 2:55 PM  
**To:** Shea, Valois  
**Subject:** RE: Public comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

Attention:  
Valois Shea  
U.S. EPA Region 8 Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129

Dear Ms. Shea:

Absolutely no exemptions for groundwater contamination, whether from uranium, or any other foreign (non-H<sub>2</sub>O) substance. We (U.S. EPA) must prohibit any contamination of water, whether they are ground water or surface waters.

<https://www.epa.gov/newsreleases/epa-seeks-public-comment-draft-permits-and-aquifer-exemption-uranium-mining-project>

Thank you,  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 8:39 PM  
**To:** Shea, Valois  
**Subject:** Azarga Uranium

We are begging you please do not allow Azarga to mine or dump uranium in the Hills or anywhere in SD. The Hills are sacred to the indigenous people here and to us too.

We have had 2 new leaky oil pipelines forced on us. Between the oil pipelines and Azarga we fear for our ground water and the deep aquifers.

We hope you will reject Azarga's application.

Please help us protect our state,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, June 02, 2017 9:05 AM  
**To:** Shea, Valois  
**Subject:** Azarga

Dear Ms. Valois:

I am writing to urge the EPA not to grant Azarga permission to mine uranium in South Dakota's Black Hills. First, the area currently needs cleanup from previous mining. Second, the mining will undoubtedly adversely affect aquifers. Third, this is yet another out-of-state (or, in this case) foreign company seeking to exploit our state's resources. Fourth, this enterprise would not bring significant economic benefits to the state or its people.

Best,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 3:29 PM  
**To:** Shea, Valois  
**Subject:** Uranium/Aquifer

I'll keep this simple. Don't do anything to contaminate the aquifer in South Dakota. Nevada's water issues with surface level fallout is bad enough.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 8:01 AM  
**To:** Shea, Valois  
**Subject:** Aquifer Exemption South Dakota

There is no safe level of Uranium waste in drinking water, and you won't be able to reach safe levels of uranium waste if you are exempting an aquifer from the safe drinking water act. By that very act you are saying that the people of that area don't deserve or need safe drinking water. This is court sanctioned murder of the native people in Black hills. You have stolen their children, taken their land and now you are polluting their water. I am strongly against this measure. It violates everything the EPA stands for. I can only assume you are doing this because of the current president. Stand up and have a spine.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, March 17, 2017 9:41 AM  
**To:** Shea, Valois  
**Subject:** Powertech/Azarga Black Hills

Good Morning,

While the EPA might be gutted financially, my hope is there are people there that still understand the important of keeping our waterways, and airs clean of all pollutants. This project would be an unbelievable hazard, contaminating the Inyan Kara aquifer which is being used for agriculture, as well as contaminating other aquifers. Mining wastes are often radioactive and would create a permanent hazardous waste dump site in the Black Hills. One needs to only look at what happened in Brazil with the Doce River to understand the potential calamity a project like this represents.

I would appreciate if you officially include my comment - while I may not live in South Dakota I have relatives that do. I also spent some time reporting from Standing Rock in the last year. Furthermore the pollution of waterways effects all of us directly. Every body of water is connected to another, to our soil where we need food to grow so we can survive.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 10:04 AM  
**To:** Shea, Valois  
**Subject:** I am opposed to granting permits to Powertech for uranium injection wells in South Dakota

I am writing to register my opposition to the granting of permits and exemptions to the Safe Drinking Water Act for Powertech's proposed uranium mining in South Dakota..

The Safe Drinking Water Act is a crucial means of protecting an irreplaceable resource used by local tribes and other residents. Granting exemptions to this Act so that a private company can reap financial rewards is wrong. There is NO safe amount of uranium that can be injected into an aquifer.

i call upon the EPA to do its job in protecting the environment and its inhabitants.

Do NOT GRANT this permit and exemption.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 6:28 PM  
**To:** Shea, Valois  
**Subject:** Proposed uranium mining and storage on Lakota Lands

As a concerned citizen I write to you to persuade you to deny this toxic trespass, the Lakota do not want this in their lives on their land. Sincerely,

[REDACTED] [REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 12:27 PM  
**To:** Shea, Valois  
**Subject:** Comments on Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

I ask that you reject the two draft Underground Injection Control (UIC) Area permits and aquifer exemption to Powertech, Inc. for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota.

Together these permits would allow the drilling of thousands of wells within 14 different fields. These wells would bore hundreds of feet into the ground and pierce the Inyan Kara system of underground aquifers. According to the USGS, the Inyan Kara, Minnelusa, and Madison aquifers are the principal sources of ground water in the northern Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming. The second of the two permits is to allow the disposal of hazardous waste materials resulting from uranium mining. The proposed action would expose the aquifers to dangerous contamination, therefore an aquifer exemption to the Safe Drinking Water Act is inappropriate and should be rejected.

Both permits would needlessly expose the Lakota Oyate to the devastation of uranium mining and continue a record of disregarding the health and welfare of native populations.

[REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 2:58 PM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock proposal public comment

To Whom It May Concern,

I strongly encourage the Environmental Protection Agency to protect the public's interest in clean, abundant, safe water in the southern Black Hills by denying the Dewey-Burdock project the required permits to mine uranium.

Water is always a precious commodity in this semi-arid region, and this proposed uranium mining project will utilize far too much of it for daily operations. Overdraw of the aquifers in question is a real concern. The Dewey-Burdock project is requesting access to far too large a quantity of water in comparison to the annual recharge of these formations. If severe, prolonged drought comes to this region, as it has in the past, that water will be needed to serve the people, livestock and agriculture of area.

Overdraw is one concern, and when combined with the sizable potential for contamination of the local aquifers, it becomes clear that this project should not be allowed by the EPA. The few studies of the geology of the region indicate that there is no way to isolate the mining chemicals to one formation, as the Dewey-Burdock proposal claims they will do. There are too many features, natural and man-made, that cut across formations, that can allow for contaminants to migrate into unwanted areas.

Finally, the recent reports of outside waste being brought in to be disposed of in this area are very disconcerting. If true, these mining byproducts would only add to the potential for contamination in the region.

I ask that the EPA put aside all other concerns associated with this mining project, and focus on the facts that the Dewey-Burdock proposal asks for far too much access to public groundwater, and seems little concerned about the large potential for toxic contamination across several aquifers in question. The small amount of potential economic benefit this project could bring the Edgemont region is nothing when compared to the large hazard posed to our water supply. Stop this proposed project once and for all!

Thank you.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 8:41 PM  
**To:** Shea, Valois  
**Subject:** Uranium waste

I live in Grants, New Mexico, the former self proclaimed "Uranium Capital of the World".

As a now retired RN, I can tell you of the many deleterious effects of Uranium Waste.

Years after closure of the mines here we are still dealing with illnesses and deaths from uranium, and the water and environment are still not cleaned up, and won't be.

Allowing uranium mining waste disposal in a SD aquifer is an absolutely horrible idea unless you believe it is a good thing to poison people, give people cancer...**please, NO.**

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 5:37 PM  
**To:** Shea, Valois  
**Subject:** No Uranium in Treaty Territory

Dear Sir/Madam:

I want to submit a public comment regarding the Dewey Burdock Uranium Aquifer Mining. I say "No" and ask that you protect these most pristine aquifers in the world - the Black Hills Aquifers.

Thank you for your time and attention to this matter.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 5:44 PM  
**To:** Shea, Valois  
**Subject:** No Uranium mining in the Black Hills follow-up

Dear Sir/Madam:

I sent an email to voice a public comment against uranium mining in the Black Hills. I also want to ask:

- that the old mines are cleaned up before any further permits are considered
- that there is tribally defined consultation
- that there are fully tribally approved archeological and cultural surveys
- that there is a Lakota translator/transcriptionist at hearings

Thank you very much for your consideration.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, June 14, 2017 7:38 PM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock NO

Dear Ms. Shea,

I testified at one of the hearings that were held at the Ramkota in Rapid City. I would like to reiterate my comments here. I am 100 percent against the dewey-burdock plan to "mine" for uranium and to dump waste in our aquifers.

- 1.Environmental in...justice: Native American Tribes have put up with a multitude of ways in which their lands have been stolen. Now the plan seems to be to strip them of clean safe water.
2. Historically, companies mining in South Dakota have many times left an environmental disaster in their wake. With the small bonds required by the state, there is never enough money to clean up the sites and the residents become dependent on the Federal Government to clean things up.
3. Having a Chinese Company dump nuclear waste in Fall River - or even mine for uranium - does not benefit any South Dakotans - not the tribe, not Edgemont, not Fall River and not South Dakota.
4. Can the EPA guarantee, in this age of deregulation and budget cutting that they will have the means to keep the water uncontaminated and the people of South Dakota safe?
5. The Black Hills of South Dakota are a unique landscape - literally an island of green in the plains. Tourism is one of the states major industries. It seems foolish to jeopardize that industry for the sake of another country.

I have a different vision of a great country than the current administration.. Public lands, environmental protection, the importance of science and education are concepts under the gun. I'm hoping our government agencies, like our courts will step up and do the right thing. Keep uranium mining and waste out of the Black Hills.

Thank you for listening.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 5:57 AM  
**To:** Shea, Valois  
**Subject:** Powertech permits

As a US citizen, I do not want Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota to be approved because of the impact on water quality in the region.

Also, your email link does not work. Perhaps the parenthesis have something to do with that.

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 12:06 AM  
**To:** Shea, Valois  
**Subject:** Black Hills Uranium Mining

I am writing to express my opposition to uranium mining in the Black Hills. Past and current uranium mining is causing significant environmental damage, health problems, and wide-spread contamination. Until all of the existing mines and contamination is cleaned up, we have not proven ourselves willing or capable of safely mining dangerous materials.

Furthermore, many treaties, including the Fort Laramie Treaties of 1851, require consent of the Indigenous peoples whose land mines would be located on. Without consent, mining is a genocidal act of theft and desecration.

Sincerely,

[REDACTED] [REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 1:23 PM  
**To:** Shea, Valois  
**Subject:** Draft Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota.

Dear Valois Shea,

Please do not allow uranium mining waste disposal in aquifers or streams. It is the EPA's job to protect people and ecosystems, not pander to mining and energy interests.

Sincerely,

[REDACTED]  
US Citizen

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Thursday, March 16, 2017 9:00 PM  
**To:** Shea, Valois  
**Subject:** please deny permits

Dear Ms. Shea,

Please accept this communication as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.

I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.

We can live without uranium but not without clean water and soil.

Best regards,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 10:36 AM  
**To:** Shea, Valois  
**Subject:** Black Hills

Please stop the Dewey Burdock uranium aquifer mining in the Black Hills. It's wrong, dangerous & makes water unsafe. Just Stop. [REDACTED]  
Sent from AOL Mobile Mail

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 10:59 AM  
**To:** Shea, Valois  
**Subject:** Public Comment on Draft Permits and Aquifer Exemption for Uranium Mining....

To Valois Shea:

I am writing to OPPOSE approval of the permits that would allow “injection wells for the in-situ recovery (ISR) of uranium in the Inyan Kara Group aquifers and ... deep injection wells that would be used to dispose of ISR process waste fluids into the Minnelusa Formation below the Inyan Kara after treatment. Under the terms of the draft permits, waste injected under the Class V permit must be treated prior to being injected and must meet all radioactive waste and hazardous waste standards. Monitoring of the underground sources of drinking water surrounding the Class III injection wellfields will take place before, during and after ISR operations to ensure the underground sources of drinking water are protected.”

“EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur.”--  
News Release from EPA Region 8

Anyone who is familiar with South Dakota’s recent history knows that uranium mining has caused radiation poisoning on the Pine Ridge Indian Reservation since at least the 1960s. The Cheyenne River that runs through the reservation is dotted with radiation warning signs that say “Caution – Nuclear Radioactive River.” The uranium waste has not been cleaned up from the last spate of uranium mining. Why should the EPA permit this again? Uranium tailings and wastes pose a significant health risk for thousands of years into the future.

Today, key water supplies dotting the Pine Ridge reservation carry arsenic, alpha radiation and other contaminant levels up to 18 times the legal limit, according to water tests conducted by Energy Laboratory, an independent, EPA-certified analytical laboratory in Rapid City, S.D. Fifty-eight percent of the private wells, springs and soils tested on Pine Ridge in June and July 2009 showed positive results for contamination by arsenic, lead and/or various forms of radiation.

Local wells that tap into the Inyan Kara aquifer already have levels of alpha radiation above the EPA’s Maximum Contaminant Level.

“The portion of the Cheyenne River Basin that lies in southwestern South Dakota drains about 16,500 square miles within the boundaries of the state. The area in this basin includes part of the Black Hills and Badlands, rangeland, irrigated cropland, and mining areas. After traversing the western half of the state from southwest to northeast, the Cheyenne River flows into Lake Oahe, a reservoir on the Missouri River.

“Previous efforts remove the radiation in the water at Red Shirt have been unsuccessful. Drinking water is piped in, or residents must drive 25 miles to the little town of Hermosa to buy water. The Cheyenne River has dried up approximately one mile from Red Shirt and tests of the river bottom soil by Defenders of the Black Hills are pending. Initial tests using a Geiger counter revealed more than double the amount of normal background elevations for radiation.” **Uranium Mining Poisons Native Americans**, article by Jeff Gerritsen, 25 Feb 2009. <http://www.culturechange.org/cms/content/view/336/65/>

I reproduce below the Fact Sheet prepared by Charmaine White Face in 2006.

**Uranium Mining and Nuclear Pollution in the Upper Midwest:  
FACT SHEET**

*America's Secret Chernobyl*

By Charmaine White Face, Coordinator  
Defenders of the Black Hills

1. Uranium mining in South Dakota, Wyoming, Montana, and North Dakota began in the middle of the 1960s. World War II, which ended with the nuclear bomb, introduced the use of nuclear energy for the production of electricity and caused the price of uranium to rise. As the economy of the Midwestern states depends primarily on agriculture, when uranium was discovered in the region, many get-rich-quick schemes were adopted. Not only were large mining companies pushing off the tops of bluffs and buttes, but small individual ranchers were also digging in their pastures for the radioactive metal. Mining occurred on both public and private land, although the Great Sioux Nation still maintains a claim to the area through the Fort Laramie Treaties of 1851 and 1868.
2. In northwestern South Dakota, for example, the Cave Hills area is managed by the US Forest Service. The area currently contains 89 abandoned open-pit uranium mines. Studies by the USFS show that one mine alone has 1400 mR/hr of exposed radiation, a level of radiation that is 120,000 times higher than normal background of 100 mR/yr. There are no warning signs posted for the general public anywhere near this site! It is estimated that more than 1,000 open-pit uranium mines and prospects can be found in the four state region from a map developed by the US Forest Service.
3. The water runoff from the Cave Hills abandoned uranium mines empties into the Grand River which flows through the Standing Rock Indian Reservation. Three villages are located on the Grand River and their residents have used the water for drinking and other domestic purposes for generations. One village still uses the water for drinking and domestic purposes. The water runoff from the Slim Buttes abandoned uranium mines empty into the Moreau River which flows through the Cheyenne River Indian Reservation. Four villages are located on the Moreau River; however no data is currently available about their use of the Moreau River water. Both of these rivers empty into the Missouri River which empties into the Mississippi River.
4. The following agencies are aware of these abandoned uranium mines and prospects: US Forest Service, US Environmental Protection Agency, US Bureau of Land Management, SD Department of Environment and Natural Resources, the Bureau of Indian Affairs and the US Indian Health Service. Only after public concern about these mines was raised two years ago did the USFS and the EPA pay for a study of one mine this year, 2006.
5. In Southwestern South Dakota, the southern Black Hills also contain many abandoned uranium mines. Nuclear radiation near Edgemont, SD, has already polluted the underground water of the Pine Ridge Indian Reservation according to a study completed in 1980 by Women of All Red Nations. The US Air Force also used small nuclear power plants in their remote radar stations and missile silos which number in the hundreds in this four State region. No data is available on the current status or disposal of these small nuclear power sources.
6. More than 7,000 exploration holes for uranium have been drilled in the southwestern and northwestern Black Hills. More are being planned in Wyoming. These holes go to depths of 800 feet. The exploratory process itself allows radioactive pollutants to contaminate underground water sources. South Dakota currently has no regulations for In Situ Leach mining of uranium.
7. In Wyoming, hundreds of abandoned open-pit uranium mines and prospects can be found in or near the coal in the Powder River Basin. Yet plans are being made to ship more of that coal to power plants in the Eastern part of the United States. Radioactive dust and particles will be released into the air at the power plants as well as locally in the strip mining process. Federal tax dollars totaling more than \$2.3 billion dollars as a loan are planned to be given to a private business, the Dakota, Minnesota and Eastern Railroad, to increase the amount of coal hauled to the power plants. Two

other railroads currently haul coal out of this area.

8. In 1972, President Richard Nixon signed a secret Executive Order declaring this four State region to be a 'National Sacrifice Area' for the mining and production of uranium and nuclear energy. This is the same area of the 1868 Fort Laramie Treaty territory, the final home of the Great Sioux Nation.

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"Current uranium mines have a history of noncompliance  
<<http://www.earthworksaction.org/files/publications/Nuclear-Power-Other-Tragedy-low.pdf>> with regulations. There continue to be spills. Mining corporations do not clean up areas that they are required to clean up. They do not pay fines. And they influence local governments to loosen requirements once they receive a mining permit.

In addition to contamination of land, air and water, uranium mining, particularly in situ mining requires large amounts of water. In the current environment with extended droughts and reduced aquifers, in situ mining places greater strain on the water crisis.

And the International Physicians for the Prevention of Nuclear War passed a resolution in 2010  
<<http://www.ippnw.org/pdf/2010-resolution-uranium-ban.pdf>> calling for a ban on all uranium mining worldwide, which states that "As well as the direct health effects from contamination of the water, the immense water consumption in mining regions is environmentally and economically damaging – and in turn detrimental for human health. The extraction of water leads to a reduction of the groundwater table and thereby to desertification; plants and animals die, the traditional subsistence of the inhabitants is eliminated, the existence of whole cultures are threatened."

**America's "Secret Fukushima": Uranium Mining is Poisoning the Bread Basket of the World**

By Margaret Flowers <<http://www.globalresearch.ca/author/margaret-flowers>> and Kevin Zeese  
<<http://www.globalresearch.ca/author/kevin-zeese>>


Global Research, June 07, 2013

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All responsible Americans must oppose additional uranium mining in South Dakota, especially injection mining. The United States has already polluted hundreds of thousands of acres of Indian land, hundreds of miles of waterways, and the air and wind above them. Not only cattle, but also wildlife and HUMAN BEINGS drink the polluted waters and suffer illness and death as a result.

I urge the EPA to deny these mining permits being applied for.

Thank you for the opportunity to comment.

  
Bloomington, Minnesota

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, May 08, 2017 6:28 PM  
**To:** Shea, Valois  
**Subject:** Black Hills

Dear U.S.,EPA Region 8,

I am asking for no uranium in treaty territory. I am asking for a strong no to the Dewey Burdock Uranium in the Black Hills. No, to this whole thing.

Very Sincerely,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 4:24 PM  
**To:** Shea, Valois  
**Subject:** Re: Thank you for your comments

Though I am concerned about drinking water, my main concern is who is owning the uranium mining rights. There has been some articles online about a possibility that PowerTech is connected to Uranium One, the company rights sold to Russia while Hillary Clinton was in the State Department.

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**From:** "Valois Shea" <Shea.Valois@epa.gov>  
**To:** [REDACTED]  
**Sent:** Monday, May 15, 2017 6:02:19 PM  
**Subject:** Thank you for your comments

Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.



## Shea, Valois

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**From:**  
**Sent:** Monday, March 13, 2017 8:38 AM  
**To:** Shea, Valois  
**Subject:** FW: Black Hills Aquifer

comment

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 9:27 PM  
**To:**  
**Subject:** Black Hills Aquifer

So let me get this straight...the EPA, an agency specifically designed to protect the environment, is going to use an aquifer to dispose of "treated" radioactive waste

Seriously?

No excuse. NONE

I don't live in that area, but I am a human being, with a conscience.

Do your jobs

[REDACTED] [REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 1:08 PM  
**To:** Shea, Valois  
**Subject:** Uranium Mining in Black Hills

Hello,

I am emailing to say that I do not support the Dewey Burdock Uranium Aquifer Mining being planned in the Black Hills of South Dakota. This land should be kept pristine and not harmed as mining a radioactive material would do. This is also sacred land to many Native tribes and mining it is a horrible thing to do. Please do not approve this project.

Best,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 12:48 AM  
**To:** Shea, Valois  
**Subject:** comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

### **PLEASE WITHHOLD NAME AND CONTACT INFORMATION BY POSTING AS ANONYMOUS**

I am adamantly opposed to this project and do not feel the U.S. should allow ANY company to mine uranium as it cannot be done safely, despite industry assurances to the contrary. Uranium is lethal to humans, fish, wildlife, birds and the environment and no safe level of uranium exposure exists, period. The EPA's proposed aquifer exemption approval in connection with the draft UIC Class III Area Permit would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. That proposed exemption clearly indicates EPA's prior knowledge that uranium mining is unsafe and will most certainly contaminate drinking water for millions of Americans. Such approval would give the mining company legal cover, but the EPA is charged with protecting Americans and the environment -- not corporate interests. Why should we allow a Canadian company with ties to Russia to extract uranium in the U.S., thereby poisoning everything for billions of years inducing suffering our citizens and the environment? That the uranium is going to be sold to foreign markets adds further insult to injury. This proposal is absolutely ignorant and short-sighted. Millions of Americans -- Indigenous and otherwise, depend on clean water for LIFE. WE THE PEOPLE have had enough of the mega-corporations polluting our skies, rivers, seascapes and oceans. So stop this nonsense and do your job on behalf of the Americans you are supposed to be serving... ! !!!

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Saturday, March 18, 2017 6:31 PM  
**To:** Shea, Valois

this is stupid. would you inject this into water you plan on drinking?

Sincerely,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, March 16, 2017 1:08 PM  
**To:** Shea, Valois  
**Subject:** Formal Comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under...

Dear Valois Shea:

Please accept this communication as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.

I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants (including chloride, sulfate, sodium, radium, arsenic and iron) are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about run-off into the Cheyenne River and Angostura Reservoir. As you are well aware, the most serious radiation release in the U.S. came from a tailings pond spill at a uranium mine in New Mexico.

We can live without uranium, but not without clean water and soil. Please protect us.

Best regards,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 5:59 AM  
**To:** Shea, Valois  
**Subject:** Aquifer Contamination

**Follow Up Flag:** Follow up  
**Due By:** Wednesday, March 15, 2017 3:00 PM  
**Flag Status:** Flagged

Does this paragraph actually state that despite the comments about treating the water in the preceding paragraph that you are requesting an exemption from treating it?

What waste products are in this water? And who owns these uranium recovery mines?

"EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur."

Thank you for answering my questions.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 2:25 PM  
**To:** Shea, Valois  
**Subject:** Say no to the Dewy Burdock Uranium Aquafer mining

The Black Hills are sacred territory and treaty land. We have already stolen so much from native peoples when are we going to stop? For once do the right thing and keep the water clean.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 23, 2017 11:30 PM  
**To:** Shea, Valois  
**Subject:** comments on Dewey-Burdock permit application

### Comments on Dewey-Burdock ISM Disposal Well Permit Application

The permit application fails to address the reasonably foreseeable event of a natural or induced earthquake along the Dewey fault, which lies only a mile from the project area. The geologic study prepared for the permit application does not employ best current science. To be specific:

1. The study does not classify the Dewey fault as a capable fault. As nearly as I can determine, the Dewey fault meets at two of the four criteria for a capable fault, only one of which is needed for a fault to be classified as capable. It may meet all four criteria; however, this is difficult to determine because local seismic data are not available to me.

(Definition of capable fault can be found here:

<https://www.nrc.gov/reading-rm/doc-collections/cfr/part100/part100-appa.html>

Earthquakes of greater than 3.0 magnitude have occurred in the immediate area on July 17, 1920, December 30, 1924, and May 3, 1996. A 3.5 magnitude earthquake east of the town of Custer that occurred on December 12, 2013, may have been associated with the Dewey fault.

Please explain how it was determined that the Dewey fault is not capable.

2. The permit application assumes that movement along the Dewey fault, which is already estimated as having experienced a 440-foot vertical displacement, cannot disrupt “confining” shale strata that are only 20 to 80 feet thick. This assumption is clearly wrong. Nowhere does the permit application address this scenario.



Source: [https://www.nps.gov/parkhistory/online\\_books/geology/publications/bul/1063-G/sec2.htm](https://www.nps.gov/parkhistory/online_books/geology/publications/bul/1063-G/sec2.htm)

What is the basis for the assumption that the movement of the Dewey fault will not cause displacement of the so-called confining strata and mixing of aquifers?

3. The application does not address the possibility of induced earthquakes from the waste-disposal wells needed in the proposed uranium extraction process, nor does it address the likelihood of eventual hydraulic fracturing to extract oil and gas in western Fall River County. According to USGS studies, deep wells used to dispose of wastewater from fracking can cause earthquakes as far as 10 miles from the location of an injection well: "Earthquakes can be induced at distances of 10 miles or more away from the injection point and at significantly greater depths than the injection point." Note that the Dewey Fault is only two miles from the proposed well sites. (USGS website, accessed 5/22/2017.)

[http://rapidcityjournal.com/news/local/seismic-crews-want-to-test-up-to-acres-northwest-of/article\\_2d670e86-f90b-5db4-8bd6-19075034e04e.html](http://rapidcityjournal.com/news/local/seismic-crews-want-to-test-up-to-acres-northwest-of/article_2d670e86-f90b-5db4-8bd6-19075034e04e.html)

What is the reason for assuming that neither natural nor induced earthquakes can happen in or near the project area and create disruption of confining strata and mixing of underground water bodies?

4. Further, the USGS studies demonstrate that injection wells can cause such earthquakes even without the presence of high-pressure injection. "In operations where engineers pour fluid down the well without added pressure at the wellhead still increase the fluid pressure within the formation and thus can induce earthquakes." (USGS website, accessed 5/22/2017.)

Please explain why it is assumed here that the proposed wells cannot induce earthquakes, given the presence of relatively soft rock strata and geologic faults within and adjacent to the project area.

5. The USGS has developed methods to estimate the risk of such wells causing earthquakes. These methods have not been applied here. (USGS website, accessed 5/22/2017.)

Please clarify whether earthquake risk evaluation methods have been applied here and state the results of such evaluations.

6. The permit application does not incorporate recent studies showing that water moves between aquifers to a much greater degree than previously thought.

<http://www.nature.com/ngeo/journal/vaop/ncurrent/full/ngeo2943.html>

The permit application assumes that the relatively thin “confining” strata do not allow mixing of water from the various permeable strata. Please re-evaluate in light of this new research or explain why such analysis is not needed here.

7. I also notice that the permit application makes no mention of a fault lying within the project area, which is described in *Stratigraphic and Structural Controls of Uranium Deposits on Long Mountain, South Dakota*, by William A. Braddock, US Geological Survey Bulletin 1063-A, 1957, page 51.

Why was the presence of this fault omitted from the application?

8. Regarding the surface-application alternative. The proposal is to fence the area where contaminated water will be applied to keep out livestock and people. How will you assure that deer and pronghorn do not enter this area and consume grass with high levels of arsenic and radioactive elements, which can then enter the human food chain via hunting and consumption of these animals?

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████████████████████

████████████████████

# Dewey Burdock Class 3 and Class 5 Injection Wells - Public Testimony

June 19, 2017

**TO:**

Valois Shea ([shea.valois@epa.gov](mailto:shea.valois@epa.gov))

U.S. EPA Region 8

Mail Code: 8WP-SUI

1595 Wynkoop Street

Denver, CO 80202-1129

**FROM:**

Linsey McLean



## General Considerations of Permits for Class 5 and Class 3 mining wells for Dewey Burdock

- EPA should require thorough borehole identification and plugging prior to issuing a permit, as there are currently 7,650 old boreholes that have not been closed or have been closed incorrectly (ie. with fence posts, or pie plates with a rock on top).
- EPA should require the additional pump tests that will be necessary (the existing data is admittedly incomplete) – NRC is requiring these tests prior to operations – EPA should hold the same requirement prior to full permitting under UIC (EPA should not be pressured to permit this project in order to obtain the necessary data on its environmental safety parameters).
- This would be the first EPA-led Class 3 UIC permit ever issued for ISL mining. At the start of the Powertech application process, EPA met with Powertech representatives and worked to define key terms of the regulations without any involvement by Native American Tribes nor the public. We feel this was wrong and we ask for the EPA to begin developing a formal and standardized Class 3 UIC permitting process.



- If the the Class 3 permit is approved, the EPA should include a detailed analysis of current leaking abandoned mine impacts on groundwater, as well as locating and proper reclamation of all the open boreholes to repair the previously damaged confining layers, as the NRC has done.
- There is no description of the kind of wastes that might be injected in the Class 5 injection wells, nor toxic metals, so that correct monitoring for potential contamination of downstream private wells could be done. Currently, no documentation is required for incoming wastes, from other areas or countries, destined for the deep injection wells. This needs to be done as all of Powertech's wastewater will contain heavy metals, including unrecoverable organified uranium and other unrecoverable and un-filterable toxic and heavy metals, along with radioactive metals. Powertech's waste water does not qualify as non-hazardous. If it could be considered non-hazardous, then it would most certainly be used for agriculture or other purposes in this semi-arid climate (where clean water is always in demand). The “airing out” of radon from the waste water via evaporation ponds should not qualify as a corrective treatment for Class 1 radioactive and heavy metal waste into Class 5 deep injection wells. The lack of information in the Powertech application, with so many blanks to be filled in later, says to oversight regulatory agencies “Just give us the permit and we will fill in the blanks later”, which was also advised by the corrupt DENR, of whom, who many are stock holders in Powertech. EPA should be where this buck stops.
- Additionally, Powertech did its measurement of groundwater flow from East to West (from Dewey-Burdock to Dewey-Burdock Terrace on the Wyoming side of the Black Hills) while the water, according to USGS maps, actually flows from West to East. Powertech and the state of South Dakota seem to entirely disagree with hydrological flows in the application area. EPA should require Powertech to do the correct water flow analysis, from West to East as the correct direction of water flow, and to monitor plumes from the Class 5 wells. <https://pubs.usgs.gov/wri/wri024094/pdf/wri024094.pdf>

## **General History of the Powertech Company and Current Status of Their Mining Permit from NRC.**

In the 1970's and 1980's, the Dewey Burdock area was, yet again, thoroughly investigated for potentially mineable uranium deposits, after the open pit mining of the roll front was completed in the 1960's. Uranium yellowcake was then going for \$100 / lb and in high demand. The Tennessee Valley Authority was hired by the US DOE to locate geological sources for uranium. TVA then drilled over 7650 test site

boreholes in Edgemont, in two investigative sessions, to locate more recoverable uranium during/for the Cold War. A test mining tunnel was even attempted, but caved in due to the extensive and volatile cave structures in the area. They even lost an excavator, it sunk right into the ground while parked in what they thought was a safe place, in the open air. The TVA abandoned the site altogether, twice, concluding that there was not enough recoverable uranium to warrant a mining project. Powertech tried to mislead the public by including focus on uranium levels tested in alluvial wells - instead of limiting tests to the proposed affected aquifers. The alluvial wells actually showed higher levels of uranium than the intended mined aquifers, which actually confirms the TVA's conclusion that the roll front uranium deposits were gone. Powertech was falsely trying to claim the alluvial deposit concentrations as part of the deposits they would be mining. Alluvial wells are not mineable as they cannot be confined, composed mostly of surface water.

Like many mining companies in Canada, where the laws are lax, Powertech was formed by a hedge fund in Vancouver about 1990, that has absolutely no experience or history in mining of any kind. They intended Powertech as an investment vehicle.

The ten people who had shares in Powertech began to manipulate the reports about the company in order to raise the stock share price. They first operated out of Colorado, attempting to start a uranium mining operation there. They drilled some test holes and damaged local water supplies. They were immediately sued by angry local home owners. The lawsuits ended up at the supreme court level of Colorado, where they lost. The governor of Colorado and the legislature passed some restrictive mining laws and virtually forced Powertech out of Colorado. For this history, please consult [powertechexposed.com](http://powertechexposed.com).

Powertech then showed up in South Dakota, where they induced the legislature to pass SB 158 in 2011, which negated all of the uranium mining controls that we had in South Dakota at the time. A substantial number of legislators, state officials, Fall River County officials, and prominent people in South Dakota were induced to buy the stock at \$20 per share, with promises that the stock would be expected to go to \$600. per share. Over the years, 420 million shares of stock were issued and \$68 million were run through this small company, sold worldwide on the Toronto Stock Exchange. Sole revenues for Powertech were and still are, stock sales, with promising sounding "forward looking" press reports, while attempting to get various mining permits. They were granted a conditional NRC permit, but have never been able to use it because they have never complied with the conditions for use. Currently that permit is on hold indefinitely from NRC. There are two more permits needed from the state of South Dakota, requiring a mining permit public hearing and a water use permit public hearing, that are tabled pending the NRC and the EPA rulings.

The TVA documents attached show that the Fuson shale is a leaky aquitard and the main reason that ISL mining was not considered at Dewey Burdock, causing the TVA to abandon the site after 10 years and 2 explorations. This was never a viable site to mine uranium from the beginning.

This company is inexperienced in mining, grossly underfunded, and nearly bankrupt, with stock prices currently in the 2 cents per share range. Historical investors have all lost their money.

### **The Science Against Injection Wells in this Proposed Area (Dr. LaGarry and Dr. Moran)**

Testimony of Dr. Hannan LaGarry, geologist stratigrapher, to NRC and ASLB 2014, shows that there are extensive fractures, fissures, sinkholes and breccia pipes in the area that dramatically increase permeability within confinement layers. These geological features go unrecognized by Powertech.

Powertech was “cherrypicking data” (selecting a non-representative sample to incorrectly represent the whole) from the first TVA exploration in the 1950’s and 60’s, carefully selecting only the data that supported their project. They were not even in possession of the latest exploration TVA data from the 1970’s and 80’s when they submitted their permit requests. Powertech just obtained those documents in May of 2014. In the discovery of that data in the NRC/ASLB hearing of 2014, Dr LaGarry found that the drillers logs, notes and hydrological pump tests “did not provide a scientifically recognized analysis that can support any hydrogeological conclusion about the project area”. He also concluded that “The NRC ‘spot check’ of 37 random data points does not provide a statistically reliable testimony or basis for any conclusions regarding confinement or hydrology.”

Dr. LaGarry also added “NRC Staff presents no basis for its so-called “random” selection. Without such information, professionals in my field cannot accept such assertions where it is possible that the limited data set resulted in poor methodology that is the hallmark of modern junk science. Having examined only 37 data points out of thousands available, NRC would have failed my Math 123 Introduction to Statistics class. None of my student researchers would be allowed to publish or present their research findings had they made such a fundamental error.”

Dr. Robert Moran’s, hydrologist, testimony before NRC/ASLB thoroughly established that, “Dewey-Burdock uranium ore zones are not hydraulically - isolated from other geologic units, other aquifers, or zones outside the project area.” He provides many

examples of what he refers to as, “NRC Staff disregarding the conclusions of numerous hydrogeologic experts (both Powertech-funded and independent).

## **The Quantity of Injection Wells Requested for Waste is Ridiculous**

Powertech/Azarga is asking for 4 Class 5 UIC deep injection wells for hazardous waste deposition, into the Minnelusa aquifer, with a reserve request for 4 more of the same “in case they find the they need them”. They say they need 2 of these “right away”. Powertech/Azarga will operate 14 well fields total. The Minnelusa aquifer is a major drinking water aquifer in the Black Hills. To say that it is not, is not correct.

For comparison, Crow Butte ISL uranium mine in Crawford, Nebraska, operated 11 well fields for 20 yrs using a single UIC hazardous waste deep injection well for deposition of their toxic wastes. Dewey Burdock originally requested a total of 8 UIC hazardous waste deep injection wells, but EPA is only permitting 4, still too many for a non functional, no profit mine, two of which are requested to be drilled right away. (Really? What do they need them all for? No work has been done to find and properly close any of the old borehole sites that is required by NRC, followed by adequate pump testing to make sure that the aquifer is contained prior to actively mining. EPA is not requiring borehole closure for the injection wells. This spells certain “disaster” even more.) It is estimated that this work will take approx. 3 years before any mining can take place.

By the numbers: Smith Ranch in WY :10 well fields, one deep injection well Crow Butte, Ne : 11 well fields, one deep injection well for 20 yrs. Willow Creek, composed of two sites, Christensen Ranch and Irigary- 2 injection wells.

Powertech/Azarga has also applied for Class 3 injection wells for 14 well fields. This will be an additional 84 injection wells that will be receiving rock dissolving chemicals/lixivients for production. Normally a well field contains one production well for extraction surrounded by 6 injection wells. Further, the 14 production well fields are not on a uranium rich roll front, as per TVA documents. (uranium ISL mines are typically situated on a uranium rich roll front so that extraction is efficient and the mine is profitable. Remember, the roll front was found by TVA to be mined out prior by surface mining) Where did the increased number of wells come from up to 4,000?

The 4 hazardous waste deep injection wells in the area are destined for the Minnelusa aquifer, a drinking water aquifer in the Black Hills. Normally, UIC hazardous waste deep injection wells are drilled “below” aquifers, not “in” them. The hazardous waste injected into the aquifer will travel hundreds and even thousands of

miles and contaminate other aquifers that are connected, and ultimately the huge Ogallala Aquifer that services the entire central US. In addition, these hazardous waste wells will legally be able to take in the water of the hazardous wastes, containing radioactives, with toxic and heavy metals from other mining sites, to make our aquifers a toxic waste dump, and ruin the water we have there. Since the wastewater will contain radioactives and toxic heavy metals, the ultimate destination as to which class of deposition well is required, is determined by the proximity of the drinking water aquifer near it, above or below. Powertech /Azarga has played a semantics game with the determination of the class of disposal well required, however the toxicity of the ultimate wastewater is still the same. Nowhere can I find where Class 1 waste waters were ultimately dumped into a class 5 injection well.

The claim that Powertech/Azarga is going to treat the wastewater first to “purify” it to classify for the Class 5 deep injection regulations, does not include the inability to extract radioactive organified metals that are now found in wastewater by ISL in several studies, notably uranium. By regulation, Class 5 waste waters can only be as toxic as storm sewer waters. This wastewater is hardly that. Radioactive organified metals and metallic salts in this wastewater make this waste water unusable for even agricultural purposes, as it would be in this dry uplift area where water is “blue gold”, if it were as “pure” as the company says it is. Better technology today shows us the flaws of obsolete testing and regulations today, and why we see such horrid toxicities in Nature at mining sites. The company has not shown any technology that could be effective in processing this wastewater to be safe for a Class 5 well. And the extra great expense of this processing will cost the profitability of the project dearly. They already cannot pay their mining land leases and are essentially bankrupt going in to this project.

## Injection-Induced Earthquakes

A July 2013 study by US Geological Survey scientist William Ellsworth links earthquakes to wastewater injection sites. In the four years from 2010-2013 the number of earthquakes of magnitude 3.0 or greater in the central and eastern United States increased dramatically. After decades of a steady earthquake rate (average of 21 events/year), activity increased starting in 2001 and peaked at 188 earthquakes in 2011. USGS scientists have found that at some locations the increase in seismicity coincides with the injection of wastewater in deep disposal wells. Injection-induced earthquakes are thought to be caused by pressure changes due to excess fluid injected deep below the surface and are being dubbed “man-made” earthquakes.

<http://people.uwec.edu/piercech/HazwasteWebsSp04/DeepWellInjection/DeepWellInjection.htm>



## References:

### [High-rate injection is associated with the increase in U.S. mid-continent seismicity](#)

Barbara A. Bekins, and Justin L. Rubinstein Abstract An unprecedented increase in earthquakes in the U.S. mid-continent began ... in 2009. Many of these earthquakes have been documented as induced by wastewater injection. We examine the relationship between wastewater injection ... and U.S. mid-continent seismicity using a newly assembled injection well database for the central and eastern United States. We find that the entire ... increase in earthquake rate is associated with fluid injection wells. High-rate injection wells (>300,000 barrels per month) are much more likely to be ...

### [Induced Earthquakes](#)

The primary cause of the recent increase in earthquakes in the central United States. Wastewater disposal wells typically operate for longer durations and ... injection wells induce earthquakes. Most injection wells are not associated with felt earthquakes. A combination of many factors is necessary for injection to ... induce felt earthquakes. These include: the injection rate and total volume injected; the presence of faults that are large enough to produce felt ... earthquakes; stresses that are large enough to produce earthquakes; and the presence of pathways for the fluid pressure to travel from the injection ...

### [Injection-induced earthquakes](#)

Abstract Earthquakes in unusual locations have become an important topic of discussion in both North America and Europe, owing to the concern that ... and underground mining, withdrawal of fluids and gas from the subsurface, and injection of fluids into underground formations. Injection-induced ... production of oil and gas from previously unproductive formations. Earthquakes can be induced as part of the process to stimulate the production from tight ... associated with industrial activity, with a focus on the disposal of wastewater by injection in deep wells; assess the scientific understanding of induced ...

### [A Century of Induced Earthquakes in Oklahoma?](#)

related to oil production, particularly disposal of wastewater in deep injection wells, are known to potentially cause earthquakes. Prior to the ... Release Date: October 26, 2015 The rate of earthquakes has increased sharply since 2009 in the central and eastern United States, with growing ... evidence confirming that these earthquakes are primarily caused by human activity, namely the injection of wastewater in deep disposal wells. The rate of ... earthquakes has increased sharply since 2009 in the central and eastern United States, with growing evidence confirming that these earthquakes are ...

### Sharp increase in central Oklahoma seismicity 2009-2014 induced by massive wastewater injection

data required to unequivocally link earthquakes to injection are rarely accessible. Here we use seismicity and hydro-geological models to show that ... earthquakes to distances of 35 km, with a triggering threshold of  $\sim 0.07$  MPa. Although thousands of disposal wells may operate aseismically, four of ... Sharp increase in central Oklahoma seismicity 2009-2014 induced by massive wastewater injection Science By: Kathleen, M. Keranen, Geoffrey A. Abers ... , Matthew Weingarten, Barbara A. Bekins, and Shemin Ge

### **The Proximity of Igloo, Black Hills Army Depot/Black Hills Ordnance Depot**

- The Black Hills Ordnance Depot was officially designated in February 1942 in Fall River County. The site consisted of 21,095.85 acres, and was utilized for long-term storage of ammunition. In August 1962, the site was renamed the Black Hills Army Depot. The facility was developed with industrial storage, administrative buildings, housing, and related support facilities and utilities. The Depot was used for the receipt, storage, maintenance, inspection, testing, restoration, issuance and shipping of ammunition, propellants, and chemical toxics, the unpacking and functional packing of small arms ammunition, and the demilitarization of unsafe, obsolete and surplus ammunition, chemical ammunition, ammunition components, chemical toxics and general supplies. On June 30, 1967, the Black Hills Army Depot was closed and in 1968 was declared surplus by the Department of the Army. The City of Edgemont, South Dakota, purchased all land within the boundary fence and the remainder of the former site was transferred to the United States Forest Service. Currently, the entire site is used for livestock grazing. In 1981 a study conducted by Ecology and Environment, Inc. determined that a change in land use which would generate direct human contact, such as housing or crops for human consumption, should be avoided.
- 368,000 tons of various kinds of nerve gas is stored underground and dumped in 200 miles of trenches on the 21,000 acre site. BHAD contaminants are: Sarin, Soman, Toban, GB, VX, Lewisite, Mustard Gas. Phosgene, as well as a host of very lethal things recovered from Germany at close of WWII. These canisters were soaked in ice water overnight so they could be opened, and a stabilizer added that would stabilize for just 10 to 15 years, according to the files, but that was back in the 1950's. Obviously, these nerve gases, which are both oil and water soluble in now unstable canisters should not be disturbed by pressurized injections known to cause earthquakes, or with remainder corrosive lixivients that

would harm the fragile canisters. at least some of the old boreholes were described by the TVA were directly into the tunnel structures.

- Additionally, great numbers of UOX/ unexploded ordinance including rockets, hand grenades, bombs, land mines etc., are also buried there. The combination of these UOX and the toxic nerve gasses together spells something like an Armageddon if the site were disturbed by anything at all that would have even the remotest possibility of releasing this monster of a mess.
- Sandia Labs has several reports on the dangers of chemical warfare agent bombs using M-55 rockets that are destabilizing and auto igniting. Too dangerous to move. Studies of this problem were commissioned by Congress. Circa 1994. Here is a link to the complete report <https://www.nrc.gov/docs/ML1305/ML13053A145.pdf>
- US Senators Larry Pressler and Tom Daschle both received classified briefings by the Pentagon on the dangers of the BHAD. Both are living in the Washington DC area.
- When one considers that the Wind Cave Structure lies beneath the depot, one comes to the inescapable conclusion that we should never disturb this area with any mining activity or injection wells. The Wind Cave Structure is huge and not even fully explored or mapped.
- There have been leaks documented in the area already, ranchers have sustained episodes of livestock deaths and wildlife deaths in the depot area from time to time. A rancher who owned a creek on the east side of the depot lost 1200 sheep in a four day period one spring.
- The 4,000 foot Madison well at Igloo is already showing increased levels of arsenic, radioactivity and other heavy metals. Since the U.S. Army insists that the Black Hills Army Depot was not a nuclear or atomic site, I feel that the increased levels of heavy radioactive metals and arsenic are from the older uranium mines in the area from the 1950s has begun to enter the aquifer.
- If we disturb the area with injection wells, bore holes etc., and force toxic sludge under pressure into the underground areas riddled with the massive Wind Cave structure, we will get the BHAD contaminants moving in the plume. These are soluble in oil and water. Deep injection wells will unleash a catastrophic moving lethal torrent underground that will kill everything it touches, borne by oil and water wells. That plume will flow directly towards the city of Hot Springs, poisoning the local Minnelusa wells, of which 22 on the west side are now under

monitor for possible class action suites.

- The plume will also contaminate the municipal water of that city which is a mixture of all the aquifers, according to the water engineer of Hot Springs, and Evans Plunge - the 100 yr old natural hot springs swimming pool that is a local and tourist attraction. The state shows anywhere from over 100 to a possible 1000 Minnelusa wells in the Hot Springs area and Fall River County, where the plume will flow, and possibly to Custer County as well. The state of SD only began keeping records of wells in the recent past, so there are many undocumented domestic wells where people do not even know what aquifer their wells are in or how deep they are. They will not know that they are drinking hazardous waste until their cattle all die and they get cancer. Poisoning a whole city and county should be fresh on the minds of the EPA from the Flint, Michigan fiasco, my home town.
- The 22 domestic wells recently tested all showed very low uranium levels and low to very treatable TDS, and all families but one were drinking the water, with only one using a softener and several just a sediment filter. Nobody was using an RO.
- If the TDS elevates, the water will not be treatable and will contain high levels of organified uranium from the wastewater plume, an obvious tracer to the deep injection wells, since a baseline has now been established. Powertech/Azarga and the EPA will be the targets of a massive lawsuit, with the mining co undoubtedly filing bankruptcy, as they are known to do, and leaving EPA holding the bag for monetary claims.
- The wastewater from Dewey Burdock mines will undoubtedly contain an even higher level of organified and unrecoverable uranium than that already documented from other ISL mine sites, because of the open boreholes contaminating the aquifers with micro organisms that are known to organify metals. Other organified toxic metals will also be elevated, increasing the toxicity of such by increased bioavailability and biochemistry in the living body.

### **Basis for My Testimony as Expert in Field**

As an environmental biochemist working with toxic exposures in both animals and humans for the last 40 years. I was born and raised in Flint, Michigan, lived there for the first 55 years of my life with over 450 Class 7 industrial dumpsites in each of the counties in SW Michigan. So I am well acquainted with environmental contamination of all kinds. This is the reason, actually, that I sought my course of study, and pursued a

career in the effects of environmental pollution on the living body of both humans and animals. I am also a federally approved expert witness.

I have collected the largest databank for hair analysis monitoring of metals and minerals of anyone in the world since 1977. This databank follows the continuing increase in environmental toxins in air, water and food residues over the last 50 years, and correlates with disease and health compromise symptoms and syndromes. To date, I have one Canadian and 7 U.S Patents for products and protocols addressing health compromises from environmentally driven diseases in both humans and animals, including one for the only diet protocol that has ever earned a U.S Patent. This diet program resulted from my research from the 1970's, 1980's and 1990's, and underlies all the popular and effective diets of today featuring low carbohydrate, high protein, and high monounsaturated healthy vegetable oils, including the Atkins Diet, the South Beach Diet, the Zone Diet, the American Diabetes Association Diet, the Mediterranean Diet, etc. The foundation of this revolutionary approach is designed to fuel biochemical energy pathways while supporting compromised biochemical pathways, including hormone pathways, and also addressing detox of the interfering environmental chemicals, so that normalization of biochemistry is achieved. I have served in Michigan as an expert witness in state courts in environmental pollution and dumping cases and as expert witness in South Dakota in state and federal (NRC) hearings in the Dewey Burdock case for ISL uranium mining.

## **The Non Radiological Effects of Uranium**

Inorganic forms of minerals, especially selenium and uranium, as well as other heavy metals, which consistently test high in aquifers post mining, have shown to be toxic to living systems of plants, animals and humans in very low levels. Uranium toxicity at low levels has shown in population statistics of exposed population such as Native Americans on contaminated and exposed reservations downwind and downriver from old exposed uranium mines to be more predisposed to chronic conditions such as: metabolic syndromes, diabetes, behavior and sleep problems, obesity and heart disease, fertility, and morbidity and mortality compromises. These are non radiological effects of uranium discussed, in that uranium as a metal actively incorporates itself into the biochemistry of the body. The radiological effects are another subject, not involving the actual chemical reactions such are described here.

Reference:

**Heavy metal uranium affects the brain cholinergic system in rat following sub-chronic and chronic exposure**

“Previous studies have shown that uranium is present in the brain and alters behavior, notably locomotor activity, sensorimotor ability, sleep/wake cycle and the memory process, but also metabolism of neurotransmitters. The cholinergic system mediates many cognitive systems, including those disturbed after chronic exposure to uranium i.e., spatial memory, sleep/wake cycle and locomotor activity.”

<https://www.ncbi.nlm.nih.gov/pubmed/19409444>

**Uranium is known to travel through the blood to virtually every tissue and organ system in the living body through active transport by blood.** It will reduce and for solid precipitates in the hard tissues of the body like bone and also cause kidney stones and kidney disease and the precipitates enlarge with time and chronic exposure. Binding with bicarbonate in the body will also compromise the body's ability to neutralize acids, predisposing to gastric ulcers as well as various muscle pains, cramps and spasms. Highly acidic bodies with compromised acid neutralization abilities, such as contamination with compromising uranium ions, will have higher agitation levels and volatility of behavior. Uranium ions in the liver will compromise blood sugar regulation, causing increased cravings for sugars in the diet, leading to diabetes, metabolic syndromes and obesity, as carbohydrate metabolism is compromised. Further, as blood sugar lacks internal regulation, alcohol and drug use is elevated in statistics, as the body struggles to “just feel good for a little while”. Increased cancer rates are observed with uranium exposure as well as reproductive toxic effects with DNA breakage observed. Compromise to the connective tissues of the body, that cover virtually every surface in the entire body, produce autoimmune diseases such as crippling Lupus. This is exactly what we are seeing in population health statistics on the reservations affected. Further, the toxic effects of uranium are greatly enhanced in the presence of calcium ions, which are known to be generated in ISL mining as well as in runoff waters of the Rocky Mountains over old uranium open pit mines. The Rocky Mountains are high reservoir of calcium carbonate, so ISL mining waters containing uranium as they are known to do, will have even more toxic effects in synergy than what would be expected and predicted of each separately.

Reference:

**Medical Effects of Internal Contamination with Uranium**

Croatian Medical Journal v.40, n.1, Mar99 Asaf Duraković

Department of Nuclear Medicine, Georgetown University School of Medicine, Washington D.C., USA

**“Uranium as a heavy metal is of particular importance as a complex of uranium and bicarbonate ions, which increases the solubility of uranium in serum. This compound is rather insoluble in water due to the complex ion formation between uranium and bicarbonates. This mechanism determines the**

**transport of ultra filterable uranium from the sites of contamination to the tissues and target organs (8). In blood, the uranium-bicarbonate complex establishes an equilibrium with non-filterable protein-bound uranyl ions, with 60% of uranium bicarbonate-formed and 40% protein- formed (9). In other studies, 74% of uranium in blood was present in the inorganic compartment of plasma, 32% was protein-formed, whereas 20% was associated with red blood cells (10). Uranyl salt complexes with bicarbonates are less stable than uranous salt complexes. Reduction of uranium in plasma is not probable, while the uranous salts can be reduced in the intracellular environment (11). Uranous (IV) retention sites are the bone and kidney, whereas uranyl (VI) ions accumulate in the liver and spleen prior to their redistribution in the renal and skeletal system.”**

“Each of the uranyl ions are complexed by two phosphate ions on the surface of bone crystals, with simultaneous release of two calcium ions. The uranous ion produces a toxic effect on the living cells by inhibiting the processes of metabolism of carbohydrates by the inhibition enzyme systems. A uranyl ion replacing a magnesium ion binds the ATP molecule to hexokinase. ATP-uranyl-hexokinase complex blocks the release of phosphate to glucose, inhibiting its first step of metabolic utilization with non-metabolized glucose in the extracellular environment (12). The toxic effects of uranium were shown to be enhanced by the administration of calcium (33). The effects of uranium on the nervous system have been described as paralysis of the hind legs, blindness, and loss of coordination in rabbits in the terminal phase of intoxication (52). Most recent studies indicate significantly higher prevalence of malignant diseases in uranium workers (59), with increased mutations in underground miners (60) and connective tissue disease, including lupus erythematosus (61). Reproductive toxicity of uranium in a recent Chinese study includes chromosome aberrations in spermatogonia, causing DNA alterations in the spermatocytes and strand breakage in sperm (62).”

**All metals/minerals have a relationship to each other in Nature.** They balance each other. Too much of one will have a negative effect on the other. For good health, they all need to be in proper balance. Heavy metals generated from mining are many, and will compromise many essential minerals for health. When one mineral or metal is too high, it will exert a repressive effect upon its counterpart metal or mineral, causing a deficiency or imbalance. Since minerals are known to fuel enzyme systems in the body, and the living body is dependent upon enzymes for life itself, compromise of any enzyme system can cause severe health consequences and even death. The toxic heavy metals generated in ISL mining are shown in an overlay to accurately depict the interference of those toxins on the natural system and their impact to all living things, even plants. See slides 1-3

Inorganic salts of metals most prominent in aquifers, also have different toxicities, and any monitoring of aquifers should include speciations of these different forms so that proper toxicity evaluation can be done. Simply giving the absolute levels of a metal does not tell the whole story. All metallic “salts” are not equal. They can have different solubilities, different melting points, different Ph, different conductivity affecting the central nervous system that relies on electrical signals, and totally different chemistry within the living body. Further, any discussion to the general lay public needs to distinguish between a chemical metallic salt and ordinary table salt, that the public is led to believe will be created as “salt” in a mined aquifer. Slide 4 shows the many species/ chemical forms that a metal can take upon exposure to oxidation/reduction reactions typical within an ISL mining aquifer. Typically, speciation testing, even if monitored by the mining company, is not made available to the public. Selenium is the example, but all metals do this.

### **The difference between inorganic and organic compounds:**

Organic compounds always contain carbon, while most inorganic compounds do not contain carbon. Also, almost all organic compounds contain carbon-hydrogen or C-H bonds. Organic chemistry is “The Chemistry of Life”. Metals in an inorganic form have significantly different chemistry in the living body from organically bound minerals. Organic forms of uranium as well as other toxic metals have also been shown to exist in mining areas and they are not known to be recoverable by the ion exchange method of ISL recovery, since it is already bound organically and will not bind to the organic synthetic resins. Organic forms of any heavy metal are known to be much more toxic and much more bioavailable, so that they are able to penetrate the lining of the digestive tract much easier than ionic and inorganic salts that are blocked by their electrical charges. Organic metals have their electrical charges spread over the organic ligand they are bound to, so that they act as a “chelate”, something that the health industry does to minerals to significantly improve absorption of essential minerals, and also make them much more able to enter into direct biochemical reactions in the living body. Organically bound metals under this circumstance, and there is plenty of organic carbon naturally existing with ISL mining sites to make this a complication, will continue to increase in the waste water of the ISL mine as they are **not recoverable, adding to the metal burden of the wastewater and also the toxicity of such beyond what would be if the metals remained in an inorganic and ionic form.**

Reference:

#### **Problems with Ion Exchange in Water Purification**

“Ion exchange is another method used successfully in the industry for the removal of heavy metals from effluent. An ion exchanger is a solid capable of exchanging either cations or anions from the surrounding materials. **Commonly used matrices for**



ion exchange are synthetic organic ion exchange resins. The disadvantage of this method is that it cannot handle concentrated metal solution as the matrix gets easily fouled by organics and other solids in the wastewater. Moreover ion exchange is nonselective and is highly sensitive to the pH of the solution.”

Arabian Journal of Chemistry

Volume 4, Issue 4, October 2011, Pages 361-377

(Kurniawan et al., 2006)

<http://www.sciencedirect.com/science/article/pii/S1878535210001334>

**On the other hand, binding natural essential minerals to organic molecules will make them more bioavailable as well, and so much better able to enter the living body.** We use that chelation process to enhance nutrition for essential minerals.

**25 controlled studies by different authors in five different countries adverse array of data is presented.** These data validate the effectiveness of mineral nutrients presented as amino acid chelates when compared with the ionic forms derived from the inorganic salts. These studies further support the results of numerous laboratory experiments showing increased absorption, assimilation and reduced toxicity of the forms of minerals chelated to amino acids. With little cost and effort animals can be supplemented with amino acid chelates which will promote, with little risk of overdose, a fuller genetic potential achievement as far as mineral requirements are concerned. Results of this supplementation are reflected in increased growth, immunological integrity and more consistent reproduction increased ovulation and conception after first service as a result of increased bioavailability of these. See slide 5

Reference:

**Chelated Minerals in Animal Nutrition**

Rajendran, C.Kathirvelan and V.Balakrishnan, Madras Veterinary College, Chennai, INDIA

[www.pitt.edu/~super7/32011-33001/32391.ppt](http://www.pitt.edu/~super7/32011-33001/32391.ppt)

### **The Jeckyll and Hyde personalities of minerals**

Even the minerals that we consider necessary for the living body will have different biochemical actions and tissue and organ destinations in the living system. Common case in point: selenium. Selenium is known to have wonderful health effects, preventing cancer, converting the storage form of the thyroid hormone T<sub>4</sub>, to the active form T<sub>3</sub> by virtue of fueling an enzyme glutathione peroxidase. This biochemical reactions is absolutely essential to life. Glutathione also doubles as the most powerful antioxidant in the body. Inorganic selenium, as is the form generated in ISL mining, is known to cause birth defects of the highest severity. However, in the inorganic state,

selenium as a consequence of mining, is severely toxic, producing severe deformities. The higher evolved animals above micro organisms are not able to convert quantities of the inorganic forms of minerals, even essential ones like selenium, into the bio compatible organic forms.

### **How inorganic metals are organified by microorganisms that contaminate aquifers from open boreholes, and surface waters and lands**

See slides 6 and 7

### **Bioaccumulation of organified heavy metals rises quickly in the living systems and the environment, rising up the food chain.**

Elemental inorganic forms of metals and minerals are “organified”, bonded with carbon compounds to become organic forms by micro organisms, which are then eaten by simple life forms, which are then eaten by higher animals, and so on, all the way up to man and other top predators at the top of the food chain. As these metals and minerals pass from one body to the next, they are known to concentrate as they move up, with humans and other top predators then suffering the worst consequences from the highest concentration in their tissues and organs. There can be formed many different kinds of organic metal compounds, however, all are not equally bio essential, some are even more toxic as the living body cannot convert them. This will depend on which micro organisms are organifying the metals into which compounds.

See slides 8, 9 and 10

Evidence for naturally occurring organified uranium has been found in significant levels in roll fronts.

### **Biogenic non-crystalline U(IV) revealed as major component in uranium ore deposits**

Amrita Bhattacharyya, Kate M. Campbell, Shelly D. Kelly, Yvonne Roebbert,  
Stefan Weyer, Rizlan Bernier-Latmani & Thomas Borch  
<http://www.nature.com/articles/ncomms15538>

SLAC Study Helps Explain Why Uranium Persists in Groundwater at Former Mining Sites

**New Details About Uranium Chemistry Show How It Binds to Organic Matter**

Article ID: 668799

Released: 2-Feb-2017 2:05 PM EST

Source Newsroom: SLAC National Accelerator Laboratory

<http://www.newswise.com/articles/slac-study-helps-explain-why-uranium-persists-in-groundwater-at-former-mining-sites>

Newswise — Decades after a uranium mine is shuttered, the radioactive element can still persist in groundwater at the site, despite cleanup efforts.

A [recent study](#) led by scientists at the Department of Energy's SLAC National Accelerator Laboratory helps describe how the contaminant cycles through the environment at former uranium mining sites and why it can be difficult to remove. Contrary to assumptions that have been used for modeling uranium behavior, researchers found the contaminant binds to organic matter in sediments. The findings provide more accurate information for monitoring and remediation at the sites.

The results were published in the *Proceedings of the National Academy of Sciences*. In 2014, [researchers at SLAC's Stanford Synchrotron Radiation Lightsource \(SSRL\)](#) [began collaborating](#) with the [DOE Office of Legacy Management](#), which handles contaminated sites associated with the legacy of DOE's nuclear energy and weapons production activities. Through projects associated with the [Uranium Mill Tailings Radiation Control Act](#), the DOE remediated 22 sites in Colorado, Wyoming and New Mexico where uranium had been extracted and processed during the 1940s to 1970s.

Uranium was removed from the sites as part of the cleanup process, and the former mines and waste piles were capped more than two decades ago. Remaining uranium deep in the subsurface under the capped waste piles was expected to leave these sites due to natural groundwater flow. However, uranium has persisted at elevated levels in nearby groundwater much longer than predicted by scientific modeling.

In an earlier study, the SLAC team discovered that uranium accumulates in the low-oxygen sediments near one of the waste sites in the upper Colorado River basin. These deposits contain high levels of organic matter—such as plant debris and bacterial communities.

During this latest study, the researchers found the dominant form of uranium in the sediments, known as tetravalent uranium, binds to organic matter and clays in the sediments. This makes it more likely to persist at the sites. The result conflicted with current models used to predict movement and longevity of uranium in sediments, which assumed that it formed an insoluble mineral called uraninite.

Different chemical forms of the element vary widely in how mobile they are—how readily they move around—in water, says Sharon Bone, lead author on the paper and a postdoctoral researcher at SSRL, a DOE Office of Science User Facility.

Since the uranium is bound to organic matter in sediments, it is immobile under certain conditions. Tetravalent uranium may become mobile when the water table drops and oxygen from the air enters spaces in the sediment that were formerly filled with water, particularly if the uranium is bound to organic matter in sediments rather than being stored in insoluble minerals.

“Either you want the uranium to be soluble and completely flushed out by the groundwater, or you just want the uranium to remain in the sediments and stay out of the groundwater,” Bone says. “But under fluctuating seasonal conditions, neither happens completely.”

This cycling in the aquifer may result in the persistent plumes of uranium contamination found in groundwater, something that wasn’t captured by earlier modeling efforts.

“For the most part, uranium contamination has only been looked at in very simple model systems in laboratories,” Bone says. “One big advancement is that we are now looking at uranium in its native environmental form in sediments. These dynamics are complicated, and this research will allow us to make field-relevant modeling predictions.”

The study combined the expertise of researchers at SLAC, Pacific Northwest National Laboratory and the Canadian Light Source. The research team used a blend of techniques to analyze samples of sediments in the experiment. They performed X-ray spectroscopy at SSRL to identify the chemical form of uranium. Capabilities at the Canadian Light Source and at the Environmental Molecular Science Laboratory (EMSL) at Pacific Northwest National Laboratory were used to map the locations of the elements in the samples at the nanometer scale. This additional information allowed the researchers to determine whether or not the uranium was bound to carbon-containing, or organic, materials. SSRL and EMSL are DOE Office of Science User Facilities.

The DOE Office of Science funded the project.

SLAC is a multi-program laboratory exploring frontier questions in photon science, astrophysics, particle physics and accelerator research. Located in Menlo Park, Calif., SLAC is operated by Stanford University for the U.S. Department of Energy's

Office of Science. For more information, please visit [slac.stanford.edu](http://slac.stanford.edu).

SLAC National Accelerator Laboratory is supported by the Office of Science of the U.S. Department of Energy. The Office of Science is the single largest supporter of basic research in the physical sciences in the United States, and is working to address some of the most pressing challenges of our time. For more information, please visit [science.energy.gov](http://science.energy.gov).

### See Original Study

[www.pnas.org/content/114/4/711.abstract](http://www.pnas.org/content/114/4/711.abstract)

**Selenium is a poorly regulated heavy metal, and difficult to regulate as far as toxicity and allowable levels are concerned, because of the myriad chemical forms that it can exist in, each with different toxicity.** The same can also be said for every other toxic metal as well as nutritional metal. The Jeekyll and Hyde personalities of these elements is a very real thing in the natural world. Slide 11 shows the incongruencies between actual toxicities of some chemical forms of selenium and the regulatory levels. Most toxicity level charts fail to take into consideration the chemical forms of metals and minerals, which is absolutely critical in assessing any toxicity status. Care for patients suffering from selenium poisoning is usually aimed at treating symptoms. There is no specific antidote or treatments for selenium poisoning.

Selenium from mining waste is highly mutagenic. Slides 12 through 19 show the mutations of selenium in old mining sites.

Reference:

### Upper Human Limits for All Minerals and Metals

<http://iom.edu/Activities/Nutrition/SummaryDRIs/~media/Files/Activity%20Files/Nutrition/DRIs/ULs%20for%20Vitamins%20and%20Elements.pdf>

**Arsenic is another major pollutant.** Unlike selenium, which has a value in certain chemical forms as a health and life biochemistry promoter, arsenic has not been found to have any health value outside of its use as a parasiticide, and even that use can have toxic consequences. Slide 20 shows the major health effects of arsenic exposure.

Arsenic, in particular, is extremely dangerous in the world today, and especially North America, because arsenic opposes iodine on the mineral wheel, meaning that high arsenic causes iodine deficiency. Current research has shown that we need far more iodine than we thought we did for health, and we are not getting it in food or water, even

as we used to decades past, when iodine was used in food processing and water purification.

Arsenic has been rising in our environment and food supply because of the legal dumping of it into commercial fertilizers from mining and ore smelting waste since 1976 when it became legal to do so. In the 1980's President Reagan increased to legal limit of arsenic in public drinking water because the levels were rising so high, and arsenic is both difficult and expensive to remove from water, as mining reclamation efforts have shown.

Mother Nature, of course, does not necessarily agree that so much arsenic is safe! Arsenic compromises thyroid. Thyroid disease has escalated epidemically in the last 50 yrs since iodine was reduced in our food and water supplies. And today, as relevant for accelerated aging, each generation is not expected to live as long as its parents, and higher and higher statistics of formerly "old age" ailments are evident in younger and younger segments of the population, severely compromising our health care.

Arsenic will cause a physiological iodine deficiency by its opposing actions even if there is enough iodine in the diet to counteract general deficiency. Such is the case with all opposing metals and minerals of nutritional minerals. This is how things work in Nature and the living body. Metals like arsenic have their own set of compromising chemistries, but the opposition and interference chemistries of opposing metals and minerals presents a whole new set of pathways for health compromise, independent of the individual roles of the individual metals in actual biochemical reactions. So, but its opposing action on iodine, arsenic can precipitate a whole hypothyroid overlay on the living body, complete with all the health compromises that a hypothyroid body will manifest. Slide 21 shows the different LD 50 doses for different chemical forms of arsenic. LD 50 represents the level at which 50% of the animals are killed from the toxin presented. So this again shows the importance of different toxicities of different chemical forms. Slide 22 shows the comparison of the toxicity of arsenic relative to other common toxins. Slides 23-27 show arsenic effects in humans.

There is no specific treatment for chronic arsenic poisoning. Once it has been identified further exposure should be avoided. Recovery from the signs and symptoms may take weeks to months from when exposure is stopped. In particular, effects on the nervous system may take months to resolve and in some cases a complete recovery is never achieved.

### **Epigenetics, a newly recognized toxic compromise of DNA by heavy metals.**

Epigenetics is a new study looking at how heavy metals and other environmental toxins can and do affect the gene expression of DNA to cause potentially serious ill health compromises, even death. DNA is actually a set of switches which are found to be

controlled by chemical signals from the cell membrane of each cell, which are generated in response to the cell membrane's sensing of the environmental characteristics in the fluid surrounding it. Every living cell is actually floating in a body fluid called lymph. If the cell membrane senses that something is wrong, it sends a chemical signal to the cell nucleus and DNA there to adjust by turning on or off certain genetic switches. This is the living body's way of adapting to its surroundings for survival. This is evolution in progress.

Heavy metals have been found to both up regulate and down regulate DNA switches, and these switches tripped by epigenetic toxins can remain tripped into up to 5 generations hence, even if the original cause or toxin has been removed in the first generation. The implications for health and humanity for future generations considering epigenetics is mind blowing. Slides 28 - 32 tell the story of epigenetics and the impact on DNA expression, all the way to cancer.

### **Heavy metals also act as xenohormones and hormone disruptors in the living body.**

Our hormones are all stereoisomers, meaning atoms are arranged differently in 3 dimensional space, and are subject to the toxic effects of xenohormone environmental toxins. Heavy metals have been shown to act as xenohormones, entering into the cellular receptor sites and skewing the hormone biochemical pathways for Estrogen, Testosterone, Progesterone, Cortisol, Pregnenolone, Thyroid, DHEA, Insulin and more. Since hormones are key initiators, regulators and intermediary metabolites of virtually every biochemical reaction in the living body, the protection of their integrity is crucial for their actions. Heavy metals, environmental chemicals and industrial chemical wastes can act as "xenohormones", and interfere with natural hormones, enzymes, etc., and cause cancer and other severe ill health compromises.

Further, heavy metals are known to be "xenoestrogens", a hormone mimic of estrogen, the female and growth hormone. Estrogenic toxicity causes cancer, skin lesions, obesity, fertility problems, accelerated aging, liver problems, learning problems, mood disorders, metabolic syndrome, blood sugar irregularities, blood fat irregularities, increase in breast tissue and size in both males and females, smaller or even undeveloped male genitalia and higher anger and anxiety responses to daily life situations. Mineral imbalances caused by high levels of toxic heavy metals themselves, also are known to cause hormone imbalances of insulin, thyroid, testosterone, progesterone, estrogen and cortisol.

We see those very problems exemplified in the most toxic areas of the world, and in increasing statistics overall in the world, as environmental pollution moves around the world. All of the heavy metals studied so far, that are common exposures to man, have

shown to be “xenoestrogens”, including those that are generated from the rock strata at ISL mines. The increase in obesity of animals and humans over the last several decades is directly correlated to the increase of environmental toxins that are known to be fat soluble and deposited in body fat, including heavy metals.

Reference:

### The Effects of Metals as Endocrine Disruptors.

Iavicoli I1, Fontana L, Bergamaschi A., J Toxicol Environ Health B Crit Rev. 2009 Mar;12(3):206-23. doi: 10.1080/10937400902902062.

<https://www.ncbi.nlm.nih.gov/pubmed/19466673>

### Abstract

“This review reports current knowledge regarding the roles that cadmium (Cd), mercury (Hg), arsenic (As), lead (Pb), manganese (Mn), and zinc (Zn) play as endocrine-disrupting chemicals (EDCs). The influence of these metals on the endocrine system, possible mechanisms of action, and consequent health effects were correlated between experimental animals and humans. Analysis of the studies prompted us to identify some critical issues related to this area and showed the need for more rigorous and innovative studies. (1) Study the possible additive, synergistic, or antagonistic effects on the endocrine system following exposure to a mixture of metals since there is a lack of these studies available, and in general or occupational environments, humans are simultaneously exposed to different classes of xenobiotics, including metals, but also to organic compounds that might also be EDCs; (2) assess the potential adverse effects on the endocrine system of low level exposures to metals, as most of the information currently available on EDCs originates from studies in which exposure levels

Our hormones are all stereoisomers, meaning atoms are arranged differently in 3 dimensional space, and are subject to the toxic effects of xenohormone environmental toxins. Heavy metals have been shown to act as xenohormones, entering into the were particularly high; and (4) assess the effects on the endocrine and reproductive systems of other metals that are present in the general and occupational environment that have not yet been evaluated.”

**Heavy metals are also known to denature protein and negate the biochemical activities of protein based enzymes and hormones, as well as cause effects in skeletal muscles.** Protein makes up a full 90% of the dry weight of the living body. Any



living body, any species. Protein is an organic compound composed of long chains of amino acids. Each protein has its own distinct combination of amino acids and also its unique three dimensional shape, and it is the shape that gives it its unique biochemical activity, not simply the chemical formula of its amino acid composition. **This is the most important concept in protein, hormone and enzyme biochemistry.**

Denaturation is a process in which proteins lose their three dimensional structure/shape which is present in their native state, causing them to unwind and deform, by application of some external stress or compound such as a strong acid or base, a concentrated inorganic salt, an organic solvent (e.g., alcohol or chloroform), radiation or heat. If proteins in a living cell are denatured, this results in disruption of cell activity and possibly cell death. Denatured proteins can exhibit a wide range of characteristics, from conformational change and loss of solubility to communal aggregation to form a solid.

### **Heavy Metal Salts:**

**Heavy metal inorganic salts act to denature proteins in much the same manner as acids and bases.** Heavy metal salts usually contain  $\text{Hg}^{+2}$ ,  $\text{Pb}^{+2}$ ,  $\text{Ag}^{+1}$ ,  $\text{Tl}^{+1}$ ,  $\text{Cd}^{+2}$  and other metals with high atomic weights. Since salts are ionic they disrupt salt bridges in proteins. The reaction of a heavy metal salt with a protein usually leads to an insoluble metal protein salt, meaning that it forms a solid and becomes inactive biochemically.

A common example that we all understand and that is epidemic in the human and pet animal population today, is that of insulin. Insulin is a three dimensional folded protein that acts also as a hormone, regulating blood sugar but escorting glucose in the blood into the tissues for storage. If the insulin cannot accomplish this process, then the blood sugar rises to dangerous levels and the patient is diagnosed with Diabetes.

Non-Insulin Dependent Diabetes, or Diabetes Type 2, is the result of such a compromise in the body, with the insulin not able to perform its designated function. It is also called Insulin Resistant Diabetes, because simply giving the affected patient more insulin does not cure the problem. Typical blood testing of insulin reveals the presence of adequate insulin or even higher than normal levels, but conventional blood testing is not capable of viewing the actual three dimensional shape of the molecules to properly assess their actions or lack of. So we typically see the Type 2 diabetic having both high blood glucose along with high insulin levels that are not working effectively. The insulin has been denatured in the blood, and any new insulin that would be still functional when administered to the type 2 diabetic with toxic blood sporting effective levels of some denaturing toxin, will just further deform any new and functional insulin given. Such is the naming of "Insulin Resistance".

The same scenario is commonly born out with thyroid testing and other natural hormones such as estrogen, testosterone, progesterone, DHEA, cortisol, pregnenolone, etc. We call this scenario in medicine “euthyroid hypothyroid” for thyroid, and appropriately such for the other hormones, where the blood levels show normal levels but the patient manifests hypo hormone symptoms, because the hormones present have been denatured and rendered ineffective. This is a serious problem for medicine today. This is a serious problem in assessing the real toxicity of any environmental toxin that has been shown to denature protein, such as heavy metals. Conventional blood testing does not accurately reflect the true health compromise of the sick individual. Slides 33 - 34 show how proteins are formed and then folded into their three dimensional shapes and then subsequently unravelled and deformed by denaturing agents. Slide 35 shows the hormone insulin with its characteristic folded nature, that is unfolded in Type 2 diabetes by denaturing agent exposure.

Metals cannot be broken down to other elements in Nature or the living body, and in fact, toxin exposure in continuous low levels, formerly thought to be safe, have now been shown to have additive or synergistic effects, where the end effects of a combination of toxin exposure produces more severe health compromises than those that would be expected from each toxin. The common example is that 2 + 2 now equals 8. Since different chemical forms of minerals and metals can and do exist, and some are more toxic than others, and travel up the food chain at different rates. Different chemical forms of minerals and metals target different organs and tissues of the body.

Additionally, each individual toxin is shown to enter the body at levels under the body's detoxification radar of liver detoxification, thus allowing toxic levels of the pollutant to build up over time, until the body becomes so sickened that it cannot help itself anymore in a detox and elimination protective method.

Reference:

**Combined Toxic Exposures and Human Health: Biomarkers of Exposure and Effects**

Int. J. Environ. Res. Public Health 2011, 8, 629-647; doi:10.3390/ijerph8030629  
[www.mdpi.com/1660-4601/8/3/629](http://www.mdpi.com/1660-4601/8/3/629)

The moral of the story is that once you severely contaminate an aquifer and the environment with radiation and heavy metals, it cannot be taken back. The initial financial rewards enjoyed for a relatively short time become horribly costly in the end, much more so than the initial rewards. For this reason, ISL mining has been banned in Europe.

And science now understands that exposure of just one generation of individuals, will have their genetics impacted in a negative way for the next 5 generations, even if that

individual is removed from the contamination. This is HUGELY significant! This means that birth defects from environmental toxins can last up to 5 generations afterward.

Contamination of our water, land and air with radiation and toxic chemicals released in uranium mining and processing cannot be taken back...not in our lifetime, nor the lifetimes of the next 5 generations. In fact, it cannot be taken back at all.

Civilization has been shaped over time by science and scientific discoveries. In- deed, this is how we grow and develop as humanity. New observations by man are incorporated into the standard paradigm which change our world views, and shape and direct our actions for the future. We learn from our mistakes, or are supposed to.

When new observations come into conflict with the standard paradigm, there is always outrage, resistance and denial, as the status quo is challenged. However, for man to progress forward, these new observations must be incorporated into our learning curve so that civilization can progress forward. We must keep learning about our environment, our surroundings and our place in it, to survive, maintain and improve our quality of life on Earth.

In decades past, we thought that butter was the best treatment for burns. In fact, even hospitals put butter on burns. It wasn't until an oil tanker burned and sank in the north Atlantic, leaving the crew with burns up to 80% of their bodies and float- ing in the cold ocean for 14 hours until help arrived, that we discovered that cold water was the superior treatment for burns. When the crew was plucked from the cold ocean water, they were in remarkable shape. This new discovery by tragedy, changed our paradigm of burn treatment forever. Yes, it caused the expected denial, resistance and outrage by the traditionalists, but further studies comparing different treatments of burns proved the new discovery correct, and a paradigm shift was accomplished.

Today, with ISL mining, we are now seeing the same traditionalist beliefs prevailing here, however history has shown us that ISL mining cannot be contained, aquifers cannot be restored to baseline, and the mining toxic wastes cannot be disposed of in a safe and economical way. So, we professionals here testifying for you today, from various fields of expertise, are giving you the latest research and information for you to use, for the opportunity for you to right a grave wrong, to upgrade our paradigm for the good. Understanding that those who came before you, permitted ISL technology with the belief that mining in a totally reduced zone, a condition that other areas exhibit, would safely secure any excursions, that they would just go out and hit the reduced zone and turn back into rock and be contained for safety. However, history has shown us otherwise. Now, with the experience of history and the research we have given you, you have the opportunity to upgrade our mining scientific paradigm and uphold your agency's commitment to guarding the environment and safety of the American people with your oversight, that is regulating agency mandate, and deny this permit.

References:

**Report on In Situ Leach and Open-Pit Mining, Prepared for the Larimer County Commissioners**

The Larimer County Environmental Advisory Board, February 12, 2008

[subnet.loginto.me/in-situ-leach-isl-mining-of-uranium-pel.pdf](http://subnet.loginto.me/in-situ-leach-isl-mining-of-uranium-pel.pdf)

**Activation of estrogen receptor-alpha by the heavy metal cadmium.**

Stoica A1, Katzenellenbogen BS, Martin MB. Mol Endocrinol. 2000 Apr;14(4):545-53.

Choe SY1, Kim SJ, Kim HG, Lee JH, Choi Y, Lee H, Kim Y. Sci Total Environ. 2003 Aug 1;312(1-3):15-21.

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<https://www.ncbi.nlm.nih.gov/pubmed/12873394>

**Heavy Metals Acting as Endocrine Disrupters**

Cheryl A. Dyer, PHD

[eknygos.lsmuni.lt/springer/631/111-133.pdf](http://eknygos.lsmuni.lt/springer/631/111-133.pdf)

**5 Heavy Metals as Endocrine-Disrupting Chemicals**

[eknygos.lsmuni.lt/springer/631/111-133.pdf](http://eknygos.lsmuni.lt/springer/631/111-133.pdf)

**Selenium in a Wyoming Grassland Community Receiving Wastewater from an In Situ Uranium Mine.**

P. Ramirez, Jr., B. P. Rogers,

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### **Public Health Statement: Health Effects (PDF).**

Agency for Toxic Substances and Disease Registry. Retrieved 2009-01-05.

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### **Synergistic toxicity of multiple heavy metals is revealed by a biological assay using a nematode and its transgenic derivative.**

Wah Chu K1, Chow KL. Aquat Toxi- col. 2002 Nov 13;61(1-2):53-64.

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### **Synergistic effects of heavy metal pollutants on senescence in submerged aquatic plants.**

Sasadhar JanaMonojit A. Choudhuri. Water, Air, and Soil Pollution, January 1984, Volume 21, Issue 1-4, pp 351-357

<https://eurekamag.com/pdf.php?pdf=001260236>

### **Amino acid chelated compositions for delivery to specific biological tissue sites**

Patent number: 4863898 Filed: February 6, 1986Issued: September 5, 1989

Assignee: Albion International, Inc. Inventors: Harvey H. Ashmead, H. Dewayne Ashmead, Darrell J. Graff

[www.google.com/patents/US4863898](http://www.google.com/patents/US4863898)

### ***Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival?***

1996 Theo Colborn, Dianne Dumanoski, and John Peterson Myers

[www.ourstolenfuture.org/](http://www.ourstolenfuture.org/)

## Combined Toxic Exposures and Human Health: Biomarkers of Exposure and Effects

Int. J. Environ. Res. Public Health 2011, 8, 629-647; doi:10.3390/ijerph8030629  
<https://www.ncbi.nlm.nih.gov> › NCBI › Literature › PubMed Central (PMC)

### Epigenetics and gene expression

<http://www.diabetesandenvironment.org/home/mech/genes>

## **Verbal Testimony to EPA on Dewey Burdock UIC Class 3 mining and Class 5 disposal wells oral presentation at hearing:**

My name is Linsey McLean, and I am an environmental biochemist in toxicology for the last 40 years. I was born and raised in Flint, Michigan, lived there for the first 55 years of my life with over 450 Class 7 industrial dumpsites in each of the counties in SW Michigan. So I am well acquainted with environmental contamination of all kinds. This is the reason, actually, that I sought my course of study, and pursued a career in the effects of environmental pollution on the living body of both humans and animals. I am also a federally approved expert witness.

I am submitting testimony on why it is necessary to include uranium in the metals testing for MCL/maximum contaminant levels.

Currently, uranium is not one of the monitored metals in wastewater for uranium mining sites and should be. Even if the other metals are under the MCL's, uranium can be nearly off the chart and has been found to be so in old ISL sites that are attempting restoration. This has already been shown for several mines in Wyoming and Nebraska. Dewey Burdock waste injection wells will be sending plumes into the Minnelusa water as it flows south and east, through Igloo- the Black Hills Army Depot, through Buffalo Gap, Oelrichs, and elsewhere, and on into the Indian reservations that are already suffering contamination from the old open pits near Edgemont, SD.

Metals can bond with many different molecules, which can then become completely different compounds, with totally different chemical and biochemical “personalities” and activities. If they bond with inorganic substances such as phosphate, oxide, sulfate, carbonate etc, they will form inorganic compounds. However, if they bond with carbon containing compounds, they become “organified” and will then have different toxicities and different biochemical activity in a living body. Organified metals have a significantly higher bioavailability in the living body, and much more ability to travel to, and target,

different organs and tissues of the body, interfering at the highest rate with normal healthy biochemical pathways than inorganic metals. “Organic” metals, are the substances of life itself.

High levels of organified uranium have been studied and measured by the DOE recently, in old uranium mines. How did it get there when they are supposed to be extracting the uranium?

Organified metals, including uranium, are known **not** to be recoverable by the ion exchange method of ISL recovery, since it is already bound organically and will not bind to the organic synthetic resins. So the levels will build up as the mining waters are recycled over and over in the ISL mining process, until the waters become too saturated and are disposed as waste. Organically bound metals under this circumstance, will continue to increase in the waste water of the ISL mine, **adding to the metal burden of the wastewater, and also the toxicity of such, beyond what it would be if the metals remained in an inorganic and ionic form. There should be very elevated levels of organified uranium and other metals in the Inyan Kara, because of the contamination of the aquifer with micro organisms from open boreholes and decaying fenceposts placed in the old boreholes, so little recoverable uranium is there. There should be minimum levels of actual mining uranium shown for the permit, spectated and inorganic.**

Organic forms of any heavy metal are able to penetrate the lining of the digestive tract much easier than ionic and inorganic salts, that are blocked by their electrical charges. Organic metals act as a “chelate”, something that the health industry does to essential minerals to significantly improve absorption, and also make them much more able to enter into direct biochemical reactions in the living body.

Selenium, another metal, known to have wonderful health effects, preventing cancer, and enhancing thyroid hormone. But inorganic selenium, the form generated in ISL mining, is known to cause birth defects of the highest severity. Higher evolved animals above micro organisms are not able to convert quantities of the inorganic forms of minerals, even essential ones like selenium, into the biocompatible organic forms. Plants and micro organisms do that in rivers and soils, and can make heavy toxic metals even more toxic as they organify them.

The incongruencies between actual toxicities of some chemical forms of metals and the regulatory levels is huge. Most toxicity level charts fail to take into consideration the chemical forms of metals, which is absolutely critical in assessing any toxicity status, and currently are not being tested for.

My recommendation to EPA is to upgrade their testing of MCL's by including the speciation of inorganic forms of metals, and testing for organified forms, including uranium. Then, comparing the LD 50 levels of each chemical form, which are often orders of magnitude in difference. Only then can the true toxicity of the wastewater you are testing be assessed. Using only a quantitative analysis of the metals tells you nothing about the toxicity you are actually looking for.

The history of the Dewey Burdock area as far back as the 1950's is well known. But what is not well known is the summary of the explorations and subsequent 7,650 old boreholes left by the TVA unclosed or improperly closed, in two different explorations, over 10 years, which says: "The aquifer test results indicate that the Fuson member of the Lakota formation is a leaky aquitard separating the Fall River and Lakota aquifers. The hydraulic communication between the two aquifers observed during the tests is believed to be the result of (1) general leakage through the primary pore space and naturally occurring joints and fractures of the Fuson shale, and (2) direct connection of aquifers via numerous old unplugged exploratory boreholes." Thus, the ability to dewater the area for mining was impossible and the site was abandoned...twice. The understanding was that even if the boreholes were closed, there are still enough geologic anomalies to prevent effective confinement of rock layers for ISL mining, or dewatering for tunnel mining. Powertech knew about this when they first concocted this business, but failed to disclose to NRC and EPA and the public. In fact, the permit papers filed to the state of SD featuring tested uranium concentrations in the area, show the highest levels in the alluvial aquifers, which are essentially runoff from the old roll front that was completely mined out back in the 1950's and 60's in the open pit mines left there, and are not able to be mined due to lack of confinement. There is essentially no economically recoverable uranium left in that area to mine, and why the TVA abandoned the site...twice. The roll front is gone, mined out.

As stated by others, the business model of Powertech is not actually uranium mining. But by their own admission, they lack funds to mine and even fulfill the requirements of the NRC before they can mine, of closing those old boreholes. While a normally profitable mining venture is situated atop a concentrated uranium source roll front, Dewey Burdock's roll front is gone, as was documented by TVA. Additionally, there are extra costs of preparation of the site that are huge, even before mining could begin, that other regular sites do not have. They have to find and properly close all of the 7,650 old boreholes and do new pump tests to show proper confinement, which by expert assessment would take 3 years or so. Other mine sites do not have this. And, since the state of SD does not permit Class 1 disposal wells, which do not require prior treatment of hazardous wastes, Powertech will have to treat their wastes before deposition, another additional cost of production. With their testified break even cost of production at \$63.00 per pound of yellowcake, without those extra production costs that other mines do not have, and the future of yellowcake predicted to fall even more from the



current spot price of just \$16.00 per pound, since long term contracts are difficult to obtain now with the world in excess supplies, the business model would not reasonably include actual uranium mining.

So the business of hazardous waste deposition becomes the only way to make money, and likely why the original ridiculous request of 8 hazardous waste injection wells was done. Normally, mines like this only need one. So still the request for 4 Class 5 wells is still ridiculous, and without the ability or clear permit to mine. And they say they need two right away? What in the world for?

The ability to purify the wastewater to class 5 standards is not considered. Simply putting the waste water in a pond to air out the radon gas and then precipitating out the radium with barium chloride does NOT remove the other radioactive and toxic components. The toxic metals that have been mobilized are still there, and that includes vanadium, strontium, thallium, thorium, some radioactive forms of lead, and organified uranium that has been documented to build up in the recycled wastewater, and is not recoverable by ion exchange, and are all radioactive as well as toxic as heavy metals. This does NOT constitute the level of safety equal to “stormwater” or “sewage effluent” that a Class 5 well is limited to. If Powertech were able to clean this water to levels they boasted about in the NRC/ASLB hearing “so pure you could almost swim in it”, then that water would be most valuable for agriculture, irrigation and farm use in this high dry area of the country. It does not meet the qualifications for a Class 5 UIC, not for the concentration of toxic metals, or radioactivity of such.

There are usable Minnelusa wells in the southern Black Hills, down gradient from Dewey Burdock. The state DENR says they know of thousands of current Minnelusa wells under use there, however there are many other older wells not registered by the state, where the owners do not even know what aquifer they are in, or how deep their wells are. They will not know when they are sucking up hazardous radioactive heavy metals until they get cancer and their cattle die. Then comes the class action law suits to both EPA and Powertech, (who will undoubtedly bail and file bankruptcy and walk away from the mess, leaving EPA holding the bag) because you were informed of these private wells before these permits were even issued, and did it anyway. If these permits are issued, the Council For Responsible Mining will begin getting baseline testing and monitoring of these wells for class action lawsuits that will surely follow as the plumes flow, south and east, through Igloo and beyond.

### **Which brings me to the the subject of Igloo...**

The proximity of Igloo, the 367,000 tons of various nerve gasses known to be unstable in old metal containers, that are self igniting and both water soluble and oil soluble, buried in over 200 miles of both naturally occurring and man made tunnels, presents a

unique hazard of epic proportions on the planet, if flooded by highly oxidative lixivients or disturbed by seismic activity known to be caused by injection wells. This alone should negate the Dewey Burdock site for any and all mining activity.

Reclamation of the affected land and aquifers are not physically or economically feasible, as has been demonstrated in these mines all over the world. Heavy metals, most notably: Selenium, Molybdenum and Arsenic, in addition to the radioactive metals listed prior, will be generated in soluble forms that are highly toxic to all living things, and are able to be concentrated even further by bioaccumulation up the food chain, which brings me to the last points, that of current regulations and proper and effective oversight.

## Regulations

IUC wells are required to treat wastes to acceptable levels of toxicity **or prove there is no mitigation of the waste.**

The wells are designed so that if they happen to fail, the waste would be confined to the injection zone. **No mitigation means the waste will not affect an underground water supply for 10,000 years or until the waste is not harmful. To ensure this, the EPA mandates there are no faults or other adverse geological features present in the area, that the well injects into layers that do not currently hold water but have the correct features (porosity and permeability), and that are below a confining layer.** In no way does the Dewey Burdock site comply with these regulations. **In this case, the metals are quite immortal. They do not break down and do not detoxify.**

## Lack of oversight of UIC wells

**I quote a report that criticizes EPA oversight of injection wells from ProPublica published in 2014:**

The Government Accountability Office says environmental regulators are failing to adequately enforce rules for wells used to dispose of toxic waste from drilling.

by [Naveena Sadasivam](#)

*ProPublica, July 29, 2014, 3:40 p.m.*

**It goes on to say, “injection wells used to dispose of the nation’s most toxic waste are showing increasing signs of stress as regulatory oversight falls short and scientific assumptions prove flawed.”**

“Federal environment officials have failed to adequately oversee hundreds of thousands of wells used to inject toxic oil and gas drilling waste deep underground, according to [a new congressional report](#).”

“The report, by the U.S. Government Accountability Office, is critical of the Environmental Protection Agency's inconsistent handling of safety inspections, poor record keeping, and failure to adjust its guidelines to adapt to new risks brought by the recent boom in domestic drilling, including the understanding that injection wells are causing earthquakes.”

“The GAO's findings echo those in [a 2012 ProPublica investigation](#) which found that the nation's injection wells were often poorly regulated and experienced high rates of failure, likely leading to pollution of underground water supplies. ProPublica's investigation found that the EPA did not know exactly how many wells existed in the United States or what volume of waste was being injected into them, and that it did not possess complete records required to be collected under the Safe Drinking Water Act.”

“These wastes, often euphemistically referred to as "saltwater," commonly contain a mixture of water, hazardous chemicals and radioactive minerals.”

“The EPA generally agreed with the GAO's findings and characterization of the challenges the agency is currently facing. Concerns have mounted recently about potential water contamination from injections wells.”

This report was done when EPA had a fuller staff and budget. What upgrades to inspections and oversight have been made since 2012? And how will new budget cuts under the Trump administration affect oversight and regulation of injection wells? If EPA depends on permit fees from industry to make up a significant portion of their budget, as FDA and NRC do, 95% to be exact, then how can we be sure that EPA does not just issue, in this case, permits in dangerous areas that should not be issued, just because they have to underwrite their paychecks? **If the circumstances of the past have not been rectified, then no new permits for any injection wells should be issued, period.**

Citing:

### **Water Contamination, 2008-2010**

Cases of Unauthorized Injection, of toxins not permitted = 859

Cases of Over Pressurized Injection, resulting in damage to well casings and equipment = 1,199

Test Failures for Significant Leaks = 6,723

**Total Wells With Violations = 60,467**

## **In Conclusion**

No ISL mines have ever have proven to be safe and free of excursions, or been able to be properly decommissioned with the mined aquifer restored to baseline chemistry levels, so that the water is drinkable and safely usable. The high dry area we live in cannot afford this sacrifice. ISL mining has been banned in other countries for that reason.

Humanity has continuously failed to clean up our mining messes throughout history, as evident from all the superfund sites of total and complete loss of any use all over the country and the world, not to mention the over 10,000 other old uranium mines that should be super funds and are not, due to lack of funding for remediation/burial. If ever there was a case for your first rejection of a permit, it is most certainly, here and now. Oh, and I have a Minnelusa well.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, March 23, 2017 3:43 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock

Hello Valois,

I came to see you with my son back Dec 5, 2016 about Dewey Burdock injection well permits.

At that time, you and Douglas Minter told us that with those permits, that mining waste of the same class as the wells in question could be brought in for deposition at Dewey Burdock legally from other mines, even in other states.

You also said that the permits could be sold to another company should the holder of the permits choose, or go bankrupt, as long as the waste deposited was of the same class.

Please confirm the legality of that for me.

Thank you for your time,

[REDACTED]

Sent from my iPhone

## Shea, Valois

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**From:**  
**Sent:** Friday, March 24, 2017 10:11 AM  
**To:** Shea, Valois  
**Subject:** Re: answers to your questions

Thank you Valois,

But are they also allowed to bring in waste from other mines or is the permit for their own wastes only? And why do they say they need two deep injection wells right away if they have no mining planned or started at this time? They have to fulfill the requirements of NRC to find and close all prior bore holes and then redo pump tests to show that the aquifers are contained. No work has been started on that and they have no funds to do so. Will you also require that ?

Thank you,  
[REDACTED]

Sent from my iPhone

On Mar 23, 2017, at 7:28 PM, Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)> wrote:

Hi [REDACTED]

Now that the draft permits have been issued we are able to share the actual permit requirements regarding the authorized injectate.

Another person asked the same two questions, so I am forwarding you the answers I sent to that person.

Please review the answers below.

*Valois*

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Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129

Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

A description of the deep well injection fluids is found in the Class V Draft Area Permit Fact Sheet:

[https://www.epa.gov/sites/production/files/2017-03/documents/class\\_v\\_draft\\_area\\_permit\\_fact\\_sheet.pdf](https://www.epa.gov/sites/production/files/2017-03/documents/class_v_draft_area_permit_fact_sheet.pdf)

Section 7.8 Approved Injectate and Injectate Permit Limits, pages 50-51

EPA Underground Injection Control regulation 40 Code of Federal Regulations (CFR) §144.38 specifies the conditions under which UIC permits may be transferred:

#### **§144.38 Transfer of permits.**

(a) *Transfers by modification.* Except as provided in paragraph (b) of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under §144.39(b)(2)), or a minor modification made (under §144.41(d)), to identify the new permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.

(b) *Automatic transfers.* As an alternative to transfers under paragraph (a) of this section, any UIC permit for a well not injecting hazardous waste or injecting carbon dioxide for geologic sequestration may be automatically transferred to a new permittee if:

(1) The current permittee notifies the Director at least 30 days in advance of the proposed transfer date referred to in paragraph (b)(2) of this section;

(2) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer or permit responsibility, coverage, and liability between them, and the notice demonstrates that the financial responsibility requirements of §144.52(a)(7) will be met by the new permittee; and

(3) The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this paragraph may also be a minor modification under §144.41. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph (b)(2) of this section.

To implement this regulation, the EPA requires operators to fill out the form found at the following website before the EPA will approve a transfer of ownership:

[https://www.epa.gov/sites/production/files/2016-01/documents/7520-7\\_508c\\_0.pdf](https://www.epa.gov/sites/production/files/2016-01/documents/7520-7_508c_0.pdf)

I hope these answers help clarify things. More information on the proposed draft permits can be found at:

<https://www.epa.gov/uic/administrativerecord-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

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Fax: (303) 312-6741

Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 28, 2017 4:50 PM  
**To:** Shea, Valois  
**Subject:** the 4000 injection well no in Dewey Burdock application

Hello Valois,

Here is a quote from the Aquifer Exemption Draft Record of Decision, page 3 -- "The project will involve the injection of lixiviant, consisting of injection interval groundwater with added oxygen and carbon dioxide, into the uranium ore deposits targeted by 14 proposed wellfields consisting of approximately 4,000 Class III injection wells."

Shouldn't there be just 84 class 3 injection wells for 14 wellfields? Where do the 4,000 fit in? Or is this a typo?

[REDACTED]

[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:22 PM  
**To:** Shea, Valois  
**Subject:** Testimony for Dewey Burdock injection wells

Hi Valois,

The following links are the documents comprising my written public testimony for Dewey Burdock Injection well permits.

- [REDACTED]
- [REDACTED]
- [REDACTED]

Thanks so much for all that you do!

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 1:29 PM  
**To:** Shea, Valois  
**Subject:** Powertech UIC permits

Hello,

I'm writing to oppose the Underground Injection Control permits to Powertech as well as the aquifer exemption.

I'm relatively new to this concept and am no environmental scientist - but is injecting uranium recovery waste near a source of drinking water common practice? Seems like a really bad idea. And the request for exemption from the Safe Drinking Water Act suggests that Powertech thinks it may not work out so well, too.

Please don't approve this.

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 10:51 PM  
**To:** Shea, Valois  
**Subject:** Black Hills Public Comment

Here is my public Comment for the Black Hills Uranium and waste water disposal.

[REDACTED]

**June 19, 2017**

South Dakota Environmental Protection Agency

RE: Uranium Mining and Waste Disposal in Black Hills

Dear SD EPA:

My name is [REDACTED] I am an enrolled member of Mandan, Hidatsa, and Arikara Nation and President of Fort Berthold Protectors of Water and Earth Rights. We oppose the uranium mining and waste disposal in Black Hills underground water tables. This opposition are the result of a Hong Kong-headquartered company named Azarga Uranium Corp. requesting EPA permits for the expressed purpose of uranium mining, milling, and wastewater disposal in the Inyan Kara and Minnelusa water tables underlying the Dewey Burdock Project site some 12 miles north of Edgemont in 1868 Ft. Laramie Treaty territory. This will jeopardize irreplaceable historical, cultural and natural heritage but most of all the sacred water, Water is Life!

The Indigenous peoples (also known as Native Americans or Indians) creations stories come from Mother Earth. The instructions, to protect Mother Earth were giving to us since the beginning of time.

I live with oil and gas and witnessed the environmental and health impacts. We're in the next wave of assimilation, our land has been mortgaged out to those who don't know its value or how important it is to our people. We have left our future, our children's futures, and the question of a healthy environment in your hands and what do we have left? We have continuously been forced to assimilate to live how their society thinks is the only way. Everything has been taken repeatedly, every promise broken. And we have to accept it. Our lands have been taken, mined, and extracted of resources that will never be available again because of white man's GREED. It's destroying us.

White people in the capitol, who don't live anywhere near the devastation that we have to deal with on a daily basis, are making decisions that don't affect them. Yet they profit from selling out the people they claim to represent. We were forced to relocate here, and it is the only lands that we have left that ties us to our ancestors. The intruders can leave whenever they want, we don't have that option. We will have to deal with the aftermath of the irreparable environmental destruction. These white people are only here to profit off our oil, which is another flood of the same invaders who came to our lands centuries ago.

These people have no ties to this community, their roots aren't here. They came from Europe and settled here. They have no respect for our Mother Earth. They don't know any better because their history proves their trail of destruction. They blinded our people with lies and greed. They told us how safe it is to extract oil and to build their pipelines. We do not know if our water is safe to drink, if the air is safe to breathe, if our land is healthy to sustain life. We are surrounded by flares while our people die in the winter. We live next to the

encroachers on our lands. We see pipelines running through the lands as if they are veins of our Mother Earth. The poison isn't going to end.

"A review of the ethnographic literature demonstrates that the Black Hills was a sacred area for several Tribes, and that it has been encoded as an important landmark in tribal narratives." According to the National Park Service, many tribes have potential cultural affiliation with Black Hills.

Traditional ceremonial activities which demonstrate the sacred nature of Black Hills to tribes include: **Personal Rituals:** Prayer offerings (bundles and cloths), sweatlodge ceremonies, vision quests, funerals. **Group Rituals:** Sun Dance. **Sacred Narratives:** Origin legends, legends of culture heros, and legends of the origins of ceremonies and sacred objects.

Today we are seeking to: (1) continue our religious practice as we have traditionally (2) maintain the land that has ancestral significance and provides deep ties to our culture that has been severely affected by colonization and American expansion, (3) preserve the land in its natural state and maintaining its deep, religious connections, and finally, (4) protect and preserve the soil – it is the foundation of healthy land and water.

**Please don't make the mistake of focusing only on the land itself. Give equal thought to who will use the land, live on it, learn about it, or help to protect it for the future generations. Land that does not involve people on an ongoing basis becomes "out of sight and out of mind" – and subject to abuse.**

Thank you for your time!

██████████ ██████████  
██

***The nation that destroys its soil, destroys itself. – Franklin Delano Roosevelt***

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 12:53 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining in Treaty Territory

Please help to discontinue this vile procedure of uranium mining on any Treaty or Native American lands. Thank you for your cooperation.

[REDACTED]

[Sent from Yahoo Mail on Android](#)

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, May 18, 2017 5:38 AM  
**To:** Shea, Valois  
**Subject:** Just say no to Dewey Burdock!

I am writing you to beg you to deny these permits! Burying uranium is not safe, if it was then the people behind this project would have no problem doing it in their own back yard instead of someone else's. If something we're to go wrong (and it probably will) this will be an unmitigated disaster for the people in the area, people down stream/down wind, and the wild life and ecosystem. Really, if this is so safe, why dont you propose that the uranium be buried near where you live or like to vacation? Thank you for your time. I hope that you do the right thing.

Sincerely,

[REDACTED] [REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Thursday, March 16, 2017 1:09 AM  
**To:** Shea, Valois  
**Subject:** Re: Permit for Uranium Mine

Thanks for your reply and everything you do to try to protect our environment. I know our Hawaii congress reps will do everything they can to not let the EPA be dismantled so it can continue its important work.

[REDACTED]

> On Mar 15, 2017, at 7:57 PM, Shea, Valois <Shea.Valois@epa.gov> wrote:

>  
> [REDACTED]  
> Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.  
>  
> Here is the link to the EPA UIC program website that contains all the information in the Administrative Record, in case you do not already have it:  
> <https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>  
>  
> The public comment period is in effect through May 19, 2017, in case you have any additional comments after reviewing this information.

>  
> Thank you!  
> Valois  
>  
> \_\_\_\_\_  
> Valois Shea  
> U.S. EPA Region 8  
> MailCode: 8WP-SUI  
> 1595 Wynkoop Street  
> Denver, CO 80202-1129  
> Fax: (303) 312-6741  
> Email: shea.valois@epa.gov

>  
>  
> -----Original Message-----  
> From: [REDACTED]  
> Sent: Tuesday, March 14, 2017 11:10 PM  
> To: Shea, Valois <Shea.Valois@epa.gov>  
> Subject: Permit for Uranium Mine

>  
> I am very concerned the EPA is considering issuing a permit to Powertech for injection activities related to a proposed uranium recovery project. Please DO NOT issue this permit and endanger our wildlife and drinking water for the citizens of South Dakota.

>  
> [REDACTED]

> [REDACTED]  
[REDACTED]



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:54 AM  
**To:** Shea, Valois  
**Subject:** Oppose Black Hills Uranium Mining

Dear EPA, Region 8:

I would like to submit my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:

- New mining in the Black Hills is potentially disastrous for the people, wildlife, and environment of the region.
- Old uranium mines in the Dewey-Burdock area should be fully reclaimed before new mining is permitted.
- Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible, and our groundwater is likely to be contaminated.
- A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected.
- The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is very likely.
- The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather than relying on imperfect protection and clean-up processes.

[REDACTED]  
[REDACTED]

[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 5:36 PM  
**To:** Shea, Valois  
**Subject:** U.S. EPA Region 8 Mail Code: 8WP-SUI / Underground Injection Control in EPA Region 8

Hello-

I believe this proposal is reckless. I understand there are monitoring for ground water, but there are never any guarantees the water won't get contaminated. I am sad that protecting the environment seems to no longer be the focus of the EPA. I hope you do the right thing here and reject this proposal.

Best,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 6:44 PM  
**To:** Shea, Valois  
**Subject:** Epa seeking comment on uranium mining in S. Dakota

How can you even consider destroying an aquifer with uranium mining waste? It is inconceivable and appears to be in direct contradiction to the EPA mission to protect our water. Please, stop this kind of disgraceful catering to mining interests and protect our waters!

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 8:20 PM  
**To:** Shea, Valois  
**Subject:** Public comments for draft permits Dewey Burdock

Please be advised that I am hereby submitting my comments regarding the draft permits on Dewey-Burdock insitu mining.

An enrolled member of the Standing Rock Sioux Tribe, I disagree with any mining on our treaty lands, and jeopardizing the aquifers from which the Great Sioux Nation (Oceti Sakowin) receives drinking water. For your information the Oceti Sakowin is made up of seven councils of recent history.

I do not want any further degradation of our waters encompassing current tribal needs, namely the Pine Ridge, Cheyenne River, Standing Rock, Rosebud, Lower Brule, Crow Cree, Sisseton-Wahpeton, and Santee Sioux, Flandreau, and Yankton reservation lands and waters.

I do not want any other peoples health jeopardized as well, i.e. all of the South Dakota, North Dakota, Montana, Wyoming, and Nebraska states populations.

Thank you for considering my comments.

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 1:50 PM  
**To:** Shea, Valois  
**Subject:** South Dakota uranium mining exemption - opposed.

Dear Valois Shea,

I am opposed to the aquifer exemption for the uranium mining project in South Dakota. Polluting water, no matter how remote, with radioactive and toxic waste is a horrible idea. Water is life and we have a finite supply. It needs to be protected for future generations.

Respectfully,

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

"In spring, at the end of the day, you should smell like dirt." Margaret Atwood

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 2:06 PM  
**To:** Shea, Valois  
**Subject:** Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc.,

I am writing to state my opposition to the draft Underground Injection Control Area Permits issued to Powertech Inc. for injection wells for the in-situ recovery of uranium in Inyan Kara Group aquifers. I am also opposed to the approval of an aquifer exemption, which would exempt portions of this aquifer from protection under the Safe Drinking Water Act.

This exemption would set a dangerous precedent by exempting drinking water protections at the federal level. I am concerned for the health and safety of the citizens of South Dakota and Wyoming that utilize this aquifer; and for the tourists that visit the Black Hills and Mount Rushmore. Deep injection wells have the potential to leak.

ProPublica completed a review of more than 220,000 well inspections from October 2007 to October 2010, finding that structural failures were routine. More than 17,000 integrity violations were handed out and more than 7,000 of these wells were found to be leaking (<https://www.propublica.org/article/injection-wells-the-poison-beneath-us>).

I am concerned that the current administration's planned cuts to the EPA will result in insufficient funding and personnel to monitor these wells. In addition, research has linked deep injection wells to local earthquakes. These earthquakes have the potential to cause damage to the wells and may also cause structural damage that will impact local populations.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

Sent from [Mail](#) for Windows 10

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, June 13, 2017 3:34 PM  
**To:** Shea, Valois  
**Subject:** No to uranium mining in SD!

Dear EPA,  
I wish to protest the proposal for uranium mining in the Black Hills of SD.

Period.

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 19, 2017 9:43 AM  
**To:** Shea, Valois  
**Subject:** EPA seeks public comment - draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

Please do not continue with these draft permits and aquifer exemption for uranium mining in the Black Hills. These are the tribes land. All protections should be done to protect these lands and water from ever having any mining on them. It is not necessary. Why should any exemptions be made?. This land is owned by the tribes and should be treated just like any other private land. the water should be protected from contaminants at all cost. No mining should be allowed. Mining in and of itself is not a guarantee of safe clean water no matter how many precautions are made. I am against any mining permits or aquifer exemptions for uranium mining in the Black Hills or anywhere.

--

[REDACTED]  
[REDACTED]



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 3:04 PM  
**To:** Shea, Valois  
**Subject:** uranium mining in black hills

*Dear EPA, Region 8:*

*I urge you not to grant permits for the Dewey-Burdock uranium mine.*

*Here are my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:*

- Old uranium mines in the Dewey-Burdock area should be fully reclaimed before new mining is permitted.*
- Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible, and our groundwater is likely to be contaminated.*
- A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected. The black hills in particular are a site of extreme cultural and historic significance and should not be mined.*
- The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is very likely.*
- The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather than relying on imperfect protection and clean-up processes*

*Sincerely,*

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:00 PM  
**To:** Shea, Valois  
**Subject:** Comments on Dewey-Burdock Proposal

For me the most important argument against the proposed permits is that the Lakota community seems nearly unanimously against them. The recent findings of elevated uranium levels in a local reservoir only reinforce lack of trust in any uranium mining operation.

I have learned the bitter historical truth that we white Americans stole most of the Lakota land, kidnapped their children, nearly obliterated their culture, almost caused the extinction of the bison, and massacred their people on multiple occasions. I benefit from these actions in part because my house sits on some of the stolen land. The debt of justice we owe is staggering; for the land alone the Supreme Court has placed the price at over one billion dollars (counting interest and inflation). Against that debt, to refrain from more uranium mining seems to me to be a small payment.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 10:06 AM  
**To:** Shea, Valois  
**Subject:** No dumping uranium in aquifers

Hello,

Please do not make these permits permanent. Dumping uranium in aquifers is a bad idea. (Just so we're clear, I'm talking about the draft permits in the portion below.) Access to safe, clean, inexpensive water is a human right. Do not allow these companies to poison our planet!

[REDACTED]

EPA has issued two draft Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota. EPA will conduct information sessions combined with public hearings on April 27<sup>th</sup> and on May 8 through May 11 at the times and locations detailed below. EPA will accept public comments on the draft permits and a proposed aquifer exemption associated with the project through May 19, 2017.

The draft permits issued today include a UIC 'Class III' Area Permit for injection wells for the in-situ recovery (ISR) of uranium in the Inyan Kara Group aquifers and a UIC 'Class V' Area Permit for deep injection wells that would be used to dispose of ISR process waste fluids into the Minnelusa Formation below the Inyan Kara after treatment. Under the terms of the draft permits, waste injected under the Class V permit must be treated prior to being injected and must meet all radioactive waste and hazardous waste standards. Monitoring of the underground sources of drinking water surrounding the Class III injection wellfields will take place before, during and after ISR operations to ensure the underground sources of drinking water are protected.

EPA is also proposing an aquifer exemption approval in connection with the draft UIC Class III Area Permit. Specifically, this approval would exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act. Such an exemption must be in place before ISR activities within these aquifers can occur.

Under its obligation to comply with the National Historic Preservation Act and under EPA's Tribal Policy on Consultation and Coordination with Indian Tribes, EPA has been consulting and coordinating with several interested Tribes to identify the potential effects of the proposed project on traditional cultural places, historic and sacred sites. EPA will continue to consult and coordinate with Tribes as necessary throughout the public comment period concerning these proposed permitting actions.

The public is encouraged to provide comment on these draft permits and the aquifer exemption by midnight mountain time, **May 19, 2017**. EPA's final permit decision will be based on an evaluation of comments received and a determination of whether underground sources of drinking water are protected. The draft permits can be found at the EPA Region 8 UIC Program website: <https://www.epa.gov/uic/uic-epa-region-8>

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, March 17, 2017 10:07 AM  
**To:** Shea, Valois  
**Subject:** Drilling

Please do not give permission to drill in nation parks

Sent from my iPad

## Shea, Valois

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**From:**  
**Sent:** Friday, March 17, 2017 10:11 AM  
**To:** Shea, Valois  
**Subject:** Uranium waste

This is a no brainer! Don't allow dumping uranium waste in an aquifer.

Sent from my iPad

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 1:10 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining and storage comment

Ms. Valois.

We are writing to ask that the EPA DENY permits to Powertech/Azarga Uranium Corporation for uranium mining and storage on Lakota lands. Comment deadline is today. My husband is a retired biologist and I am a 63 yr old schoolteacher from KS. We are done with all the wrongs that we have heaped on the original inhabitants of this country. Particularly by a foreign company. This is blatant environmental racism, it is wrong, and we need to do better.

Please record our comment.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]

CONFIDENTIALITY NOTICE: This message is from the Winfield District Schools. The message and any attachments may be confidential or privileged and are intended only for the individual or entity identified above as the addressee. If you are not the addressee, or if this message has been addressed to you in error, you are not authorized to read, copy or distribute this message or any attachments. We ask that you please delete this message and any attachments and notify the sender by return email or by phone [REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Thursday, March 16, 2017 8:08 PM  
**To:** Shea, Valois  
**Subject:** Concerns

Dear Ms. Shea,

**Please accept this communication as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.**

**I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.**

**We can live without uranium but not without clean water and soil.**

**Best regards,**

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 08, 2017 9:17 AM  
**To:** Shea, Valois  
**Subject:** uranium :(

PLEASE stop the Uranium in the Black Hills! PLEASE do not issue any permits PLEASE clean up old mines (reclamation) before any further permits are ever considered !! DO you really not understand the importance of cleaning this crap up??

PLEASE remember to have a tribally defined consultation in addition to FULL tribally approved archeological and cultural surveys !!! A translator would also be helpful during court.

Than you, [REDACTED]





## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Saturday, June 17, 2017 9:13 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock SD  
**Attachments:** EPA.pdf

Dear Ms. Shea,

Attached please find my written testimony objecting to the granting of exemptions to the Clean Drinking Water Act applied for by Powertech in their quest to mine in Dewey-Burdock areas of Fall River County and Custer County, South Dakota.

Respectfully,

[REDACTED]  
[REDACTED]  
[REDACTED]

Written testimony objecting to the granting of exemptions to the Clean Drinking Water Act for In Situ Uranium mining in the Dewey-Burdock area.

No useful purpose exists for uranium mining. Fukushima has shown us that nuclear energy is not safe. Nuclear energy producing plants are fallible and can be destroyed by nature causing environmental disaster and death to fish, wildlife and humans. Mankind was not wise enough to learn this from Chernobyl, but continued on using and building nuclear power plants. Now we have two examples of what can happen using this type of energy.

The only other use for uranium is war. Using uranium in atomic bombs means the direct killing of humans and all life forms in the vicinity where they are dropped and causes extensive environmental damage for a vast area surrounding the bombing sight. DO NOT LOSE SIGHT OF THE FACT THAT WE NOW HAVE A PRESIDENT WHO THINKS THAT NUCLEAR BOMBS ARE TO BE USED.

Granting these exemptions would be illegal. It violates the treaty rights of the Sioux Nation. The Pine Ridge and Rosebud reservations will be effected by this proposed mining because they take a portion of their drinking water from the aquifers that are threatened. They also still have hunting and fishing rights in this area pursuant to the Fort Laramie Treaty of 1868. These are precisely the issues that are now swinging the tide in the favor of the Standing Rock Sioux and the other tribes who have joined them in their ongoing battle against the Dakota Access Pipeline.

The United States Supreme Court has held in, *United States v. Sioux Nation of Indians*, 448 U.S. 371 (1980) that the Black Hills including the area of the Dewey Burdock proposed mines was illegally taken from the Sioux Nation and awarded them compensation with interest from the date of the taking, 1877. This money is still accumulating and is being held in trust for the Tribe because they do not accept it and want the Black Hills returned to them.

Granting these exemptions would lead to more taking of rights from the Sioux Nation, rights to hunt, fish, gather and to have safe water.

Granting these exemptions would also take property from other people living in the area. It would take the homes, ranches and farms from these people because their home would not be habitable without water and their ranches and farms, their livelihoods, could not support them without water.

More compensation plus interest would have to be paid to the Sioux Nation and to these other people under the Fifth Amendment of the United States Constitution.

The very fact that exemptions to the Clean Drinking Water Act have to be requested indicates that if the party requesting them has no interest in following the law. They want to violate it. If the E.P.A. grants these exemptions they will be complicit in violating the Cleaning Drinking Water Act, one of the most important pieces of legislation the E.P.A. exists to protect.

The water, once fouled by in situ Uranium Mining, cannot be made useable. All you have to do see an example of this is look about an hour's drive south from the area where these mines are proposed to the Crow Butte mine near Crawford, Nebraska. In situ uranium mining there has left the Brule aquifer permanently contaminated.

These exemptions to the Clean Drinking Water Act could only be granted if it were economically viable to mine this uranium. With all that compensation that would have to be paid they cannot possibly be economically viable.

More jobs could be created by bring renewable energy to the area and creating a public transportation system connecting the communities in the area. These systems would provide ongoing employment of people to design and build renewable energy operated transportation and operate and maintain it after it is established.

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 2:00 PM  
**To:** Shea, Valois  
**Subject:** Refuse Permits for Dewey-Burdock Uranium Mine

Dear EPA,

RE: Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells.

The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of groundwater resources is very likely.

I am also concerned that adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be inadequate, and groundwater is likely to be contaminated.

A full survey of cultural and historical sites is needed before mining or deep disposal is allowed. Cultural and historical sites must be protected.

The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. Groundwater has never been returned to its original condition at any In-Situ leach uranium mine in the U.S. These permits should not be issued until it can be demonstrated that groundwater resources will be protected.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 10:56 PM  
**To:** Shea, Valois

Comment submitted by --

[REDACTED], an interested party who is a US citizen, taxpayer, and user of the natural resources of the state of South Dakota, including but not limited to drinking water and consuming food while in South Dakota for travel and recreational purposes.

The permittee(s) should NOT be granted a UIC permit or permits that exempt them from applicable regulations that protect human health and the environment, and that protect the quality of the aquifer in the southern Black Hills region in Custer and Fall River Counties of South Dakota, and that protect this aquifer from contamination and deterioration in quality from the disposal of mining waste into or adjacent to the aquifer.

The EPA should not grant permits or exemptions to Powertech USA that would allow disposal of uranium mining waste in or adjacent to the aquifer in the southern Black Hills region in Custer and Fall River Counties of South Dakota

Disposal of uranium mining waste in or adjacent to the aquifer will result in the release of Radioactive substances including Selenium, that will poison the animals and other life in the area. The people of the United States, including its children, need this aquifer to be uncontaminated and protected by vigorous application of criteria and regulations applicable to clean water. The EPA should determine that the aquifer is subject to safe drinking water standards.

Thank you for your serious consideration of this comment. Please weigh this comment in your deliberations.

Sent from phone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Thursday, June 08, 2017 4:20 PM  
**To:** Shea, Valois  
**Subject:** Please deny Dewey Burdock permits

To Valois Shea,

I am writing to request that the Dewey Burdock Well Draft Area permits be denied.

I believe the environmental risks to water and land in the area are too high. Also, I believe problems with water could affect our region including the Black Hills and Oglala Lakota Reservation.

Also, the company applying for these permits has been shown to have questionable integrity. The Canadian government has challenged them in court charging that they provided misleading information to their stockholders. Our area has had problems with companies not completing clean up after mining, and these early concerns could indicate problems in the future.

Water is our most precious resource. The Lakota truism, Water is Life, could not be more applicable.  
Please deny these permits.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, June 02, 2017 2:22 PM  
**To:** Shea, Valois  
**Subject:** Azarga Uranium mining permits


Please do not give these permits to this foreign company that would have any chance of contaminating our water sources. We are thankful for our pure water and want that for our children and all those who live down the line from us. Thank you, [REDACTED]

  
EPA Comment Letter

Valois Shea  
U.S. EPA Region 8  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

RE: Draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

Dear Ms. Shea,

Hello, my name is  and attached for your review, please find comments on the proposed policy on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota released by the EPA on March 6, 2017. It is important to take careful consideration into the Underground Injection Control (UIC) proposal before taking action because of the numerous entities that could be potentially impacted. This proposal could be of concern because of the potential risk of contamination of water, disturbances of Indian tribes and their land and detrimental environmental hazards. Underground injections have been a controversial topic for several years because of the potential risks that are entailed. The issuance of two draft Underground Injection Control permits for the allowance of dumping waste from a mining company into a local aquifer is currently under review. I strongly believe the permit should not be approved.

A geological survey of the geohydrology and water quality of the various aquifers in the area was conducted in 1987 and stated that, large amounts of groundwater are from the Inyan Kara, Minnelusa and Madison aquifers in Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming (Kyllonen and Peter, 1987). This



proposal focuses on the Inyan Kara, therefore, being that this aquifer is a principle source of ground water in the area, providing permits to move forward with UIC of mining waste could be hazardous to the water quality and the surrounding soils. The possibility for water leaks to occur between aquifers is apparent. This can happen due to numerous reasons including through semi confining layers, wells completed in more than one aquifer and wells with deteriorating casing (Kyllonen and Peter, 1987). Because of this possibility, it poses a risk for the contamination of other surrounding aquifers causing more harm to the environment as a whole. Furthermore, according to the 1987 geological survey of the Inyan Kara aquifer, the principal source of water from the aquifer is used for domestic and livestock supply (Kyllonen and Peter, 1987). In comparison, more recent research shows that the aquifer is still a major source of water for livestock and domestic uses such as drinking water (Powertech (USA) Inc., 2012). Therefore the water from the aquifer is still being used for the same purposes as in 1987. Overall, contamination from the UIC of mining waste can be hazardous to not only the environment but human health as well.

Also, the EPA states that more fluid is extracted than injected in solution mining processes in order to prevent the contamination of drinking water by Class III wells (EPA, 2017a). Therefore, with the Inyan Kara aquifer, there would be more water extracted than there is mining fluid being injected. This would be in attempt to prevent the aquifer from reaching its capacity and contaminating other water sources. However, this statement is very vague and doesn't completely eliminate the risks that could occur from the UIC of the mining waste. Full consideration of the scientific arguments concerning the injections will help provide more reassurance to the safety of the policy.

For example, the Interstate Technology Regulatory Council listed several environmental concerns including the alteration of food webs and sediment structure from contamination, impacts on natural biological activity including waste stability. There are also potential negative impacts on animals, marine life and their communities (Interstate Technology Regulatory Council, 2010). The environmental risks that are associated with the UIC of mining waste are substantial enough to reject the permit.

The policy is extremely vague regarding the disturbances of Indian tribes and their land. It is important to include more details on how this topic will be handled and how the policy could impact the tribes. There are various potential impacts of disturbances to the Indian tribes land. Direct impacts to cultural resources are a significant topic that should be discussed in the policy. According to the Tribal Energy and Environmental Information Clearinghouse, increases in human access and disturbances can result in unauthorized removal of artifacts around the site (Tribal Energy and Environmental Information Clearinghouse, 2017). There may also be disturbances to food sources and the Indian tribes water sources ultimately affecting their daily lives.

It is also not stated how the policy and permits for aquifer exemption follows the Clean Water Act regulations and what will be done in order to maintain these regulations. By including this in the policy, it will help prove that the permits are being regulated and abiding by the Clean Water Act. The Clean Water Act establishes a structure for regulating pollution in the waters of the United States (EPA, 2017b). As mentioned above, water leaks are possible, which could ultimately lead to water contamination. Therefore, if there is a risk of contamination of water sources due to the UIC of mining

waste with the aquifer, the process could fail to abide by the Clean Water Act ultimately making the proposed policy on draft permits to be reconsidered.

Thank you for the opportunity to provide input on the proposed policy regarding permits for aquifer exemptions of UIC injections of a uranium-mining project in South Dakota. It is encouraged to reconsider the policy proposed for numerous reasons. The disadvantages of the injections outweigh the advantages proving that the injections could be detrimental to all entities involved and so I strongly encourage you to deny these permits.

I look forward to the opportunity to discuss this further. You can reach me at

[REDACTED]

Cordially,

[REDACTED]

**Citations:**

Environmental Protection Agency (2017a). *Class III injection wells for solution mining.*

Retrieved 26 March 2017, from <https://www.epa.gov/uic/class-iii-injection-wells-solution-mining>

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*Minnelusa, and Madison aquifers of the northern Black Hill, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming* [PDF Document]. Retrieved

from <https://pubs.usgs.gov/wri/1986/4158/report.pdf>

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*water right permit application Custer and Fall River counties, South Dakota*

[PDF Document]. Retrieved 29 March 2017, from

[http://denr.sd.gov/powertech/wr/Inyankara/Report/InyanKaraWR\\_Report.pdf](http://denr.sd.gov/powertech/wr/Inyankara/Report/InyanKaraWR_Report.pdf)

Tribal Energy and Environmental Information Clearinghouse (2017). *Coal: Construction*

*and mining impacts.* Retrieved 12 April 2017, from

<https://teeic.indianaffairs.gov/er/coal/impact/construct/index.htm>

## Shea, Valois

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**From:** [REDACTED] >  
**Sent:** Friday, May 19, 2017 8:14 PM  
**To:** Shea, Valois  
**Subject:** Uranium Mining!!!

Hello my name is [REDACTED] I am writing you today because of concern about mining of uranium in the Black Hills.

I see many issues with this mining project:

1. Its uses a lot of water. 551 gallons per minute, totaling 94 billion gallons of water during a 20 year period. That uses up all of the resources of the people who actually live and love this place. The long term effect of water availability cause a drought and forcing people to buy their water from the else where, and cause a drought.
2. Uranium affects humans and animals on cellar level. Meaning it breaks down your whole body an organs. People over profit!!!
3. Short term profit with long term pollution, and unemployment.
4. Uranium mining has already leaked in these ares causing damage to the land, waters, and polluting the aquifers. Don't you want a place where you can eat the plants right from the ground and have water you can swim in?
5. Weather phenomena such as tornados spread Uranium, and radiation. Which is also causing cancer all around your area and starting to see the effect the radiation has on people.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 08, 2017 3:59 PM  
**To:** Shea, Valois  
**Subject:** EPA's mission is to protect human health and the en

EPA's mission is to protect human health and the environment. We are here today to discuss allowing a foreign owned corporation to mine for uranium and to drill eight bore holes.

There are already over 15,000 abandoned uranium mines in 15 Western states. 75% of these are on federal and tribal lands. 10 million people live within 50 miles of an abandoned uranium mine. No existing federal law requires the cleanup of these hazardous waste sites. Most of these abandoned uranium mines were established under the general mining law of 1872 and remain dangerously radioactive for hundreds of thousands of years.

The Public health threat they pose grows greater the longer they are left abandoned. This threat to our health is invisible. It seeps into our water. It contaminates our livestock. It is carried in the wind for hundreds of miles and there is no dose of radiation that is harmless.

Listen to these good people here today and work to clean up every abandoned uranium mine in the nation before considering a new one.

Sent from my iPad

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 1:02 PM  
**To:** Shea, Valois  
**Subject:** Uranium

Dear Lois, I made a comment at the Hot Springs EPA meeting and also handed you my notes. Please think very carefully about granting any permits. We who are against it now have another Bio-Chemists who did research in Iraq and has chosen to retire in the Black Hills of South Dakota. I have lived here for almost 40 years and many people have said that Edgemont Army Depoe left buried chemicals behind. Sarin Gas as well as unexploded munitions behind. I shrugged it off. This man who did research for our country in Iraq concerning weapons of mass destruction said he is getting involved because he found that in Edgemont ( Iglo) the chemicals came in but he can find no record of them being taken out. A company is sending a seismic testing in the area for potential oil which will be done by fracking. Can you imagine what will happen when the ground shakes? More time is needed to find out the truth. Please help us protect our water from Uranium. Once water is gone....that is it. And if it is proven about the chemicals left behind, much must be done. Thank you for your service and I feel you have people over you that quite possible have a financial stake in all of this. Take courage and know that in the end of it all,we must be able to say,"I did my best : [REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 9:45 PM  
**To:** Shea, Valois  
**Subject:** Uranium injection in South Dakota

Are they insane? Let's pollute the aquifer that drinking water comes from? Ummmm no way.



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, June 16, 2017 7:09 AM  
**To:** Shea, Valois  
**Subject:** No uranium waste water disposal

Please protect our water! I live in Spearfish, S.D. where my town and other municipalities withdraw drinking water from the Minnelusa aquifer. It's not possible to guarantee that it will not become polluted by Azarga's uranium waste water. PLEASE don't allow this! Sincerely, [REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Saturday, March 18, 2017 4:21 PM  
**To:** Shea, Valois  
**Subject:** Public Comments at Valentine, NE

I was told the reason you scheduled a meeting in Valentine on April 27, 2017 at Niabrara Lodge is so the two reservations in South Dakota would have a place to comment. It isn't going to happen. If you truly want comments from the two reservations, you will have to hold them on the reservations. Contrary to public knowledge, the reservations have modern hotels and large public meeting places on the reservations. In fact, Rosebud has a very modern hotel and meeting rooms, just twelve miles north of Valentine at the state line of South Dakota. Because they are not welcome in Valentine, unless they come in the daytime to spend their money. Yes, discrimination is alive and well in the United States, before Trump started spewing his hate on us.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 5:47 AM  
**To:** Shea, Valois  
**Subject:** Uranium mining & storage on Lakota Lands

Lakota land belongs to the Lakota people. No mining or any other thing should be done on these lands. The United States has broken countless treaties over the years. Please chose to be the person who stops this.

Thank you.

[REDACTED]

Sent from my iPad

## Shea, Valois

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**From:** [REDACTED] >  
**Sent:** Wednesday, May 31, 2017 11:55 AM  
**To:** Shea, Valois  
**Subject:** in situ Uranium mining and waste disposal in the Black Hills

Greetings,

I am writing to register my alarm at the prospect of in situ Uranium mining and waste disposal from such mining in the Black Hills.

This is a semi-arid region. As such, aquifers are precious resources, and this kind of mining would use a LOT Of water, diverting it away from drinking and agriculture.

Any risk of contamination of the aquifers is unacceptable. Containment is not possible due to the natural fissures of our geology. Geologist Hannan LaGarry found serious flaws in Arzarga Resources' analysis of the groundwater geology. He concluded that there is a risk of groundwater contamination if the mine is allowed to go forward. Also, the Resource Conservation and Recovery Act excludes mining waste from federal hazardous waste regulations. If, or rather, when there is an accident, South Dakotans will not only suffer the biological consequences, but will also have to do the clean up. And clean up of radioactive substances is not easy.

While our laws state that an aquifer must be restored to its previous condition when mining is finished, a 2009 report from the U.S. Geological Survey says, "To date, no remediation of an ISR (in-situ recovery) operation in the United States has successfully returned the aquifer to baseline conditions."

Even if I were supportive of uranium mining (which I am emphatically not), I am troubled by the laws as written which permit mining corporations (in this case, one from China) to profit from public resources without paying anything for the right. The Mining Law of 1872, which still governs uranium and other "hardrock" mining to this day, any company can extract and sell minerals from public lands without paying a cent in royalties to the federal government.

Please do NOT allow this project to go forward. The financial and health consequences in Flint due to water quality is a cautionary tale for all. Perhaps it was preventable but their residents *needed* to have water. We do not need to have uranium mining.

Sincerely,

[REDACTED]  
[REDACTED]

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 5:30 PM  
**To:** Shea, Valois  
**Subject:** Black Hills Uranium Mining Permits

I'm writing to encourage the EPA to deny permits requested by Azaraga/Powertech for injection drilling and exemption to Clean Water Act provisions at the Dewey Burdock site for the purpose of uranium mining. Even if there were a significant market for uranium (and there isn't), it would be a paltry sum in the face of possible clean up on site or, worse, contamination of fresh water aquifers in the surrounding area.

In coming decades, access to clean, fresh water will be one of the greatest problems we face as a nation and a planet. Aquifers across the US are being drained at unsustainable rates while many states neglect to pass legislation and regulations to conserve water now, before problems are widespread. One need only look at the Ogallala Aquifer that supplies the majority of plains states along with parts of TX and NM to see that a crisis involving water availability is a reality in some regions and is coming for other areas. One need only look at Flint Michigan in order to see that the affects of contaminated water are real, serious, and difficult to reverse. There is no reversal to brain damage from lead poisoning from pipes, so the idea that we play at contamination of fresh water aquifers with radioactive materials sounds naive.

There is no scientific certainty in the Powertech/mining lobby's claim that there is no way in which the wastes from this injection drilling and extraction process could contaminate other local aquifers. We have a nation dotted with oil and gas spills, with Superfund sites, and no company acting in its own financial interest admitted beforehand the risks. Instead, we the people pay with our health, our lives, and our communities.

And when it comes to water, what affects one community can affect all communities. TX--my home state--is planning on piping in water from other states (and Canada) should we continue as we are and finish draining off our aquifers. Other states have similar attitudes and lack of regulation. While one aquifer, one river contaminated may seem like a local problem, these things compound over time. We must treat water like a public resource--an entitlement that we owe to future generations. We want our great grandchildren to be able to grow food, to be able to live in the proud states and towns that we live in today. We want our children to not have to worry about cancer down the road due to uranium mining waste contaminants. And with climate change and the long term effects of poor water conservation today, some states or communities may require others to step up and share water. So, every fresh water aquifer counts. Every community matters. Respect local tribal peoples and their right to water to sustain their community. Respect all local people's right to clean water now and in the future, their right to access water without fear of finding out that it has at some point been contaminated. Respect the rights of all Americans to visit the Black Hills years from now. And respect all generations of future Americans who will need water. Water is life.

Thank you for your time and consideration.

Sincerely,  
[REDACTED]

[Sent from Yahoo Mail on Android](#)

March 26, 2017

Valois Shea  
U.S. EPA Region 8 (8WP-SUI)  
Unit Chief for Permitting  
1595 Wynkoop Street  
Denver, CO 80202-1129

**RE: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits**

Dear Ms. Shea,

My name is [REDACTED] and I am an undergraduate student at James Madison University. Attached is my statement on the *Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits*, released by the U.S. Environmental Protection Agency on March 6, 2017.

**I. Background**

The Inyan Kara Group aquifers are located in the Black Hills of South Dakota which is composed of the Inyan Kara, Madison, and Minnelusa aquifers (Kyllonen, 1987). These aquifers are regenerated by the infiltration of rainfall into the ground, while water from these aquifers is released from well extractions as well as natural springs. Water in all three of the aquifers in the Inyan Kara Group require some kind of treatment before either public use or irrigation (Kyllonen, 1987). Some substances requiring treatment include: gross alpha radiation, iron, manganese, sulfate, hardness, sodium, bicarbonate, and fluoride (Kyllonen, 1987). Within the Inyan Kara Group aquifers, contain rocks that have uranium in them. This uranium is then naturally dissolved over time, producing dissolved uranium and radium-226 within the aquifers (Kyllonen, 1987).

## **II. Overview of Proposed Action**

The U.S. Environmental Protection Agency (EPA) has drafted two Underground Injection Control (UIC) Area Permits for Powertech (USA) Inc. These drafted permits are for

“UIC ‘Class III’ Area Permit for injection wells for the in-situ recovery (ISR) of uranium in the Inyan Kara Group aquifers and a UIC ‘Class V’ Area Permit for deep injection wells that would be used to dispose of ISR process waste fluids into the Minnelusa Formation below the Inyan Kara after treatment. Under the terms of the draft permits, waste injected under the Class V permit must be treated prior to being injected and must meet all radioactive waste and hazardous waste standards. Monitoring of the underground sources of drinking water surrounding the Class III injection wellfields will take place before, during and after ISR operations to ensure the underground sources of drinking water are protected” (McClain-Vanderpool, 2017).

## **III. Position**

My position on this issue is in opposition of allowing there to be any kind of in-situ underground injection of uranium and uranium wastes. Injecting waste from uranium, which is radioactive and horrible for human health cannot be a good idea (Kyllonen, 1987). Even if the water is treated and has to be tested before, during, and after the mining, radioactive materials within a water supply is still potentially

harmful to the environment (Mudd, 2011). There are past instances where such actions were detrimental to the environment and natural restoration of the impacted groundwater was questionable, leaving areas of contaminated groundwater within the confines of the mining area and gradually flowing down the slope of the gradient within the aquifer (Mudd, 2001).

#### **IV. Scientific Arguments**

In situ uranium extraction has become more and more common in recent years in regions that include the United States, Europe, and Russia; while being tested in Australia (Mudd, 2001). In the United States, Nine Mile Lake, Wyoming and Reno Ranch, Wyoming were both used as trials of in situ uranium recovery (Mudd, 2011). At Reno Ranch, uranium recovery was cut short due to problems with well circulation and uranium recovery rates (Mudd, 2001). The mining halted and restoration processes commenced directly after, immediately treating the groundwater. At both sites, restoration efforts were very expensive and were revealed to not be cost-effective when compared to more traditional uranium recovery methods. In terms of monitoring the groundwater after restoration efforts, contaminants were discovered to be moving down slope at the Nine Mile Lake location (Mudd, 2001). Overall, in situ uranium mining in the United States experienced problems with wells plugging up, as well as increasing the levels of salinity, sulfate, and radionuclides within the surrounding groundwater, causing a decrease in the overall water quality when compared to the water quality before



mining commenced. Along with this, there was no evidence of natural reduction of the pollutants in post-restoration monitoring (Mudd, 2001). There is a policy in place that was created in 1995 that creates standards relating to the protection of public safety, health, and the environment in regards to uranium processing (Radiation Protection).

## **V. Policies Involved**

One policy that would be effected by the mining for uranium in the Inyan Kara Group aquifers would be the Safe Drinking Water Act (McClain-Vanderpool, 2017). But, if the proposed UIC Class III Area permit would be put into place, then the aquifers in the Inyan Kara Group would be exempt from the provisions in the Safe Drinking Water Act (McClain-Vanderpool, 2017). If the EPA were to not consult and coordinate with tribes during the public comment period, then they would be in violation of the National Historic Preservation Act and the Tribal Policy on Consultation and Coordination with Indian Tribes; but EPA has been involving the tribes throughout the process (McClain-Vanderpool, 2017).

## **VI. Conclusion**

My opposition to the Class III and Class V Underground Injection Control Area Permits for the Inyan Kara Group aquifers stems from scientific studies of previous in situ uranium recovery projects. Although the waste created from the mining

process is treated before it is injected into the groundwater, it has been shown that water quality is often worse than before the mining began. Increased levels of salinity, sulfate, and radionuclides have been observed in the areas of extraction, after restoration took place. Natural processes have not been proven to be effective in reducing the amount of uranium within groundwater (Mudd, 2001). Mining companies are unable to fully clean up the mess that they made, leaving the water and environment a dirtier and less safe place to live in.

Cordially,

A large black rectangular redaction box covering the signature area.

References Cited:

Kyllonen, D., & Peter, K. (1987). *Geohydrology and water quality of the Inyan Kara, Minnelusa, and Madison Aquifers of the northern Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming*. Date accessed: 26 March 2017. Retrieved from:

<https://pubs.usgs.gov/wri/1986/4158/report.pdf>

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<https://www.epa.gov/newsreleases/epa-seeks-public-comment-draft-permits-and-aquifer-exemption-uranium-mining-project>

Mudd, G. (2001). Critical review of acid in situ leach uranium mining: 1. USA and Australia. *Environmental Geology*. 41(3). 390-403. Date accessed: 26 March 2017. Retrieved from: <https://link.springer.com/article/10.1007/s002540100406>

“Radiation Protection.”(2017). *U.S. Environmental Protection Agency*. Date accessed: 6 April 2017. Retrieved from: <https://www.epa.gov/radiation/health-and-environmental-protection-standards-uranium-and-thorium-mill-tailings-40-cfr>

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 9:34 PM  
**To:** Shea, Valois  
**Subject:** STOP

PLEASE STOP RUINING SACRED GROUND! STOP MINING FOR URANIUM! This is Chicago IL resident Maximilian Hill Thank you

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 10:34 AM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock Aquifer Mining

Good afternoon,

I am writing to you to express my concern regarding the proposed uranium mining in Colorado. Allowing a company, any company to mine in an area where they know beforehand that any runoff or debris will effectively go right into the river is not only irresponsible, it could be deadly!

Knowing that the outcome of any kind of contamination stands to put many people as well as the environment itself in harm's way and allowing them to do it anyhow tells the general public that the State is not interested in their well-being and will in fact do whatever is necessary to make that dollar! The last time I checked life was more valuable than money but big corporations don't seem to think so that is why it is up to us, you and I, to remind them!

The simple fact of the matter is that big oil and fracking have been running amok and the result of that is an increase of seismic activity from coast to coast which has been scientifically proven! The other fact of the matter is that there is a volcano, a supervolcano in fact, laying dormant under the entire Midwest that is long overdue for an eruption and if the fracturing of the Earth's mantle - let alone mining for Uranium - is allowed to continue, the seismic activity stands to increase and intensify to the point of triggering said eruption!

What it boils down to is that the more we allow these companies to do whatever they want to do, especially if they are doing it unregulated and irresponsibly, the more lives we are effectively putting in danger!

Uranium mining should not be allowed for the simple fact that not only will it contaminate the water it will contaminate the air as well, it puts far too many lives in danger human, animal and otherwise, but the more legal argument is that it would take place on treaty land that would directly impact the tribe that owns it! Do we think the company that wants to do it cares? Sure they do! They care as much as Kelsey Warren and Energy Transfer Partners gave a damn about the Sioux and The Standing Rock Reservation!

We simply cannot allow these companies to do whatever they want to wherever they want to simply because they have money! There are many things in this world that money cannot buy nor replenish and our environment is right at the top of that list! Once a species of plant or animal is extinct it is gone forever, there is no bringing it back and cloning is not a substitute for natural organic matter!

Please help us to deliver a message loud and clear that we are not interested in their materialism and that you do not make a country great again by dismantling it from the inside and killing off its citizens via contaminated water, air and soil!

No good will come from allowing anyone to blast for uranium, it's bad for the people, it's bad for the environment and again as far as the legal argument is concerned this company wants to blast on treaty land and the tribe has already spoken, therefore the tribes request should be honored and the company needs to be denied access. At the end of the day what should prevail is what works for the greater good and that is honoring the treaties and protecting the environment, not allowing any company to endanger both in pursuit of the almighty dollar and their own corporate greed!

Thank you for your time,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 10:40 AM  
**To:** Shea, Valois  
**Subject:** Burdock Uranium Aquifer Mining

Good afternoon,

I am writing to you to express my concern regarding the proposed uranium mining in Colorado. Allowing a company, any company to blast in an area where they know beforehand that any runoff or debris will effectively go right into the river is not only irresponsible, it could be deadly!

Knowing that the outcome of any kind of contamination stands to put many people as well as the environment itself In Harm's Way and allowing them to do it anyhow tells the general public that the state is not interested in its well-being and will in fact do whatever is necessary to make that dollar! The last time I checked life was more valuable than money but big corporations don't seem to think so that is why it is up to us, you and I, to remind them!

The simple fact of the matter is that big oil and fracking have been running amok and the result of that is an increase of seismic activity from coast to coast which has been scientifically proven! The other fact of the matter is that there is a volcano, a supervolcano in fact, laying dormant under the entire Midwest that is long overdue for an eruption and if the fracturing of the Earth's mantle - never mind blasting for Uranium - is allowed to continue the seismic activity stands to increase and intensify to the point of triggering said eruption!

What it boils down to is that the more we allow these companies to do whatever they want to do especially if they are doing it unregulated and irresponsibly, the more lives we are effectively putting in danger!

Uranium blasting should not be allowed for the simple fact that not only will it contaminate the water it will contaminate the air as well, it puts far too many lives in danger human, animal and otherwise, but the more legal argument is that it would take place on treaty land that would directly impact the tribe that owns it! Do we think the company that wants to do it cares? Sure they do! They care as much as Kelsey Warren and Energy Transfer Partners gave a damn about the Sioux and The Standing Rock Reservation!

We simply cannot allow these companies to do whatever they want to wherever they want to simply because they have money! There are many things in this world that money cannot buy nor replenish and our environment is right at the top of that list! Once a species of plant or animal is extinct it is gone forever, there is no bringing it back and cloning is not a substitute for natural organic matter!

Please help us to deliver a message loud and clear that we are not interested in their materialism and that you do not make a country great again by dismantling it from the inside and killing off its citizens via contaminated water, air and soil!

No good will come from allowing anyone to blast for uranium, it's bad for the people, it's bad for the environment and again as far as the legal argument is concerned this company wants to blast on treaty land and the tribe has already spoken, therefore the tribes request should be honored and the company needs to be denied access. At the end of the day what should prevail is what works for the greater good and that is honoring the treaties and protecting the environment, not allowing any company to endanger both in pursuit of the almighty dollar and their own corporate greed!

Thank you for your time,

[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:49 PM  
**To:** Shea, Valois  
**Subject:** UIC Area Permits to Powertech, South Dakota -- Public Comments

As a US citizen, a mother of three US citizens, and a human, I vehemently object to allowing Powertech to dispose of ISR waste fluids into the Minnelusa Formation.

If this is allowed, despite what I expect will be *huge* public disapproval, then there should be no exemption of the uranium-bearing portions of the Inyan Kara Group aquifers from protection under the Safe Drinking Water Act.

The news release on this says the waste must meet radioactive waste and hazardous waste standards, and monitoring will take place to make sure drinking water isn't protected. But in a time when the EPA's leader denies the effect of humans on climate change, effectively denying science, and when science and even the mention of science is under siege by the new administration, why in the (imperiled) world would I believe that anyone will actually hold anyone accountable or test anything?

I'm very concerned in general about the EPA's ability to do its mission, protecting the environment under the leadership of Pruitt. Reading about this particular issue didn't increase my confidence at all.

No, no, no, to allowing this company to dump its uranium, regardless of what supposed cleanup they will do to it or supposed monitoring testing that will make it "safe."

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 10:42 PM  
**To:** Shea, Valois  
**Subject:** exemption for uranium mining project

Dear Ms. Shea,

I am writing to urge you to deny the exemption for the uranium mining project. The cost of this project to human health vastly outweighs the benefits; there are too many possibilities for error and too many risks associated with the waste injection methods for this to move forward.

Please protect our environment and deny the exemption- please prioritize our children's health over profit.

Thank you for your time,

[REDACTED]

--

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:34 PM  
**To:** Shea, Valois  
**Subject:** Public comment on Powertech permits.

After reading the proposals I would like to ask the EPA, please do not grant Powertech these permits in SD. This project carries a lasting risk and is unnecessary. A clean environment has immeasurable valuable, do not allow Powertech to exploit it for profit.

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 8:12 PM  
**To:** Shea, Valois  
**Subject:** Underground Injection Control in EPA Region 8 (CO, MT, ND, SD, UT, and WY)

Hi. Please know that Ossining these permits is a bad idea and I am formally against this plan as it would further threaten underground water sources and drinking water.

Thank you,

[REDACTED] [REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 4:04 PM  
**To:** Shea, Valois  
**Subject:** Uranium aquifer exemption public comment

I do not support these draft permits. In one regard, the energy sector has apparently learned nothing from the geological destabilization that has occurred in Oklahoma and other locations that have allowed injection wells as part of fracking activities. Additionally, there are no studies or details indicating what has actually BEEN placed into injection wells. However, we do know that earthquakes have occurred and toxic materials have appeared in the water sources after these injection wells have been allowed.

Given that the injection wells for these draft permits are occurring IN an aquifer, it would seem obvious that no matter what precautions the applicant has indicated, they will not be sufficient enough to prevent these aquifers and waterways from being polluted with nuclear and toxic wastes. I again state my objection to these draft permits being approved.

Sincerely,

[REDACTED]

## Shea, Valois

---

**From:** Shea, Valois  
**Sent:** Monday, July 17, 2017 9:30 PM  
**To:** Shea, Valois  
**Subject:** FW: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

I added clarification to the comment below so it could stand alone and be meaningful out of context of the email.

*Valois*

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

---

**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 5:52 PM  
**To:** Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)>  
**Subject:** Re: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Why was this [public comment period] extended?

---

**From:** Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)>  
**Sent:** Wednesday, May 17, 2017 6:15:54 PM  
**Subject:** Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Hello,

The EPA has extended the public comment period through Monday, June 19, 2017 for the proposed Underground Injection Control (UIC) Program actions at the Dewey-Burdock site located near Edgemont, SD. These actions include two draft UIC permits and a proposed aquifer exemption decision. Please see the EPA website for the official announcement and administrative record for these proposed actions:

<https://www.epa.gov/uic/extension-public-comment-period-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-0>

The EPA will accept mailed written comments postmarked by June 19 and emailed and faxed comments date stamped by midnight Mountain Time at the close of June 19. My contact information is listed at the bottom of this email and on the website above.

Thank you for your participation in the EPA public review process for these proposed actions.

*Valois*

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 12:32 PM  
**To:** Shea, Valois  
**Subject:** Uranium waste

I am contacting you to voice my opposition to allowing uranium mining waste disposal in SD aquifer.  
Thank you,

[REDACTED]



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 23, 2017 6:58 AM  
**To:** Shea, Valois  
**Subject:** Urgent Dewey-Burdockconsultations..please promptly reply

Dear Miss Shea

I contacted you last week about scheduling a consultation on the Rosebud Sioux Indian reservation and since I've gotten no response, I have no option but to address my Tribe about the allegations of scare tactics at certain meetings. I fear for my people and their safety and I beg that you schedule consultations on our reservation.

---

**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 7:33:50 AM  
**To:** Shea, Valois  
**Subject:** Re: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Dear Miss Shea,

My name is [REDACTED] [REDACTED] and I am a student at Sinte Gleska University and a member of the Rosebud Sioux Tribe. Since the Public Comment period was extended, I was wondering, if I can secure a venue, if your team would be willing to come to the Rosebud reservation for more consultations? I feel we can reach more people, especially elders, who have trouble getting around. I also believe that the people who want this mine are using scare tactics, such as shutting down the wifi at the Edgemont Church that is owned by a mine supporter so nobody can go live. I have also been hearing reports that opposers have been harassed and surrounded at one of the consultations, which makes it hard to voice opposition. Thank you for your time and consideration. I look forward to hearing from you.

---

**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 10:49:42 PM  
**To:** Shea, Valois  
**Subject:** RE: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Thank you, please keep me updated.

Sent from [Mail](#) for Windows 10

---

**From:** [Shea, Valois](#)  
**Sent:** Wednesday, May 17, 2017 6:16 PM  
**Subject:** Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Hello,

The EPA has extended the public comment period through Monday, June 19, 2017 for the proposed Underground Injection Control (UIC) Program actions at the Dewey-Burdock site located near Edgemont, SD. These actions include two draft UIC permits and a proposed aquifer exemption decision. Please see the EPA website for the official announcement and administrative record for these proposed actions:

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The EPA will accept mailed written comments postmarked by June 19 and emailed and faxed comments date stamped by midnight Mountain Time at the close of June 19. My contact information is listed at the bottom of this email and on the website above.

Thank you for your participation in the EPA public review process for these proposed actions.

*Valois*

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 23, 2017 7:05 AM  
**To:** Shea, Valois  
**Subject:** Urgent Dewey Burdick consultations

Dear Miss Shea.

Dear Miss Shea

Will be addressing my Tribe on the allegations of scare tactics used at the Dewey Burdock consultations. Please consider on reservation consultations as I said before, the opportunity for turnout will be greater. Please promptly reply. Thank you.

---

**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 7:33:50 AM  
**To:** Shea, Valois  
**Subject:** Re: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Dear Miss Shea,

My name is [REDACTED] [REDACTED] and I am a student at Sinte Gleska University and a member of the Rosebud Sioux Tribe. Since the Public Comment period was extended, I was wondering, if I can secure a venue, if your team would be willing to come to the Rosebud reservation for more consultations? I feel we can reach more people, especially elders, who have trouble getting around. I also believe that the people who want this mine are using scare tactics, such as shutting down the wifi at the Edgemont Church that is owned by a mine supporter so nobody can go live. I have also been hearing reports that opposers have been harassed and surrounded at one of the consultations, which makes it hard to voice opposition. Thank you for your time and consideration. I look forward to hearing from you.

---

**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 10:49:42 PM  
**To:** Shea, Valois  
**Subject:** RE: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Thank you, please keep me updated.

Sent from [Mail](#) for Windows 10

---

**From:** [Shea, Valois](#)  
**Sent:** Wednesday, May 17, 2017 6:16 PM  
**Subject:** Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Hello,

The EPA has extended the public comment period through Monday, June 19, 2017 for the proposed Underground Injection Control (UIC) Program actions at the Dewey-Burdock site located near Edgemont, SD. These actions include

two draft UIC permits and a proposed aquifer exemption decision. Please see the EPA website for the official announcement and administrative record for these proposed actions:

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Thank you for your participation in the EPA public review process for these proposed actions.

*Valois*

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 23, 2017 2:09 PM  
**To:** Shea, Valois  
**Subject:** Re: Urgent Dewey Burdick consultations

Hi Miss Shae its me again. So Ive called around and talked to Russell Eagle Bear at the Rosebud Sioux Tribe Historic preservation office, also with Phil Two Eagle from our Treaty Council, they seem to think that the public comment hearings aren't legitimate Tribal consultations. is this true? They seem to think they have never ending time. What is the process for consultation with Tribes? or is this it. Is June 19th the last day of public comment and Tribal consultation? They seem to think they are getting a special invitation or is that what the last letter was? I'm sorry I'm confused. I'd like to know when the last day for our Tribe to consult with the EPA. Thank you for your time. I appreciate it very much.

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 23, 2017 10:26:02 AM  
**To:** Shea, Valois  
**Subject:** RE: Urgent Dewey Burdick consultations

Thank you so much!!! I'm in tears right now!1

Sent from [Mail](#) for Windows 10

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**From:** [Shea, Valois](#)  
**Sent:** Tuesday, May 23, 2017 10:24 AM  
**To:** [REDACTED]  
**Subject:** RE: Urgent Dewey Burdick consultations

Hello [REDACTED],

Thanks for your email expressing your concerns about Tribal Consultation. I have been out of the office since last Thursday; that is the reason for my delay in replying to your earlier emails.

The EPA is planning on sending out another round of letters requesting consultation on the Dewey-Burdock project. Previously we mailed letters to 38 Tribes, including the Great Plains Sioux Tribes. We had replies back from 8 of those tribes, but the Rosebud Sioux Tribe was not one of those Tribes. Our next round of letter will be addressed to the leaders of Tribes that we heard comments from during the public comment period so far and at the public hearings, which will include the Rosebud Sioux Tribe.

I will keep you posted on our progress for preparing these letters and getting them mailed out to the Tribal leaders. Thanks!

*Valois*

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI

1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 23, 2017 7:05 AM  
**To:** Shea, Valois <Shea.Valois@epa.gov>  
**Subject:** Urgent Dewey Burdick consultations

Dear Miss Shea.

Dear Miss Shea

Will be addressing my Tribe on the allegations of scare tactics used at the Dewey Burdock consultations. Please consider on reservation consultations as I said before, the opportunity for turnout will be greater. Please promptly reply. Thank you.

---

**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 7:33:50 AM  
**To:** Shea, Valois  
**Subject:** Re: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Dear Miss Shea,

My name is [REDACTED] [REDACTED] and I am a student at Sinte Gleska University and a member of the Rosebud Sioux Tribe. Since the Public Comment period was extended, I was wondering, if I can secure a venue, if your team would be willing to come to the Rosebud reservation for more consultations? I feel we can reach more people, especially elders, who have trouble getting around. I also believe that the people who want this mine are using scare tactics, such as shutting down the wifi at the Edgemont Church that is owned by a mine supporter so nobody can go live. I have also been hearing reports that opposers have been harassed and surrounded at one of the consultations, which makes it hard to voice opposition. Thank you for your time and consideration. I look forward to hearing from you.

---

**From:** [REDACTED] >  
**Sent:** Wednesday, May 17, 2017 10:49:42 PM  
**To:** Shea, Valois  
**Subject:** RE: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Thank you, please keep me updated.

Sent from [Mail](#) for Windows 10

---

**From:** [Shea, Valois](#)  
**Sent:** Wednesday, May 17, 2017 6:16 PM  
**Subject:** Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Hello,

The EPA has extended the public comment period through Monday, June 19, 2017 for the proposed Underground Injection Control (UIC) Program actions at the Dewey-Burdock site located near Edgemont, SD. These actions include two draft UIC permits and a proposed aquifer exemption decision. Please see the EPA website for the official announcement and administrative record for these proposed actions:

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The EPA will accept mailed written comments postmarked by June 19 and emailed and faxed comments date stamped by midnight Mountain Time at the close of June 19. My contact information is listed at the bottom of this email and on the website above.

Thank you for your participation in the EPA public review process for these proposed actions.

*Valois*

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:51 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining waste

Hello,

I believe that there should be no Uranium mining waste injected anywhere near a aquifer. Bad idea! Don't do it.

Thank you,

[REDACTED] [REDACTED]





## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, March 22, 2017 12:56 PM  
**To:** Shea, Valois  
**Subject:** Dewey-burdock site

Do you drink water?  
Why do you want to poison ours?  
What should be a no brainer is a money issue, big money!!!!  
Please do not sell us out, no one will be happy unless everything is poisoned.  
PLEASE, NO

[REDACTED] [REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 11:10 PM  
**To:** Shea, Valois  
**Subject:** Please stop Dewey Burdock Uranium Aquifer mining

When I visited South Dakota, I heard about uranium mining causing birth defects, mainly among indigenous populations. I would like you to make a halt on this poisonous mining. Please!

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 9:58 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock uranium Mine proposal

Dear Ms. Shea,

I'm writing in opposition to the proposed Dewey Burdock class V and class III injection well draft area permits.

I've studied this proposed mine since it's original proposal. I also hold a degree in geology from the South Dakota School of Mines & Technology.

I believe both the inyan Kara aquifer and Minnelusa aquifers are much more complex and the company is letting on. I don't believe this company can safely mine at this site.

Furthermore, this is a foreign company that is not acting in the interest of the United States or the long-term environmental health, or economic well being of this region.

Please deny these permits.

Thnak you,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 8:20 AM  
**To:** Shea, Valois  
**Subject:** Uranium Mining Project in Southwestern South Dakota

Dear Valois Shea,

I am writing to comment on the proposal to inject uranium waste into the Inyan Kara Group of aquifers as part of a proposed uranium recovery project. I would like to say that I am opposed to allowing uranium to be injected in these areas even after treatment.

I believe the risks to drinking water are too high. We cannot live without water. That is a biological fact. It is one of our most important resources. If there is even a slim chance that it will impact drinking water and people's health negatively, I believe it is not in our best interests.

Thank you for your time.

Sincerely,

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 5:55 PM  
**To:** Shea, Valois  
**Subject:** Black Hills mining

Please do all within your power to keep mining of the Black Hills from going any further. Also, please stop all destructive activities within the entirety of Region 8. Killing land kills people. It's within your moral obligations to use your position to help save lives.

Thank you for your time.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Saturday, March 11, 2017 10:25 PM  
**To:** Shea, Valois  
**Subject:** Public comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

Hello,

I would like to voice my concern for the allowing permits on this project. It is only common sense that if you allow any of these activities, they will eventually have an effect on the environment around them. I say NO, resoundly to allowing any type of injection minning any where in our country.

We need to invest time, money and efforts into renewable energy sources and stop all dirty fuel mining now and in the future. If we don't stop now, it will soon be to late.

Again I say No to allowing these permits.

Thank you for your time,

[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Wednesday, May 24, 2017 7:17 AM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock uranium in-situ recovery (ISR)

Dear Ms. Shea,

**Please accept this communication as a formal comment regarding the proposed two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations.**

**I urge the EPA to deny both of these permits. Among other hazards, radon emissions, toxic heavy metals and other pollutants, including chloride, sulfate, sodium, radium, arsenic and iron, are in ISR wastewater ponds. Accidents and leaks in this kind of operation are inevitable, raising concerns about runoff into the Cheyenne River and Angostura Reservoir. As you are aware, the most serious radiation release in the US came from a tailings pond spill at a uranium mine in New Mexico.**

**We can live without more uranium but not without clean water and soil.**

Best regards,

[REDACTED]

[REDACTED]

[REDACTED]

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 5:16 PM  
**To:** Shea, Valois  
**Subject:** NO to uranium mining in the Black Hills!

M. Valois,

I am writing to virulently object to proposed uranium mining in the Black Hills.

The fact that this land is stolen means no settlers should be there in the first place. But to engage in a practice that has poisoned thousands, and for something so fleeting and filthy as money, is the lowest form of evil.

Indigenous people object to the rape of the earth on which they live. This disregard for human voices, let alone those of their ancestors and spirits, is mediocrally cruel and shameful.

Please contact me directly with any further questions.

Thank you for reading.

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Saturday, June 10, 2017 6:26 PM  
**To:** Shea, Valois  
**Subject:** Re: Uranium Mining in the Black Hills

Please don't allow uranium mining to pollute our water. We have a right to clean water as do our children and grandchildren.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Saturday, May 13, 2017 11:34 AM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock Permit

I am begging you say no to this. I tried to do some research into this and I did find that only 2% of the injector wells requiring an exemption to the Safe Drinking Water Act are these kind of wells. I am assuming there is a reason for this due to the forever contamination, recharge lengths and public safety. I also researched the issue relating to the exact science which seems to be changing with time since your rules were developed. Our area is so special here. We are drought prone. Our republican state lawmakers mostly seem to be concerned about money and money in their pockets from investments for some in Powertech. Who will protect us???? Only you. I am concerned our Republican administration is willing to throw us all under the bus. Our state does not even require bonding as far as I know. If there is a failure and contamination we have no other resource. This is also Indian land. How do you have consultation when they clearly have said no? I am a Republican. I am all for business but not when there is risk like this. Powertech seems to have a sloppy drill/borehole history and human and mechanical failure is a given.

Please in the name of god do not do this. I am begging.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 9:32 PM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock, Comment Letter, ESA

[REDACTED]  
[REDACTED]  
[REDACTED]

to Valois Shea,

Here are links to species petitioned to List or down-list under the Endangered Species Act  
Of special significance in the Dewey Burdock mining proposal, is the petition to list the Sturgeon chub, which is in the Cheyenne River and the White River. You may wish to pay attention to that one.

### RECENT LISTINGS

rusty patched bumble bee petition - Listed in February 2017 - as an endangered species under the Endangered Species Act

<https://www.federalregister.gov/documents/2017/02/10/2017-02865/endangered-and-threatened-wildlife-and-plants-endangered-species-status-for-rusty-patched-bumble-bee>

Petition by Xerces Society

<http://www.xerces.org/wp-content/uploads/2013/01/Bombus-affinis-petition.pdf>

## STATUS PENDING

### PETITION TO DE-LIST

Scroll down further for more info on the petition to delist the American Burying Beetle, look for photo of the beetle

Petition to de-list:

<https://www.fws.gov/southeast/candidateconservation/pdf/petition-to-delist-american-burying-beetle.pdf>

USFWS 90 Day Finding:

<https://www.fws.gov/midwest/endangered/insects/ambb/90DayFinding16March2016.html>

### PETITIONS TO LIST

#### BIRDS

=====

Black Backed WoodPecker, DPS

Chad Hanson , BCA, CBD

(deadline - USFWS decision in fall 2017)

<http://ecos.fws.gov/docs/petitions/92210/416.pdf>

The Golden Winged Warbler,

Anna Sewell

<https://www.fws.gov/midwest/es/soc/birds/goldenwingedwarbler/goldenwingedwarblerpetition.pdf>

### MAMMALS

The Plains Spotted Skunk  
<https://www.fws.gov/midwest/es/soc/mammals/pdf/PetitionList4SppGrasslandThicket.pdf>

## BUMBLE BEES

=====

western bumble bee petition

Defenders of Wildlife

<http://ecos.fws.gov/docs/petitions/92000/679.pdf>

Docket

<http://www.regulations.gov/#!docketDetail;D=FWS-R6-ES-2016-0023>

yellow banded bumble bee petition

Defenders of Wildlife

<http://ecos.fws.gov/docs/petitions/92000/681.pdf>

docket

<http://www.regulations.gov/#!docketDetail;D=FWS-R5-ES-2016-0024>

## BUTTERFLIES

=====

petition to list Monarch butterfly

Center for Biological Diversity, Xerces Society, Center for Food Safety

<http://ecos.fws.gov/docs/petitions/92210/730.pdf>

petition to list regal fritillary butterfly

Wildearth Guardians

<http://ecos.fws.gov/docs/petitions/92000/462.pdf>

Status of review

<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=1075>

## FISH

Petition to list Sturgeon & Sicklefin Chub, Wildearth Guardians,

petition link:

[http://www.wildearthguardians.org/site/DocServer/Sturgeon\\_SicklefinChubPetition8\\_11\\_16.pdf?docID=17346](http://www.wildearthguardians.org/site/DocServer/Sturgeon_SicklefinChubPetition8_11_16.pdf?docID=17346)

## REPTILES/AMPHIBIANS

=====

Reptiles/Amphibians (lots-53 species)

One species within 53 species, includes - **Blanding turtle** is in SD

Center for Biological Diversity

<http://ecos.fws.gov/docs/petitions/92210/662.pdf>

=====

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED] cell account is not currently activated,  
& it does not accept text or voice mail

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Sunday, May 14, 2017 10:18 PM  
**To:** Shea, Valois  
**Subject:** Comment on Dewey- Burdock in situ leach uranium mining injection well licensing

[REDACTED]  
[REDACTED]

Comment on Dewey- Burdock in situ leach uranium mining injection well licensing

Please explain why you did not have a hearing in Newcastle, Wyoming.  
Dewey-Burdock is next to the Wyoming Border.  
Don't people living nearby in Wyoming deserve a hearing?

Are their roads going to be used to transport stuff?  
If their water or air more or less at risk than SD's?

=====

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
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[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED], cell account is not currently activated,  
& it does not accept text or voice mail

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 7:17 PM  
**To:** Shea, Valois  
**Subject:** Additional Comments Dewey Burdock In Situ Leach Mine - President Trump

[REDACTED]  
[REDACTED]  
[REDACTED]

### Accountability

Please discuss the effect on USA v. China profit & loss trade balance of this project. If a Chinese Company (Azarga) extracts profit from a SD project (Dewey Burdock) and it eventually becomes a Superfund Site or at least mess, whose clean up becomes otherwise funded by the public...how is that wise trade policy? What is the ability of a foreign company to walk away with profits & leave us with costly clean up & irretrievable consequences? Please consider profit gained vs environmental clean up costs dumped on others -- as a trade deficit issue.

Please discuss sufficiency of bonds.

### Trump

Please discuss the effects of the following 3 points on the EPA and NRCs promises to protect the public, water and ecological resources and on the ability of EPA/NRC to function at it's duties during the permitting & oversight & restoration of Dewey Burdock In-Situ Leach Mining Project.:

1. Scott Pruitt appointment to head of the EPA with his ideology and past actions, indicating hostility to federal environmental protection.

- has he and will he impede EPA's competence.

2. Proposed budget cuts of 30% to the EPA in Trump proposed budget.

3. Trump passing executive order saying that federal agencies must remove 2 regulations for each new regulation approved

and that the incremental cost for new regulations in 2017 will be \$0. Limits on federal regulation costs to be imposed in 2018.

Quotes from "The Hill" on-line web site:

<http://thehill.com/homenews/administration/316839-trump-to-sign-order-reducing-regulations>

"President Trump on Monday signed an executive order that would require agencies to revoke two regulations for every new rule they want to issue....

"The order requires agencies to control the costs of all new rules within their budget. Agencies are also prohibited from imposing any new costs in finalizing or repealing a rule for the remainder of 2017 unless that cost is offset by the repeal of two existing regulations.".....

"Starting in 2018, the order calls on the director of the White House Office of Management and Budget to give each agency a budget for how much it can increase regulatory costs or cut regulatory costs."

Thanks,

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED], cell account is not currently activated,  
& it does not accept text or voice mail



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 3:25 PM  
**To:** Shea, Valois  
**Subject:** Mine waste injection in aquifer

The words in the subject line for this message should never be found in the same sentence!!!

Of course it is wrong to put mine waste, which is usually a higher concentration of natural materials, into any area from which water is drawn for use by humans and animals!

I am disgusted that our federal agency that is tasked with protecting our natural environment would consider a course of action that endangers our most precious resource, potable water. It is irresponsible to poison, or threaten any aquifer.

Please do not allow this proposal to be permitted. Those who produce these waste materials need to devise better methods of disposal.

[REDACTED] [REDACTED]  
Registered voter, educator, mother, and former resident of Wyoming where water is recognized as precious.

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 6:07 PM  
**To:** Shea, Valois  
**Subject:** South Dakota uranium mining permits

I oppose wholeheartedly the two draft permits issued to Powertech, a multinational corporation and division of Azarga Uranium Corporation of Canada. These wells would bore hundreds of feet into the ground and pierce the Inyan Kara system of underground aquifers. The second of the two permits is to allow the disposal of hazardous waste materials resulting from uranium mining. Both permits would needlessly expose the Lakota Oyate to the devastation of uranium mining and continue America's war against Red Nations' peoples.

Sincerely,

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:**  
**Sent:** Tuesday, March 14, 2017 8:03 AM  
**To:** Shea, Valois  
**Subject:** FW: Draft permits

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 5:02 PM  
**To:** [REDACTED]  
**Subject:** Draft permits

The draft permits should be denied for the aquafir in South Dakota. Uranium mining waste should not be allowed anywhere near any kind of water source and dumping allowing the permits is highly irresponsible.

[REDACTED]  
Easthampton, Massachusetts

Sent from my iPhone, which is sometimes less grammatically correct than I.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 5:03 PM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

I urge you to reject these permit applications. We can not afford to put water sources at risk by storing mining waste near aquifers. Protecting our nation's water supply must be of highest priority as it faces increased demand from climate change, population growth, and industrial uses.

While I recognize the risk of contamination may be low, but they aren't non-existent. There are always the potential for human error, unexpected seismic events, or unforeseen weather events that could alter the expected outcome by altering the water table or damaging the encapsulation of the waste. Under other circumstances, these risks might be acceptable but we must reconsider them in view of the increasing value of clean, usable water in this time of droughts and increased demand.

Thank you,  
[REDACTED]

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 3:54 PM  
**To:** Shea, Valois  
**Subject:** South Dakota PowerTech draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

Per the EPA request for public comments on this permitting process for this project:

The risks to the aquifer for a private corporate enterprise are too high risk to be permitted.

If the aquifer is contaminated there is no method to remove the damage. As water is required for public consumption and agriculture uses that also evolve into public consumption this is an unacceptable risk.

There are also serious concerns about the company potentially cutting corners or abandoning the project. The price of uranium has been extremely low since the Fukushima nuclear disaster. With new problems that have since developed in the nuclear power industry the price for uranium will never recover. This could lead to a number of bad business decisions on the part of the mining company or an abrupt abandonment of the site when the business factors become too unfavorable or the company goes bankrupt. Currently Toshiba-Westinghouse has decided to permanently cease new reactor builds, is considering bankruptcy and could potentially default or abandon the current new US reactors under construction.

Areva is in a similar situation as Toshiba-Westinghouse and would be unlikely to pursue any new reactor builds if they survive their current financial problems. This is all extremely relevant when considering what is permissible risk by a highly unstable private enterprise.

Western South Dakota knows all too well what happens when a uranium mining enterprise abruptly fails. This is how the current uranium mining mess left in the state was created. We should learn from past mistakes rather than hoping another company coming in won't do the same thing.

This new mining scheme provides no benefit to the local or regional community but poses a significant and permanent risk to the water system and environment of the region in question in western South Dakota.

Sincerely,

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED] >  
**Sent:** Sunday, March 12, 2017 8:40 PM  
**To:** Shea, Valois  
**Subject:** Opposition to SD draft permits and proposed aquifer exemption

Hello,

I would like to voice my opposition to the draft permits and proposed aquifer exemption associated with the work to be done by Powertech, Inc. Further, I would oppose any work that threatens to contaminate our aquifers or otherwise alter them from their natural state.

Thank you for taking public opinion on this matter.

Sincerely,

[REDACTED]

## Shea, Valois

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**From:** [REDACTED] >  
**Sent:** Tuesday, March 14, 2017 10:34 AM  
**To:** Shea, Valois  
**Subject:** EPA Region 8 UIC Program

To Whom it May Concern:

As a concerned US citizen I would like to voice my opposition to the aquifer exemption being requested by Powertech. There is evidence that these measures would contaminate drinking and ground water and are a bad idea. As Americans we rely on the EPA to protect our citizens and environment, so please do your job.

Regards,

[REDACTED]



March 23, 2017

Valois Shea  
U.S. Environmental Protection Agency  
Region 8  
1595 Wynkoop St.  
Denver, CO, 80202-1129

**Re: Public Notice: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits**

Dear Ms. Shea,

The following comment provided is for your consideration toward the *Proposed Dewey-Burdock Class III and Class V Injection Well Draft Area Permits* by the end of the comment period, on May 19, 2017. The permits in question are Permit No. SD31231-00000 for the aquifer exemption decision, Permit No. SD31231-00000 for the class III injection well permit, and Permit No. SD52173-00000 for the class V injection well permit. My name is Nicole Raftery and I am a senior at James Madison University in Harrisonburg, Virginia. I am currently studying Integrated Science and Technology, with a focus on environmental science. As a person who cares deeply about the protection of the environment, I have written a response to the UIC permits under consideration.

**Introduction**

Water is one of the most important and valuable resources on the planet. Water is the source of all life on earth and it needs constant protection. The Safe Drinking Water Act (SDWA), from the EPA, legally protects drinking water in the United States. This act led to the creation of the Underground Injection Control (UIC) program as a response to growing needs for underground injection of potentially dangerous materials and the extraction of materials from underground. According to the EPA, a class III injection well is a “well used to inject fluids for the extraction of minerals” and a class V injection well is a “well not included in the other classes used to generally inject non-hazardous fluid into or above an underground source of drinking water (USDW)” (Injection Wells, 1989).

**Public Notice: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well  
Draft Area Permits**

**Overview of Position**

The class III permit is a request to create wells that would be used for the recovery of uranium from underground (Dewey-Burdockb, 2016). This permit should not be granted in order to protect the Inyan Kara aquifers that are located where the wells would be placed (Dewey-Burdockb, 2016). The placement of these wells put the aquifers at risk of contamination from a number of possibilities that are associated with in-situ recovery. Some of the risks include groundwater contamination, leakage of chemicals, contamination of local drinking water sources, etc. (Lustgarten, 2012). The class V permit is a request to inject waste fluids into the ground after proper treatment (Dewey-Burdocka, 2016). This should also not be permitted in order to protect the Minnelusa Formation, located below the Inyan Kara aquifers. For similar reasons to reject the class III permit, the class V permit should be rejected as well. The risk of groundwater contamination, of which groundwater is the primary source of drinking water within this area, puts the people living among the Inyan Kara aquifers at risk of consuming polluted water (Kyllonen & Peter, 1987). Any amount of pollution to the aquifers would cost a heavy price to remediate, if remediation could be possible at all (Management of Remediation Waste Under RCRA, 1998 October 14).

**Research of Position**

The creation of wells in general requires copious amounts of labor, materials, and time (Injection Wells, 1989). All of this would be for the creation of wells that could potentially harm the environment and human health. Allowing Powertech Inc. to create these wells would not only put the environment at risk, but it would also continue our world's dependence on removing and injecting materials from earth. The United States is one of the top nations that contributes to copious amounts of drilling into the planet. With the current administration, this is likely to increase in the next few years. An article from The Virginia Pilot talks about a study conducted

**Public Notice: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well  
Draft Area Permits**

Page | 3

by The National Research Council of the National Academy of Sciences on the dangers of uranium mining. Specifically, the article talks about how research has found increasing activities of this type, near bodies of water that serve as sources of drinking water, often results in increased risk for contamination (Bartel, 2011). Powertech Inc. is requesting permits for well sites located within the area containing the Inyan Kara aquifers. These aquifers are the primary sources of drinking water for the “northern Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming” (Kyllonen & Peter, 1987). For the safety and health of U.S. citizens and the environment, injection wells should not be allowed in this area.

The Underground Injection Control (UIC) program was created under the Safe Drinking Water Act (SDWA) for the application of safe injection wells that cause as little damage as possible to the environment and human health. However, the creation and use of injection wells innately contain high risks that may not be worth the reward. In the instance of this situation, the people of the Inyan Kara aquifers would be the ones that are being put at risk (Lustgarten, 2012). The health of their drinking water supply is directly impacted by the proposed permits of Powertech Inc. The impacts of these permits include the potential contamination of groundwater from leaks, contamination of surrounding subsurface and surface soil from leaks, and contamination of drinking water sources (Lustgarten, 2012). Even in conjunction with regulations under the SDWA, there are many inherent and potential risks associated with injection wells. Along with discouraging this type of activity, rejecting these permits would ensure the safety of the environment and the people of Wyoming and South Dakota (Injection Wells, 1989).

Valois Shea  
March 23, 2017

**Public Notice: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well  
Draft Area Permits**

Page | 4

**Conclusion**

As a senior Integrated Science and Technology major at James Madison University, I believe that both the class III and class V permits should be rejected by the EPA. The specific focus of my major is on the environment, but in general my major is an interdisciplinary study that includes manufacturing. From an economic perspective, these wells would provide a great profit for Powertech Inc., but this would come at a high environmental price. Furthermore, these wells present the possibility of contaminating the groundwater from the underlying aquifers. If contaminants were able to get into these aquifers, it would be a heavy price to clean it up, if it could be cleaned up at all (Injection Wells, 1989). It is a human right to have access to clean, safe drinking water and accepting these permits would potentially inhibit that right. In this situation, I believe that the risk is not justified by the reward. The EPA should reject these permits from Powertech Inc. in order to protect the environment and the U.S. citizens that live in the area of concern. If you have any questions or responses to this contact, please do not hesitate to contact me. My email address is [REDACTED]. I look forward to seeing the EPA's decision on this matter after the comment review period.

Sincerely,

[REDACTED]

**Public Notice: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits**

**Sources**

Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits. (2017, March 06). Retrieved March 23, 2017

Bartel, B. (2011, December 20). Uranium mining report finds risks, benefits for Virginia. Retrieved March 26, 2017

Dewey-Burdocka. Draft Aquifer Exemption Record of Decision. (2013). Retrieved March 27, 2017

Dewey-Burdockb. Class III Draft Area Permit Documents. (2017, March 06). Retrieved March 23, 2017

Dewey-Burdock Class V Deep Disposal Injection Well Area Permit. (2017, March 06). Retrieved March 23, 2017

Goodell, J. (2016, December 09). Trump's EPA Pick Is the Fossil-Fuel Industry's Con Man. Retrieved March 26, 2017

Injection Wells: An Introduction to their Use, Operation, and Regulation. (1989). Retrieved March 26, 2017

Kyllonen, D. P., & Peter, K. D. (1987). Geohydrology and Water Quality of the Inyan Kara, Minnelusa, and Madison Aquifers of the Northern Black Hills, South Dakota and Wyoming, and Bear Lodge Mountains, Wyoming. Retrieved March 23, 2017

Lustgarten, A. (2012, September 19). Injection Wells: The Poison Beneath Us. Retrieved March 28, 2017

Management of Remediation Waste Under RCRA. (1998, October 14). Retrieved March 28, 2017.

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 9:10 PM  
**To:** Shea, Valois  
**Subject:** No!!

Sent from my iPhone

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 12:20 PM  
**To:** Shea, Valois  
**Subject:** Powertech

Dear Ms. Shea,

I strongly oppose the desecration of groundwater and Indian lands by drilling, nuclear waste, and any other form of contamination. The draft permits issued to Powertech must be revoked.

Sincerely,

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 11:19 PM  
**To:** Shea, Valois  
**Subject:** No to uranium dumping

Sent from my iPhone



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 21, 2017 5:54 PM  
**To:** Shea, Valois  
**Subject:** No aquifer exemption for powertech usa

Please do not grant an aquifer exemption for the UIC area permits to Powertech USA. We must protect our aquifers from contamination. They are a non-renewable resource, and contaminating them would likely have long-term consequences for humans. I object to risking a public resource that belongs not only to this generation but to future generations to come. Allowing the aquifer to be contaminated short sighted and inexcusable especially if it is for private profit.

This E-mail was sent from my mobile. Please excuse any misspellings or brevity.

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:15 AM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock Uranium Aquifer Mining

I wish to submit a public comment requesting NO to Dewey Burdock Uranium Aquifer Mining

[REDACTED].... Formally request that you do not grant this.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 5:53 AM  
**To:** Shea, Valois  
**Subject:** Draft proposal in SD

Hi, I am [REDACTED], High School Science teacher. I wish to express my concern for the proposed uranium extraction in South Dakota. My fear is once again money is trumping the environment! We can't keep putting our aquifers in peril for the sake of some companies bottom dollar. Our children will pay the price. Thank you for the chance to express my concern.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 6:01 PM  
**To:** Shea, Valois  
**Subject:** Re: Thank you for your comments

The EPA is truly an invaluable resource and protector of the land and therefore the American people.

Thank you for all your hard work.

[REDACTED]

[REDACTED]

[REDACTED]

On Mon, May 15, 2017 at 6:52 PM, Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)> wrote:

Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, May 14, 2017 5:45 PM  
**To:** Shea, Valois  
**Subject:** No mining permits for the proposed Dewey-Burdock Uranium. Stop this utter stupidity of threatening water.

Water Is Life!

[REDACTED]  
Sent from my iPad

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 6:27 AM  
**To:** Shea, Valois  
**Subject:** NO on Aquifer exemption for uranium mining in SD

Water is quickly becoming our most valuable natural resource. The potential damage to the aquifer will be irreparable.

[REDACTED]  
[REDACTED]  
[REDACTED]

Sent from my iPad

June 19, 2017

**BY EMAIL**

Valois Shea (shea.valois@epa.gov)

U.S. EPA Region 8

Mail Code: 8WP-SUI

1595 Wynkoop Street

Denver CO 80202-1129

Dear Sir or Madam:

The undersigned, [REDACTED] an individual, residing at [REDACTED] [REDACTED] hereby provide the following WRITTEN TESTIMONY to the above-referenced draft permits and documents related to Powertech/Dewey-Burdock. These written comments are provided in addition to the original hearing in Rapid City, SD on 09 May 2017.

I have been a research assistant at Oglala Lakota College as an undergraduate for three years, specializing in stratigraphy, geology, field surveying, geochemistry, and ICP-MS analysis. I have previously participated in the initial review of the belated disclosed Dewey-Burdock's data at the office in Edgemont; including borehole logs and multiple geology field notebooks from the field surveyors and those whom maintained the boreholes and wells. According to those records: over half of the boreholes (4,000+ of 7,000+) all of which were meant to be properly plugged and capped, were in fact not capped or plugged in a manner that would cease groundwater flow from traveling between these units. Not only did the field surveyors identify and record these improperly capped boreholes, but also mentioned in the notes of geothermal activity causing some fluid in the boreholes to bubble up and overflow onto the surface. Indicating direct contact and pressurized groundwater communication between the depths of the boreholes, the Madison formation, and potentially with other formations. Records stated of improperly capped boreholes, but also evidence of a fault within the initial land survey. The presence of a fault, shows the potential of consistent seismic activity within the permit zones and additional potential of groundwater flow being directed towards the fault line. Unless we recap the fact of gravity riding everything, the natural mobility of water is to continue flowing to the lowest point in elevation until its restricted and collected onto a body of water i.e. lake, pond, or aquifer. If contaminants were accidentally released, it would increase the potential of mobilizing lixivants into the water table and altering water chemistry. Once a plume settles, it will take numerous years (potentially 140+ years) before its half-life is reached and allowed for lower levels of radiation to be exposed to.

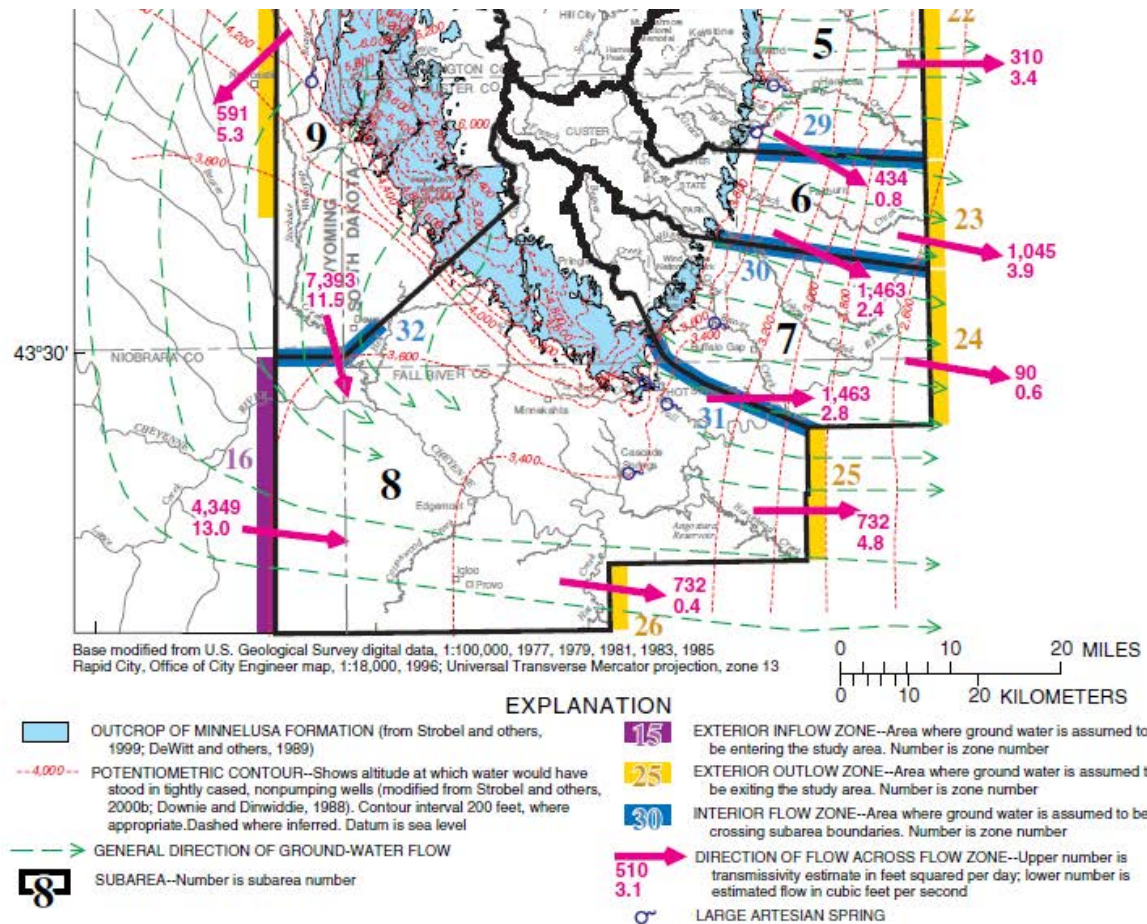
Based upon a belief that the High Plains Aquifer is already contaminated and injecting radioactive waste into it would somehow not alter the chemistry towards and within the aquifer, is the main justification of this permit. Unfortunately, if one dug a little further into the research, information, or conversation, an understanding of the difference between Naturally Occurring Radioactive Material (NORM) and chemically altered radioactive waste, especially the health



impacts, along with the environmental impact of injecting radioactive waste into boreholes (Class III and V Injection Wells). Naturally occurring radioactive material exists as a sulfide form (solid rock) present within multiple stratigraphic units for millions of years (approximately 45 million years) and are undergoing a continual process of natural weathering of areas that are near the surface and exposed to the surface. This weathering process has released some of these radioactive materials through weathering and oxidation, which transforms these sulfide forms into an oxide form and capable of limited mobility within the water system. Due to the extensive period of time of natural weathering, has allowed the conditions needed of these radioactive materials to be oxidized and released at extremely low rates. The extremely low rate and low concentration over the course of thousands of years, has allowed enough time for biological organisms, climate, and of the like to potentially adapt to these levels.

In situ leach mining (ISL) of these NORMs will essentially speed up this natural process by the additional acids and elements combined with the lixiviant fluid and being pressurized into the strata ore body. This process can release large amounts of the radioactive material from its sulfide form and oxidize into an entirely different substance (radionuclide) than its natural weathering counterpart due to the catalyzing effect of chemical alteration and additional compounds used during the in situ process. Radioactive waste can be classified as the waste precipitated during in situ leach, fission, and fusion processes. This radioactive waste is an entirely different radionuclide compared to NORM, especially in its rate of impacting health, unknown ratios and concentrations of elements, increased mobility, and overall uncertainty of the length of half-life. Injection of radioactive waste into the water table could potentially release and oxidize even more of the NORM present in the stratigraphy and mobilize higher concentrations of heavy metals, minerals, and sediments into the water table along with the higher concentrations already present in the radioactive waste. Thus increasing the overall amount of total dissolved solids and concentrations of radionuclides and elements within the water table and any underlying aquifer.

The largest issue with the management of radioactive waste seems to boil down the inability to get rid of it, especially if all that has and can be done is to move it from one site to the next with as little of a mess as possible during the transportation process. This poses another challenge of decisions, especially the tough decisions that will impact generations to come.



**Figure 70.** Subareas, generalized ground-water flow directions, and flow zones for the Minnelusa aquifer. Estimated transmissivities and flow components for flow zones also are shown (from Carter, Driscoll, Hamade, and Jarrell, 2001).

Driscoll, D. G., J. M. Carter, J. E. Williamson, and L. D. Putnam. 2002. Hydrology of the Black Hills Area, South Dakota. United States Geological Survey Water-Resources Report 02-4094, 150 pp.

The information contained herein is true and correct to the best of my knowledge at the time of this writing on 19 June 2017.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 12:47 PM  
**To:** Shea, Valois  
**Subject:** Our generations to come

What is this office doing to us? Would you want your children living near there? I wouldn't allow my children to live anywhere near there.

It's plain insane. The EPA is supposed to protect us, not side with big billionaires.

"EPA asks public for permission to allow Uranium mining waste disposal in SD aquifer."

Thank you!

[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 7:07 PM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

PLEASE do not allow these permits! Protection for our environment is systematically being removed. South Dakota has had more than its share of environmental rape. But protecting our environment is important, whether this occurs in South Dakota, Wyoming, Oregon or any other state.  
Please do the right thing and deny these permits.

Thank you,

[REDACTED]  
[REDACTED]

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This email has been checked for viruses by Avast antivirus software.  
<https://www.avast.com/antivirus>

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, April 05, 2017 8:40 AM  
**To:** Shea, Valois  
**Subject:** Re: Comment on Azarga uranium mining

Dear Valois,

After reviewing both the Class III and Class V Draft Area Fact Sheets pertaining to the Azarga Mining Proposal, I am confounded at how the EPA can even consider allowing such a project to go forward. The list of probable and possible damage that are revealed in these reports are truly frightening. The EPA's own questioning of facts offered by PowerTech is reason enough for disallowing of this permit, but I will try to offer other clear and pertinent problems with this criminal endeavor. First of all, as I mentioned in my original response, this project will be conducted only a mile and a half from a major fault zone. That in itself is reason enough to disallow this work. Page 26 of the Class III fact sheet openly admits that "many other faults are probably present but not discernible because of poor exposures." That fact, coupled with PowerTech's ridiculous assertion that any faults or fractures found in the injection area can be later avoided by modifying the pattern of the lixiviant flow around the faults or fractures, leads me to the conclusion that there is no way for them to stop a leak of toxic lixiviant into other areas. That type of fluid breach in a known fault area must be considered a factor in future slippage events and spoiled water sources. Page 22 of the same report supports the fact that "at least one breach in the Fuson confining zone" has occurred and strongly implies that other breaches will be found. The shale containment formation mentioned on Page 19 states "shales tend to be less permeable than sandstone" yet no where does it state that shale is 100% resistant to fluid breach. Considering the fact that at least 19 separate water wells are active in the area and PowerTech has shown little or no ability to contain their possible or probable breaches, the idea that this project is safe cannot be considered seriously. Page 37 of the same document admits that prior drillholes "may not have been plugged in a manner that would prevent communication between subsurface aquifers." Reading these reports, it is obvious that PowerTech has showed continuous deficient care in operation and responsibility to its geologic and aquifer environment. If the EPA wishes to do its job and protect the ecology and environment of the Black Hills, it will read its own reports and come to the easy conclusion that this is both a dangerous and irrational project. Thank you.

[REDACTED]

On Monday, April 3, 2017 7:18 PM, "Shea, Valois" <Shea.Valois@epa.gov> wrote:

[REDACTED],

Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.

Here is the link to the EPA UIC program website that contains all the information in the Administrative Record, in case you do not already have it:

<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

The public comment period is in effect through May 19, 2017, in case you have any additional comments after reviewing this information.

Thank you!

**Valois**

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Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

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**From:** [REDACTED]  
**Sent:** Sunday, April 02, 2017 3:25 PM  
**To:** Shea, Valois <Shea.Valois@epa.gov>  
**Subject:** Comment on Azarga uranium mining

Dear Valois,

I am amazed and genuinely disheartened to see that the EPA has allowed consideration of the Uzarga mining project in Fall River County, South Dakota. I have been an amateur geologist for many years and own a home in Hot Springs, SD. Knowing the complex nature of Black Hills geology, I find it appalling that you would consider injection well technology safe in an area directly adjacent to the Dewey and Jewel Cave fault zones and their direct connections to both the Barker Dome anticline and the Fanny Peak monocline. Considering what injection well technology has done to the relatively stable geology of Oklahoma and other states, I would think that special consideration would be given to an area that has already shown earthquake activity and that is so directly linked to water supplies throughout the southern Black Hills. I consider this proposed project an exercise in foolishness, and considering the catastrophic outcomes that are truly possible, an endeavor with criminal intent. I would certainly hope that the EPA will be dubious of the opinions of Uzarga geologists who will suggest that their "experiment" will be 100% foolproof. The southern Black Hills honors its water supply and considers any threat to its viability a direct threat to the entire Black Hills area. With so much to lose in one of the premier recreational and tourist areas of the world, this project falls far short of any sensible consideration. Thank you.

[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 7:17 PM  
**To:** Shea, Valois  
**Subject:** Re: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Hi Valois,

Thanks so much for accepting my full comments at the hearing in Hot Springs. Although I wasn't able to air my full statement, I am sure you will consider the additional comments concerning the containment layers and their questionable conditions. This project is utterly unnecessary and knowingly dangerous. If common sense is considered, there can be no other decision but to disallow this project. Thanks again.

[REDACTED].

On Wednesday, May 17, 2017 6:15 PM, "Shea, Valois" <Shea.Valois@epa.gov> wrote:

Hello,

The EPA has extended the public comment period through Monday, June 19, 2017 for the proposed Underground Injection Control (UIC) Program actions at the Dewey-Burdock site located near Edgemont, SD. These actions include two draft UIC permits and a proposed aquifer exemption decision. Please see the EPA website for the official announcement and administrative record for these proposed actions:

<https://www.epa.gov/uic/extension-public-comment-period-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-0>

The EPA will accept mailed written comments postmarked by June 19 and emailed and faxed comments date stamped by midnight Mountain Time at the close of June 19. My contact information is listed at the bottom of this email and on the website above.

Thank you for your participation in the EPA public review process for these proposed actions.

Valois

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 10:47 AM  
**To:** Shea, Valois  
**Cc:** [REDACTED]  
**Subject:** Fw: Stop uranium mining near Mt. Rushmore

EPA

cc: [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

On Monday, May 15, 2017 8:36 AM, "[REDACTED]" wrote:





PROTECTING COMMUNITIES AND THE ENVIRONMENT

## Uranium mining near Mt. Rushmore puts water at risk

**[Tell EPA: Protect South Dakota drinking water!](#)**



Dear [REDACTED]

Mining company **Azarga/PowerTech** is proposing to mine for uranium just **50 miles from Mount Rushmore** – threatening drinking water for families and ranchers. If this mine is built, it will be the first in-situ leach uranium mine in South Dakota. This type of operation pumps a chemical solution into a groundwater aquifer that contains uranium ore. The chemical solution picks up the uranium, and the solution is pumped back to the surface for processing.

**Groundwater has never been returned to its original condition at any in-situ leach uranium mine in the U.S.**

We can't afford to pollute clean water.

**[TAKE ACTION: Tell the EPA to protect South Dakota's groundwater from uranium mining!](#)**

Thank you,

Bonnie Gestring, Earthworks Northwest Circuit Rider

---

You received this message because you are a member of the EARTHWORKS e-action list.

[Donate to EARTHWORKS](#) | [Visit your member page](#) | [Remove yourself](#)

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, April 24, 2017 11:34 AM  
**To:** Shea, Valois  
**Subject:** Request for Information

Dear Shea,

If you can send me any information pertaining to any activities on Treaty Territory of 1851 and 1868 Fort Laramie Treaties.

I understand there is some activity with uranium mining.

I also request that you make me part of the notification list for tribes. Our organization is chartered by the Rosebud Sioux Tribe to oversee treaty related issues and report back to our tribal council.

Thank You for any assistance.

--

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Friday, May 05, 2017 3:01 PM  
**To:** Shea, Valois  
**Subject:** Resolution from Sicangu Lakota Treaty Council  
**Attachments:** SLTC Resolution 2017-02.PDF

Dear Mrs/Ms Shea,

I would like to submit the attached resolution for the Dewey Burdock Uranium Mine Injection Wells for the record the Sicangu Lakota Treaty Council is requesting that you deny the permits for the Injection Wells.

--

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**CONFIDENTIALITY NOTICE:** The contents of this email message and any attachments are intended solely for the addressee(s) and may contain confidential and/or privileged information and may be legally protected from disclosure. If you are not the intended recipient of this message or their agent, or if this message has been addressed to you in error, please immediately alert the sender by reply email and then delete this message and any attachments. If you are not the intended recipient, you are hereby notified that any use, dissemination, copying, or storage of this message or its attachments is strictly prohibited.

This message contains confidential information and is intended for the addressed recipient(s). If you are not the intended recipient you are notified that disclosing, copying, distributing or taking any action in reliance on the contents of this information is strictly prohibited. E-mail transmission cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. The sender therefore does not accept liability for any errors or omissions in the contents of this message, which arise as a result of e-mail transmission. If verification is required please request a hard-copy version.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 07, 2017 4:27 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining permit for South Dakota

Mark me in as opposed. We have more than enough uranium stored and we should never have let the Clinton's sale 20% of our supply to the Russians. Is this permit being issued to a foreign entity? Shame on the EPA! I hope President Trump drastically reduces the EPA!!! Sincerely, [REDACTED].

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 8:05 AM  
**To:** Shea, Valois  
**Subject:** Comments on Dewey-Burdock UIC permits, aquifer exemption

Greetings,

Thank you for the opportunity to comment. I am opposed to issuing the permits and the aquifer exemption. Waste water should not be pumped back into the ground. Aquifers should not be compromised or reduced in size. The Safe Drinking Water Act was very important for the United States, and should not be weakened. Our good water is precious and must be protected, not used up. Putting bad water back into the ground compromises additional water and resources.

I hope the EPA will do its job to protect the environment, even in this political climate. The EPA should not be influenced by politics and industry, but should maintain its focus on protecting our environment. It has done so many good things since its creation.

Please protect our water and environment.

Thank you,

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 4:29 PM  
**To:** Shea, Valois  
**Subject:** Re: NO - thank you for your comments

Whoops. I think I replied too abruptly. Instead I would rather say: Please, please, please deny this exemption.

It's an emotional issue for me and emotions interfere with my cold reading.

[REDACTED] [REDACTED]

On Tue, Mar 14, 2017 at 5:13 PM, Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)> wrote:

[REDACTED]

Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.

Here is the link to the EPA UIC program website that contains all the information in the Administrative Record, in case you do not already have it:

<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

The public comment period is in effect through May 19, 2017, in case you have any additional comments after reviewing this information.

Thank you!

*Valois*

---

Valois Shea

U.S. EPA Region 8

MailCode: 8WP-SUI

1595 Wynkoop Street

Denver, CO 80202-1129

Fax: [\(303\) 312-6741](tel:3033126741)

Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

**From:**

**Sent:** Saturday, March 11, 2017 6:52 PM

**To:** Sh [REDACTED]

**Subject:** NO

---

No radioactive material must be allowed into our aquifer at any time. Ever. Radioactive material is hazardous to all life forms. This is a an abomination. NO. NO. NO.

That is my input as a member of the public.

Once again: NO.

[REDACTED]

--

*Where there is heroism, there will always be hope.* Winston Churchill

--

*Where there is heroism, there will always be hope.* Winston Churchill

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 4:44 PM  
**To:** Shea, Valois  
**Subject:** Re: NO - thank you for your comments

One more thing: Perhaps you would be interested in reading a letter to the editor I wrote that was published in our local paper yesterday: <http://www2.ljworld.com/news/2017/mar/13/letter-editor-what-about-children/?opinion>

■

On Tue, Mar 14, 2017 at 5:42 PM, [REDACTED] wrote:  
Thank you. And thank you for replying so immediately.

■

On Tue, Mar 14, 2017 at 5:36 PM, Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)> wrote:

I understand & appreciate your concern.

*Valois*

---

Valois Shea

U.S. EPA Region 8

MailCode: 8WP-SUI

1595 Wynkoop Street

Denver, CO 80202-1129

Fax: [\(303\) 312-6741](tel:(303)312-6741)

Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)



**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 4:29 PM  
**To:** Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)>  
**Subject:** Re: NO - thank you for your comments

Whoops. I think I replied too abruptly. Instead I would rather say: Please, please, please deny this exemption.

It's an emotional issue for me and emotions interfere with my cold reading.

[REDACTED]

On Tue, Mar 14, 2017 at 5:13 PM, Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)> wrote:

[REDACTED]

Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.

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<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

The public comment period is in effect through May 19, 2017, in case you have any additional comments after reviewing this information.

Thank you!

*Valois*

---

Valois Shea

U.S. EPA Region 8

MailCode: 8WP-SUI

1595 Wynkoop Street

Denver, CO 80202-1129

Fax: [\(303\) 312-6741](tel:(303)312-6741)

Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

**From:**

**Sent:** Saturday, March 11, 2017 6:52 PM

**To:** Sh [REDACTED]

**Subject:** NO

---

No radioactive material must be allowed into our aquifer at any time. Ever. Radioactive material is hazardous to all life forms. This is a an abomination. NO. NO. NO.

That is my input as a member of the public.

Once again: NO.

[REDACTED]

--

*Where there is heroism, there will always be hope.* Winston Churchill

--

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*Where there is heroism, there will always be hope.* Winston Churchill

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*Where there is heroism, there will always be hope.* Winston Churchill

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, March 08, 2017 4:56 AM  
**To:** Shea, Valois  
**Subject:** COMMENTS ON DRAFT PERMIT

Below is my question and public comment on two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium recovery project.

Question: You have had the permit applications for many years. Why has it taken so long to issue the draft permits?

Comment: The relevant issues concerning environmental impacts were addressed by the USNRC in their EIS and source material license.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Thursday, May 18, 2017 6:05 AM  
**To:** Shea, Valois; Shea, Valois  
**Subject:** Re: Public comment period extended through Monday, June 19 for the proposed EPA actions at the Dewey-Burdock site

Issue the permits to Power tech for their uranium recovery project. As a USNRC project manager I licensed uranium mills using EA, an EIS covers Power tech in the 80s.

[REDACTED]

On May 17, 2017, at 6:15 PM, "Shea, Valois" <Shea.Valois@epa.gov> wrote:

Hello,

The EPA has extended the public comment period through Monday, June 19, 2017 for the proposed Underground Injection Control (UIC) Program actions at the Dewey-Burdock site located near Edgemont, SD. These actions include two draft UIC permits and a proposed aquifer exemption decision. Please see the EPA website for the official announcement and administrative record for these proposed actions:

<https://www.epa.gov/uic/extension-public-comment-period-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-0>

The EPA will accept mailed written comments postmarked by June 19 and emailed and faxed comments date stamped by midnight Mountain Time at the close of June 19. My contact information is listed at the bottom of this email and on the website above.

Thank you for your participation in the EPA public review process for these proposed actions.

*Valois*

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, April 04, 2017 1:07 PM  
**To:** Shea, Valois  
**Subject:** Powertech/Azarga Draft Permit for the ISU Dewey/Burdock Project

After studying and researching pages and in permitting ISU mining, and knowing how long it has been since the last water testing on wells for the above named project; I am proposing that the water should be retested along with the leaching, etc.

Conditions of groundwater can and do change..

There also were test conducted besides the company that was hired by Powertech, and two of three as it showed did not recommend ISU.

Thank you for

The consideration.

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Wednesday, April 05, 2017 5:34 AM  
**To:** Shea, Valois  
**Subject:** Dewey/Burdock ISL  
**Attachments:** 2014.07.15 LaGarry expert opinion\_ML14197A377.pdf

Good Morning,

spent the rest of yesterday sorting thru all my saved papers and documents to find the two sources that were against the project. So far I only came up with one, which (I am sure) You're already familiar with. I attached the PDF file anyway. The other info I found is incomplete and needs further research , are two names [REDACTED] and [REDACTED]

[REDACTED]  
these gentleman did a study on the effects of ISR mining on groundwater.

Contacted Clean Water Alliance with this info, maybe they can contact them easier,  
Will contact you when /if have more info,  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 02, 2017 8:53 AM  
**To:** Shea, Valois  
**Subject:** Re: Dewey/Burdock ISL

Hello,  
I am replying to this e-mail, since I am not sure you remember me.

I attached a link of an article/research that refer to "groundwater pollution" which I had mentioned to you. It does not go into detail of the research like the one PDF document I have, and still look for. Maybe it can lead you into the right direction of the actual test results. Although I am disappointed in the final judgement by the EPA, I feel you should consider the findings. I will keep searching for the above mentioned document,.....i saved so many of them.  
/thank you,  
[REDACTED]

Here is the link: <https://psmag.com/why-are-we-allowing-uranium-miners-to-pollute-groundwater-in-drought-zones>

On Wednesday, April 5, 2017 8:58 AM, "Shea, Valois" <Shea.Valois@epa.gov> wrote:

Hi [REDACTED]  
Thanks very much for taking the time to review your info and pursue the paper by [REDACTED] through the Clean Water Alliance! I know both of them, so I will also see if I can track that paper down. The authors sometimes don't have electronic copies they can share publicly, though, so I appreciate your efforts.

I am familiar with [REDACTED] reviews, but did not have the reference you attached, so thanks for sending it!

## Valois

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129

Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

---

**From:** [REDACTED]  
**Sent:** Wednesday, April 05, 2017 5:34 AM  
**To:** Shea, Valois <Shea.Valois@epa.gov>  
**Subject:** Dewey/Burdock ISL

Good Morning,

spent the rest of yesterday sorting thru all my saved papers and documents to find the two sources that were against the project. So far I only came up with one, which (I am sure) You're already familiar with. I attached the PDF file anyway. The other info I found is incomplete and needs further research, are two names [REDACTED] and [REDACTED]  
[REDACTED]  
these gentleman did a study on the effects of ISR mining on groundwater.



Contacted Clean Water Alliance with this info, maybe they can contact them easier,  
Will contact you when /if have more info,

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, May 14, 2017 7:54 AM  
**To:** Shea, Valois  
**Subject:** Re: Powertech in situ leach mining  
**Attachments:** 2014.07.15 [REDACTED] expert opinion\_ML14197A377.pdf; 2014.07.15 Lagarry testimony 2.pdf; lagarrysupplementaltestimonyfinal\_1-2015 (1).pdf; [REDACTED]upplementaltestimonyfinal\_1-2015.pdf; 1998-07-InSituLeach-UMining.pdf

Statement to oppose the project.

Just read the latest newspaper article about the above proposed project,  
And saw to my amazement that the  
EPA will be "thoughtful" when the decision is made.  
That statement is as much an approval from your agency as it is an insult.  
I am speaking of the BLACK AND WHITE PROOF why this permit should be denied.

- 1) document from the USGS of a survey of the Black Hills and the surrounding area.
- 2) the documentation of the Geo Hydrological department states that Inyan Kara and Minnelusa's water usable for human and animal consumption. So I guess that PowerTech is not honest in their testimony.  
Also, the tests were conducted by Scientist employed by PowerTech.
- 3) there of course is the geological survey of the greater surrounding area from Dr Hannan LaGarry-,  
Which has mostly been ignored!
- 3) Use Of Bedrock Aquifers For Water Supply In The Black Hills Area-
- 4) attachment from an Australian study which very much applies to us and our concerns.

South Dakota's #1 industry is agriculture- #2 industry is Tourism. I believe if this permit for ISL is granted we will both of these revenue incomes.

We already having shortages of water here and are on water rationing in the summer; and now you want to give an foreign controlled uranium company a permit to squander our precious resources for a mineral that is in over abundance, is more expensive to mine than what it sells for;

Most of all, there is the question of trust towards Power Tech, not to long in the past, some of these same people who would like to mine uranium on their land also wanted a soil farm just outside of Edgemont, without the consent of the residents.

That is a fact and it a public record.

I know this is a toally different project, but it is about disrespect, and dishonesty.

So if you are going to be thoughtful, take all these facts into consideration please.

[REDACTED]

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Saturday, June 17, 2017 5:04 AM  
**To:** Shea, Valois  
**Subject:** Comment against the proposed Dewey - Burdock UIC Project

We are now entering another of many severe periods of severe drought in South Dakota; Governor Dugaard just declared a emergency measure for ranchers and farmers.

It seems that issuing a permit to use precious waster recourses for a project like ISL uranium mining is most irresponsible, considering that the use and construction of nuclear power plants is in decline as we speak. Uranium energy is in decline!

The Inyan Kara water is usable if need be, with filtering, and so is the water in the Minnesula Aquafur .

We cannot afford to squander this precious resource on a venture that surely will have irreversible negative devastating results for a large Area and population. Not mentioning the overall health of the environment.

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 6:42 AM  
**To:** Shea, Valois  
**Subject:** Tabular Data Archive

Hello ,

No need to apologize about the misspelling of my name.....

Even my spell checker likes to call me "rebate".....

Anyway I attached this site about the South Dakota droughts over the last years, it might give you an idea, that we really don't have much water to spare for frivolous use; especially when it contaminates the little supply ( even if it not the best)we have.

[REDACTED]  
<http://droughtmonitor.unl.edu/MapsAndData/DataTables.aspx?state,SD>

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 6:48 AM  
**To:** Shea, Valois  
**Subject:** U.S. Geological Survey Water-supply Paper - Google Books

I guess, the more you look the more you find. Here is another report of droughts in the last 60 years in South Dakota by the USGD.

Regards,

[REDACTED]

<https://books.google.com/books?id=8DxSAQAAMAAJ&pg=PA501&lpg=PA501&dq=drought+declarations+in+the+last+20+years+in+south+dakota&source=bl&ots=xErXxPI6TB&sig=97p8kugUCWFpdNGISeRL1sS2pR0&hl=en&sa=X&ved=0ahUKewjo0bz8scfUAhVD9mMKHYPKAQUQ6AEIQzAI#v=onepage&q=drought%20declarations%20in%20the%20last%2020%20years%20in%20south%20dakota&f=false>

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 6:50 AM  
**To:** Shea, Valois  
**Subject:** Re: drought report

Sorry, the drought report is for the last "20" years.

Sent from my iPhone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 11:44 PM  
**To:** Shea, Valois  
**Subject:** Comment on the Dewey-Burdock class III and class V injection well draft area permits.

This is my comment on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells.

Old uranium mines in the Dewey-Berdock area should be fully reclaimed before new mining is permitted. Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the Proposed deep disposal wells will be impossible, and our groundwater is likely to be contaminated.

A full survey of cultural and historical sites that must be protected is needed before mining or deep disposal are allowed.

The proposed mine and Deep Disposal Wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7,000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is likely.

The history of uranium mining indicates that uranium mining cannot be done in a way that avoids creating or leaving contamination that will be reversible. This project should be stopped until it can be proved that any contamination will not migrate outside the area mined and aquifers affected can avoid contamination with uranium and heavy metal particles.

The EPA should only consider protection of the Public interest in our water and it should require that Powertech/Azarda provide a reserve account that will pay for cleanup of any contamination that results. The main owner and beneficiaries of the uranium produced are foreign and not likely to avoid leaving contamination that could lead to another Superfund cleanup that will be billed to taxpayers.

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 11:33 PM  
**To:** Shea, Valois  
**Subject:** Comments on Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

Dear Ms. Shea,

I object to EPA's granting of Class III and Class V Injection Well Area Permits to Powertech-Azarga in the Dewey-Burdock area of South Dakota.

I object to allowing them to install up to 4,000 injection wells to mine uranium and to your potentially exempting parts of the Inyan Kara aquifer from the Safe Drinking Water Act, meaning that it can be polluted and will never be used for drinking water in the future.

I especially object to allowing them pump wastes into our underground aquifers.

I am not a geologist or a hydrogeologist, but being familiar with the vulnerable geology in the area, I began doing some research about the subject. One paper that I found to be particularly insightful was: *Epstein, J.B., 2000, Gypsum karst and hydrological evolution in the northern Black Hills, South Dakota: in Strobel, M.L., A.D. Davis, J.F. Sawyer, C.J. Webb, C.A. Naus, and P.H. Rahn, eds., Proceedings of the 1999 conference on the Hydrology of the Black Hills: South Dakota School of Mines and Technology Bulletin 20, p. 73-79.*

This paper discusses how dissolution of anhydrite in the Minnelusa Aquifer at depth has produced a regional collapse breccia, many sinkholes, extensive disruption of bedding, and breccia pipes and pinnacles, some of which extend more than 300 m (1,000 ft) in the overlying strata. And this dissolution is an on-going phenomenon, so we have no business using these formations for in-situ uranium mining and especially not for waste disposal.

It goes on to state that the Minnelusa Formation is a heterogeneous unit. The upper part, which is highly brecciated and contains numerous breccia pipes, has greater fracture porosity than the lower part. The point is that the entire Minnelusa should not be considered a unified aquifer.

Therefore I strongly urge you to recommend REJECTION of these permits based on the risk of contaminating our underground aquifers that people rely on for drinking water for both people and livestock.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

P.S. Please let me know if you want me to send you a copy of the above-referenced paper. I hesitated to attach to this e-mail for fear that it would exceed the size limit and prevent you from receiving these comments.





## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, June 13, 2017 11:33 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining in the Black Hills

Dear Commissioners -

As a former elected official living in a sensitive U.S. watershed, I have learned that fresh water resources are scarce to begin with, and becoming even scarcer, especially West of the 100th Meridian (I was born in Eastern Many Branstetter and frequently pass through the Black Hills on my way "home". Other resources, including public confidence, are also scarce these days, which makes your decisions regarding uranium mining in the Black Hills even more sensitive. As you know better than I, any activity that may potentially jeopardize these resources needs to be prioritized against potential and actual gains realized by that activity. Uranium mining in the Black Hills is an obvious loser in this equation.

Several factors make it clear that these trade offs for uranium mining in the Black Hills would be a very poor investment in our future as a society, as well as regional residents. First, uranium mining has known, statistically certain risks (contamination of land and fresh water from mining and waste disposal), as well as potential risks (mining accidents, nuclear accidents with catastrophic consequences such as those seen at Chernobyl and Fukushima, loss of community confidence with its many attendant costs) that are not worth the additional energy produced for anyone, either regionally or nationally. Second, the increased availability of other, less risky and generally cheaper energy resources make the more risky choice of uranium extraction a poor investment, strictly from a community investment perspective. At worst, brief energy shortages may have the effect of reducing public reliance on these energy sources--something which some think would be a desirable for heavy societal consumption of energy. Third, while I believe that the jobs created by mining enterprises have value, they do not outweigh even other potential sources of energy sector jobs, much less the enormous interests of the public and of other enterprises in clean water and communities confident in the decisions made by their representatives and other leadership (such as yours). Once this confidence is lost through either initial decisions or their eventual consequences, regaining public confidence and encouraging investment may take generations. Risky uranium mining is almost certain to have such effects on segments of society already troubled by past public decisions.

It should be clear that I oppose uranium mining for these reasons, as any fair-minded person would after careful consideration of these and other arguments. As a steering committee member for the National League of Cities' Energy, Environment, and Natural Resources committee 2005-2007), I learned that energy resources (such as uranium for nuclear energy, coal for oxidized energy, and water for hydroelectric energy) often must be prioritized against other natural resources (for example land and water resources traded for radioactive products, habitat and cultural resources for minings, and community health for energy extraction & consumption in the case of uranium). Your steering of this difficult community-wide decision regarding utilities, which are the primary users of energy production from uranium extraction, is a heavy burden, and I greatly appreciate your willingness to manage this sometimes thankless work. I hope that you will find your way to a decision in the best interest of all constituents--current and future.

Sincerely,

[REDACTED]  
[REDACTED]

Get Outlook for iOS

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## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, June 13, 2017 11:25 AM  
**To:** Shea, Valois  
**Subject:** Uranium mining, South Dakota

Please do not allow compromise of our water aquifers for the short term benefits of mining. Water pollution is for eternity. Thank you for your attention.

[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 6:14 PM  
**To:** Shea, Valois  
**Subject:** EPA seeks public comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

**NO!**

**Leave the sacred Black Hills alone.**

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 6:10 AM  
**To:** Shea, Valois  
**Subject:** Public Comments Regarding Proposed South Dakota Aquifer Exemptions

I read this proposed change and assumed that whomever sent this to me was pranking me. Surely the United States government would not be proposing permitting, among other things, the disposal of uranium mining materials into areas that are anywhere drinking water sources. This is unacceptable.

[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, March 20, 2017 3:02 PM  
**To:** Shea, Valois  
**Subject:** Injecting waste in aquifer

I am against allowing companies to inject uranium mining waste into the aquifer. They say it is cleaned, but what if it isn't? You can't clean it up after it has been injected.

*NEVERTHELESS, SHE PERSISTED.*

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, May 18, 2017 1:15 PM  
**To:** Shea, Valois  
**Subject:** comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

Good morning, Shea;

Thank you for the opportunity to comment on draft permits and aquifer exemption for uranium mining project in southwestern South Dakota.

Although there may be perceived financial and "safety" reasons the corporation is proposing the Black Hills (the most sacred place to the Sioux people, I am sure you know) for this project, I implore the permit to inject radioactive waste near clean water (a rapidly diminishing resource) be denied. From my understanding, plans and development are only now in process in case there is a catastrophic contamination of the water source. This project is a gamble we should not take.

There are many renewable energy resources available. Please feel free to contact me for more information.

Finally, there is a reason the first thing we look for on other planets is fresh water to sustain human life. Let us not take the gifts we have here on Earth for granted.

Sincerely,

[REDACTED]  
[REDACTED]

Sent from my iPhone



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 5:51 PM  
**To:** Shea, Valois  
**Subject:** No waste

Please I beg of you-no uranium mining waste released into SD aquifer!!  
You are effectively dooming the planet, and all her children, with your crazy CO2 beliefs and reckless and wanton destruction of our delicate environment.  
SHAME

[REDACTED]  
Registered and INDEPENDENT voter

"Whatever you are, be a good one. "  
~Abraham Lincoln

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 11:57 AM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock Public Comment

Dear EPA Region 8 Administrators,

I wish to submit this email as a public comment in opposition to the proposed Dewey-Burdock Class III and Class V Injection Well Draft Area Permits to be located near Edgemont, South Dakota.

I was born and raised in Pierre, SD and grew up with the Missouri River in my backyard. I drank, cooked with, and bathed in water from wells tapping the Missouri River. I learned how to catch walleye, bass, and salmon that swam in its waters and relished the meals they provided for my family. I even worked as a life guard on the banks of the river while working for Mark Hollenbeck when he was the mayor of Ft. Pierre. Mark is a good man, but this is a bad idea.

The Cheyenne River is one of the biggest tributaries of the Missouri River and this proposal puts the Cheyenne and the Missouri on a collision course for pollution from not only groundwater migration, but from surface water pollution as well. To say this water will all be contained "on-site" is a bit like trying to catch a rain storm with an ice-cream pail. To further say that Powertech/Azarga will inject cleaner water back in the ground than what came out is even more ridiculous when one looks at the stratified nature of the underlying aquifers in the area. Yes, there are underground water formations that are not fit for human consumption, but interspersed at varying depths are formations that are comprised of pristine water that thousands in Rapid City and throughout the Black Hills and beyond depend on for drinking, for farming, and for ranching. It is these formations that could be at risk that must be considered.

In business school one of the first lessons students are taught is that of a "cost-benefit analysis." Simply put, one looks at the costs of a proposal and the benefits to be derived and if the costs outweigh the benefits common sense dictates that you do not proceed. The potential environmental costs of this proposal far outweigh any short-sited economic hiccup this could provide our state.

South Dakotans are still paying the tab left by previous mining companies and uranium mining has left one of the biggest tabs to date. Taxpayers have already spent millions on uranium brownfield mitigation in the Slim Buttes area of South Dakota and to this day near Edgemont there are hundreds of sites that have yet to see any mitigation decades after the mining interests left town with all the economic prosperity they originally promised. Who is left to sort out the mess, South Dakotans and folks like you with the federal government. Who is left with the uncertainty as to what the environmental and health care ramifications are that remains? Typically those who can do the least about it, the unborn child who has a greater likelihood of birth-defects, the disenfranchised on reservations, or those who can neither afford nor have time to even begin to figure out how to deal with it. Unless, we stop the problem before it starts.

Let's first clean up the waste-fields and open pits we have already, before we start creating problems we can't see or fix so easily miles underground. In the meantime, ask yourselves if you would drink the water in a pitcher or bottle from this area, or from Pierre if this project is allowed to proceed. Better yet, would you feel comfortable giving that water to your grandchildren today or twenty years from today? My Rapid City friends,

my ranching friends, my farming friends, and my Lakota friends are correct. We are indeed all connected and we all live downstream.

Thank you for your consideration of my words and for your consideration of my home.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 10:51 AM  
**To:** Shea, Valois  
**Subject:** deposit of uranium mining waste in S.D. aquifer

To Whom it May Concern:

Have you lost your minds? If your goal is to poison the citizenry, I suppose depositing these materials into an aquifer would be a good way to accomplish that. Do you know what an aquifer is? Do you know that ground water from many sources ultimately reaches and recharges aquifers? In the South Dakota region, almost everyone I know drills deep wells into aquifers for drinking water.

Question 1: precisely what is the identity of the designated aquifer?

Question 2: what makes you think any aquifer can be protected from any material that might be deposited into the ground?

Definitely oppose this plan.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, March 10, 2017 12:04 PM  
**To:** Shea, Valois  
**Subject:** uranium mining in southern Black Hills

Given the track record of mining in the Black Hills, gold and other, and of global corporations which are more interested in the bottom line than in the common good, I would definitely oppose any such mining, no matter what the method, in the southern Black Hills. The Cheyenne River already has pollutants from gold mining flowing through it to communities which rely on that river for drinking water. The fiasco of dumping uranium tailings near Saint Stephens, WY, and their subsequent costly removal, and the millions of dollars spent by the DOE to monitor ground water and provide clean water for those who were affected by in the area, convince me that uranium mining is of no practical benefit to the nation, and much less to those in South Dakota who potentially will be affected by it. Refuse the permit. The risk is not worth the money to be generated.

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 06, 2017 3:26 PM  
**To:** Shea, Valois  
**Subject:** Public comment on proposed Uranium mining project

Valois Shea

U.S. EPA Region 8 Mail Code: 8WP-SUI

1595 Wynkoop Street

Denver, CO 80202-1129

Dear Ms. Shea,

I am writing this email to express my concern for the proposed uranium mining project in southwestern South Dakota. My concerns are mainly for future generations and the of course the environment.

Coming from both a scientific background and from an Indigenous background, I urge you to deny this project in whole. Seeing and living the long term effects of uranium mining in my own community as well as on my reservation, I have seen and experienced all the negative impacts uranium mining has on both people that live in close proximity as well as the environment surrounding the mines. I personally seen the destruction to the land, the air and especially the water.

My research is focused on finding a solution to the water contamination by uranium, arsenic, sulfates and a number of other metals/elements of concern. Uranium chemistry is very complicated and it is difficult to imagine the environmental impacts by this proposed project. Though I feel optimistic that we are closer to solving a portion of the problem, it will cost more to remediate a contaminated sites in the future which is inevitable.

I am deeply saddened of this news and I sincerely hope that this project is not allowed to move forward.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED]

Email: [REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, May 18, 2017 10:48 PM  
**To:** Shea, Valois  
**Subject:** No uranium mining on the Inyan Kara aquifers

Hello Ms. Shea,

I'm writing to express my opposition to the offering of draft permits to Powertech in the Inyan Kara aquifer system. These permits will allow Powertech to mine uranium by drilling fourteen wells into the underground water system. Should an accident occur here, it will put further harm to the drinking water source for the Lakota people. With the controversy of DAPL still fresh with recent oil spills, it's crucial that there is no more destruction to Native American lands. Make sure to revoke any license for uranium mining for the future.

Thank you and have a nice time.

[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 9:52 PM  
**To:** Shea, Valois  
**Subject:** Re: Thank you for your comments

Thank you. WHat will we drink in the end, if mining, dredging, leaky pipelines, and general thoughtless pollution reign unimpinged? THANK YOU EPA for protecting us!!!! [REDACTED]  
[REDACTED]

On Mon, May 15, 2017 at 9:50 PM, Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)> wrote:

Thank you for emailing me your comments on the draft UIC Dewey-Burdock permitting actions. I have added your email to the list of public comments received. I have also added you to my contact list to keep you informed on future EPA actions related to the site.



**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 9:23 AM  
**To:** Shea, Valois  
**Cc:** [REDACTED]  
**Subject:** Re; permits at Crow Butte

# My statement to the EPA regarding the permits at Crow Butte, Cameco's Uranium Mine <https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>

Valois Shea ([shea.valois@epa.gov](mailto:shea.valois@epa.gov)) Fax: 303-312-6741 U.S. EPA Region 8 Mail Code: 8WP-SUI 1595 Wynkoop Street Denver, Colorado 80202-1129 " One permit would allow the company to drill 4,000 holes to mine using 8,000 gallons of water per minute for 10 years. The other permit would allow the company to pump mining waste into the Minnelusa aquifer (which people use for drinking water) through 4 disposal wells. "

I began to learn of the insitu uranium mining, in the Black Hills, in late 2013. I attended the NRC hearings in Rapid City, South Dakota. Since that time I have devoted my time and energy gathering information and I have presented comments at further NRC Hearings. I attended the NRC hearings for Crow Butte, the Cameco mining company, and now, the Environmental Protection Agency is tasked with discovering further information and I have been discovering the rules of the NRC and the EPA, what are the similarities and the differences. An example would be : CERCLA

## Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)

## Quick Links

- [PDF of CERCLA, from U.S. Senate](#)(167 pp, 423K, [About PDF](#))
- The official text of the CERCLA is available in [the United States Code on FDSys](#), from the US Government Printing Office **42 U.S.C. §9601 et seq. (1980)**<https://www.epa.gov/laws-regulations/summary-comprehensive-environmental-response-compensation-and-liability-act>

MEMORANDUM OF UNDERSTANDING BETWEEN THE ENVIRONMENTAL PROTECTION AGENCY AND THE NUCLEAR REGULATORY COMMISSION <https://www.nrc.gov/reading-rm/doc-collections/news/2002/mou2fin.pdf>

I found several links of the [usgs.gov](https://pubs.usgs.gov/wri/wri014129/pdf/wri014129.pdf) some all the way back from 1931, regarding both the Minnelusa and Madison aquifers. two of the most important aquifers in the Black Hills, . This is good information provided by Experts : A U.S Department of the Interior , U.S. Geological Survey, 123 page document which they titled : Geochemistry of The Madison and Minnelusa Aquifers in the Black Hills area, South Dakota which was prepared in cooperation with the South Dakota Department of Environment and Natural Resources and the West Dakota Water Development District.

<https://pubs.usgs.gov/wri/wri014129/pdf/wri014129.pdf>

For example on page 27 “ Table 1. Saturation indices for selected samples from wells completed in the Madison and Minnelusa Aquifers “ Beginning on Page 65 discusses the Interactions between the two Aquifers. Page 68 discusses the Interactions at Artesian Springs. On Page 75 the use of Dye testing is discussed , and this brings me to discuss my comments to the NRC at the Mueller Center at Hot Springs, South Dakota. Thanking you in advance for your time and consideration. Professor Daniel Noble, retired, from the School of Mines and Technology, Rapid City, accompanied me to the hearing. So much expert testimony is already on record for the EPA to draw on. All of these water systems are connected and need to be kept as clean as possible. “ **the Madison Aquifer which affects an entire Region, which includes: South Dakota, North Dakota, Wyoming, Nebraska, Kansas, and Southern Canada.** “ My comments were taken from this conversation which I made into a FB Note.

Organic safe green dye, proves beyond ALL doubt that " in situ "mining, WILL permanently destroy the Madison Aquifer.

April 15, 2014 at 12:48am <https://www.facebook.com/notes/sandra-irene-seide-rodders/organic-safe-green-dye-proves-beyond-all-doubt-that-in-situ-mining-will-permanen/593528617398692/?pnref=story>

This is my disclaimer : I, [REDACTED] take full responsibility for this FB Note as I have permission from noone but my Creator/ God and this still needs some revisions~~ April 15th, 2014This is CRITICAL INFORMATION. The thread is [REDACTED] and his FB friends, which I am still one of~~

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[REDACTED] of [REDACTED] Hello Friends. Below is a photo of my former neighbor, [REDACTED] at the bottom of Wind Cave at 'The Lakes", which IS the Madison Aquifer. We have spent countless hours discussing this. He was my neighbor by pure coincidence in Hot Springs, SD.

I never dreamed that relationship would become so critical at this hour.

Seen in the photo attached, is a SUCCESSFUL test that used organic safe green dye, and it proves beyond ALL doubt that Power-Tech WILL permanently destroy the Madison Aquifer.

At your service, [REDACTED]

<http://www.nps.gov/wica/historyculture/lakes-dye-tracing-project.htm> { addendum:

## Caving Narratives

Caving narratives are short summaries of caving trips into Wind Cave.

Most describe exploration trips, but some deal with significant finds or locations, science projects in the cave, or even trips where photography is the main goal of the trip.

These trips are organized by the zone in the cave where the caving activity takes place and date. The zones are: Historic, Colorado Grotto, the Lakes and Half-Mile Hall Zones (which includes the Club Room Area), North Zone, Silent Expressway and Southern Comfort Zones. Clicking on the link will take you to the zones listed. The section at the end of the list are the significant finds or locations that led to new discoveries or a better understanding of the cave. Many of these involve several trips to an area.

<http://www.nps.gov/wica/historyculture/caving-narratives.htm>

{ Scroll on down for Significant Finds: “

“

We cannot allow this to be destroyed for we are destroying ourselves { { { (A subsequent cave radio test determined that the top of this dome is 3-feet below the sidewalk and the bottom of Wind Cave Canyon). } } } We know so little ~~

<http://www.nps.gov/.../historycul.../waterfall-discovery.htm>

sisR: 04/17/2014 { I am working on my notes/drafts and because of the deadline to send comments, being April 30th; I feel this one is my priority~~ { The Bear Lodge Critical Rare Earth Project } and I need to expand some of the links in Robb's FB Note, as, the narratives of the folks who explored the Madison Aquifer, in the Wind Cave National Park, over a one year time frame, 2007, which included Jason's Organic Green Dye Test the later part of the year~~ for this Bear Lodge Project, is The Devil's Tower area of Wyoming and will greatly affect both the MINNELUSA and the MADISON AQUIFERS. In Gratitude, NAMASTE'~~ I am sorry, please forgive me, I Love you~~ bye for now~~ } “

“ Shuttlesworth Fine Art: There are several interviews available, if you discover them, please post below. ***One was with a PBS crew.*** They cannot destroy this overwhelming evidence AGAINST Power-Tech, let's finish this friends. Thank you, [REDACTED] “

Respectfully submitted.

[REDACTED], formerly of [REDACTED]

Currently residing:

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 6:37 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining in the Black Hills

Dear EPA:

Please do not allow Uranium Mining in South Dakota including the Black Hills. The pollution from drilling will be forever in our underground water - we are a semi-dry region, and we depend on all of our limited sources of water. Just like now - we are in a potential multi-year drought - our people, our animals, or crops depend on underground water - and if it is forever polluted, we will die.

The water that comes into the Cheyenne River is polluted from the Lead/Deadwood mines - and they have been closed for a long time - the pollution continues. This could be the condition of all west river South Dakota.

Plus uranium pollutes the soil and everything around it - for a million years. Why would we do this to our children and our future? We are ranchers and farmers, and we like to plan for the future - allowing this kind of damage to our lands is not going to leave anything for our future.

And also importantly, The Black Hills are the Lakota Garden of Eden. Would you drill in your Garden of Eden? This is where we came from, our Creation Story - would you destroy something so sacred?

Please do not allow Uranium Mining in South Dakota and the Black Hills - Energy development has already moved toward renewable energy - this would be counterproductive - REMEMBER WHAT IS HAPPENING TO THE OCEAN FROM THE REACTOR ACCIDENT IN JAPAN.

Thank you for listening -

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 5:57 PM  
**To:** Shea, Valois  
**Subject:** Oppose uranium mining waste disposal in aquifer

To the EPA:

I vehemently oppose the release of the waste from uranium mining into the SD aquifer. Providing an exemption for such action endangers the water supply and public health. I urge the EPA to refuse the requested. permission.

[REDACTED]  
[REDACTED]  
[REDACTED]

Sent from my iPhone



## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Tuesday, May 09, 2017 1:54 PM  
**To:** Shea, Valois  
**Subject:** Black Hills uranium mining permits comments

Dear EPA, Region 8:

Here are my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:

Old uranium mines in the Dewey-Burdock area should be fully reclaimed before any new mining is permitted. Adequate oversight of the quality of liquid wastes pumped into the Minnelusa Formation through the proposed deep disposal wells will be impossible, and our groundwater is likely to be irreversibly contaminated. A full survey of cultural and historical sites is needed before any mining or deep disposal is allowed. Cultural and historical sites must be protected. It should also be noted that the proposed mining area falls within the boundary of the Fort Laramie Treaty of 1868. Full engagement over this issue with any tribes who are party to that treaty is essential. The US constitution states that treaties are the supreme law of the land. The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is highly likely. The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather than relying on imperfect protection and clean-up processes. Even one death or illness as a result of uranium mining is totally unacceptable. The Black Hills are a semi arid area prone to regular drought. The vast quantities of ground water needed for the mining and the potential for contamination are unacceptable. Aquifers are not replenished overnight. Water is indeed life! Please do not risk it just to line the pockets of a private corporation.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 4:19 PM  
**To:** Shea, Valois  
**Subject:** Uranium in the black hills.

In these times of tension, I believe few things could be as damaging toward a true reconciliation with and the recognition and respect of the sovereignty held by the first people of this continent than the EPA's proposed plans to extract Uranium in the Black hills; particularly without tribal sanction. It seems that with each passing year, the US seems less and less committed of maintaining its obligations to the First Nations; first forcing the unwanted Keystone pipeline upon them and now this. We as a nation should be reaffirming our commitment to respecting the sovereignty and cultural spaces which connect the Indigenous communities to their history & culture, which both have a lot to teach us all about the true meaning of stewardship, reciprocity, and conservation.

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Saturday, March 11, 2017 4:31 PM  
**To:** Shea, Valois  
**Subject:** under ground injection control

I'm against this. please help save our country. thank-you

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 12:01 PM  
**To:** Shea, Valois  
**Subject:** No uranium mining!!!

Stop the mining on sacred Native American lands. No uranium mining in the Black Hills!!

Best regards,  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 2:35 AM  
**To:** Shea, Valois  
**Subject:** Proposed Dewey-Burdock Uranium Mine project

Aloha Valois Shea

I am writing to request that the EPA deny the permits for the proposed Dewey-Burdock Uranium Mine project. This proposed mining project is likely to contaminate aquifers of the Black Hills and put the health and safety of those drinking that water at risk.

In addition, this mining project is next to the Black Hills, and is within the boundaries of an area set aside for the tribes of the Great Sioux Nation by treaties signed in 1851 and 1868. The Black Hills are sacred to the Lakota Nation, and these tribes are opposed to this mining project, it clearly violates their 1851 & 1868 Treaty Rights. They did not give up their water rights or minerals rights to these areas.

Therefore, to follow the law, the EPA has no choice but to deny these permits.

Respectfully,  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, June 13, 2017 8:21 AM  
**To:** Shea, Valois

Dear EPA Region 8:

Here are my comments on the Underground Injection Control Program's Draft Permits for the Proposed Dewey-Burdock Uranium Mine and Deep Disposal Wells:

- Old uranium mines in the Dewey-Burdock area should be fully reclaimed before new mining is permitted.
- Adequate oversight of the quality of liquid wastes pumped into the Minneusa Formation through the proposed deep disposal wells will be impossible, and our ground water is likely to be contaminated.
- A full survey of cultural and historical sites is needed before mining or deep disposals allowed. Cultural and historical sites must be protected.
- The proposed mine and deep disposal wells are in an area that is documented to have faults, fractures, breccia pipes, and over 7,000 old boreholes that have not been properly plugged. It will be impossible to contain mining fluids or waste liquids, and contamination of our groundwater is very likely.
- The history of uranium mining indicates that uranium mining cannot be done without creating and leaving contamination. This project should be stopped until it can be proved to be safe, rather relying on imperfect protection and clean-up processes.

Sincerely,

[REDACTED]

Valois Shea  
U.S.EPA, Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 9:02 AM  
**To:** Shea, Valois  
**Subject:** Object to proposal to inject uranium waste under aquifer

This is not safe. There are no guarantees this will not contaminate the water. So let's not go there. Previously they were told no, the answer should still be no.

[REDACTED] [REDACTED]  
Concerned citizen

**SICANGU LAKOTA TREATY COUNCIL**  
**RESOLUTION NO. 2017-02**

**WHEREAS**, the Rosebud Sioux Tribal Council has established a Sicangu Lakota Treaty Council to protect, analyze, educate, and study issues related to the Fort Laramie Treaty of 1851 and the Fort Laramie Treaty of 1868, and other related treaties; and

**WHEREAS**, the Sicangu Lakota Treaty Council to consider and protect the Sicangu Lakota Way of Life pertaining to cultural practices and sacred sites within the treaty boundaries makes the following recommendation, and

**WHEREAS**, the Rosebud Sioux Tribe or Sicangu Lakota Oyate is a successor Tribe to the bands of the Dakota/Nakota/Lakota Oceti Sakowin Tribes also known as the Great Sioux Nation that are signatory bands to the Fort Laramie Treaties of 1851 and 1868; and

**WHEREAS**, the Oceti Sakowin tribes of the Lakota, Dakota, and Nakota consider the Black Hills of South Dakota embodies ancient sacred sites to include and not limited to Inya Kaga, Ki Iyanka Ocanku Sa (Red Race Track), Wasun Wiconiye (Wind Cave), Mato Tipila (Bear Butte), Hihan Kaga (Black Elk Peak), Buffalo Gap, Pesla, and

**WHEREAS**, the Sicangu Lakota Treaty Council determines that the Dewey Burdock Uranium Mine Injection Wells are within the sacred site Ki Iyanka Ocanku Sa or Red Race Track which is held as a spiritual and sacred site, and

**WHEREAS**, the Policy Statement in the EPA's policy is to consult on a government-to-government basis with federally recognized governments when EPA actions and decisions may affect tribal interests. Consultation is process of meaningful communication and coordination between EPA and tribal officials prior to EPA taking actions or implementing decisions that may affect tribes. As a process, consult includes several methods of interaction that may occur at different levels. The appropriate level of interaction is determined by past and current practices, adjustments made through its Policy the continuing dialogue between EPA and tribal governments, and program and regional of consultation procedures and plans. and

**WHEREAS**, the United States Environmental Protection Agency Region 8 is requesting public comment by May 19, 2017, on two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations. The Dewey-Burdock site is located in southwestern Custer County and northwestern Fall River County, on the Wyoming/South Dakota border, and

**WHEREAS**, the EPA Region 8 UIC Program is issuing two Draft UIC Area Permits to Powertech (USA) Inc. of Greenwood Village, Colorado, for injection activities related to uranium recovery. One is a UIC Class III Area Permit for injection wells for the ISR of uranium; the second is a UIC Class V Area Permit for deep injection wells that will be used to dispose of ISR process waste fluids into the Minnelusa Formation after treatment to meet radioactive waste fluids into the Minnelusa Formation after treatment to meet radioactive waste and hazardous waste standards. The EPA is also proposing an aquifer exemption approval in connection with the Class III Area Permit to exempt the uranium-bearing portions of the Inyan Kara Group aquifers, and

**WHEREAS**, the EPA is also seeking comment on two options for approval of the aquifer exemption that Powertech requested related to the Class III permit application. The two options are discussed in the Aquifer Exemption Draft Record of Decision available on the EPA Region 8 UIC Program Website, and



**SICANGU LAKOTA TREATY COUNCIL**  
**RESOLUTION NO. 2017-02**

**WHEREAS**, the Sicangu Lakota Treaty Council has determined that both of the proposed injection wells are located within the 1851 and 1868 Fort Laramie Treaty Boundary lines, and therefore in violation of the Fort Laramie Treaty of 1851 and 1868,

**WHEREAS**, Article 6 of the US Constitution states that “This Constitution, and the laws of the United States which shall be made in pursuance thereof; and all treaties made, or which shall be made, under the authority of the United States, shall be the supreme law of the land; and the judges in every state shall be bound thereby, anything in the Constitution or laws of any State to the contrary notwithstanding.” And

**WHEREAS**, the American Indian Religious Freedom Act (AIRFA) (16 U.S.C. 1996) AIRFA establishes the policy of the federal government “to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including, but not limited to, access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites and

**WHEREAS**, the Archeological Resources Protection Act of 1979. (ARPA) (16 U.S.C. 470aa-mm) ARPA requires federal agencies to consult with tribal authorities before permitting archeological excavations on tribal lands (16 U.S.C. 470cc(c)). It also mandates the confidentiality of information concerning the nature and location of archeological resources, including tribal archeological resources, and

**WHEREAS**, the National Historic Preservation Act (NHPA) Regulations Implementing Section 106 (36 CFR Part 800) The regulations implementing Section 106 of the NHPA require consultation with Indian tribes throughout the historic preservation review process. Federal agencies are required to consult with Indian tribes on a government-to-government basis, in a manner that is respectful of tribal sovereignty. The regulations require federal agencies to acknowledge the special expertise of Indian tribes in determining which historic properties are of religious and cultural significance to them, and

**WHEREAS**, the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001, et. seq.) NAGPRA requires consultations with Indian tribes, traditional religious leaders and lineal descendants of Native Americans regarding the treatment and disposition of specific kinds of human remains, funerary objects, sacred objects and other items. Under the Act, consultation is required under certain circumstances, including those identified in Sections 3002(c), 3002(d), 3003, 3004, and 3005, and

**WHEREAS**, the National Environmental Policy Act (NEPA) Implementing Regulations 40 CFR Part 1500 NEPA requires the preparation of an environmental assessment (EA) or environmental impact statement (EIS) for any proposed major federal action that may significantly affect the quality of the human environment. While the statutory language of NEPA does not mention Indian tribes, the Council on Environmental Quality (CEQ) regulations and guidance do require agencies to contact Indian tribes and provide them with opportunities to participate at various stages in the preparation of an EA or EIS. CEQ has issued a Memorandum for Tribal Leaders encouraging tribes to participate as cooperating agencies with federal agencies in NEPA reviews. Section 40 CFR 1501.2(d)(2) requires that Federal agencies consult with Indian tribes early in the NEPA process, and

**WHEREAS**, the EPA states that “Class V wells are used to inject non-hazardous fluids underground. Most Class V wells are used to dispose of wastes into or above underground sources of drinking water. This disposal can pose a threat to ground water quality if not managed properly.”, and

## **SICANGU LAKOTA TREATY COUNCIL**

### **RESOLUTION NO. 2017-02**

**WHEREAS**, the Sicangu Lakota Treaty Council considers the proposed injection wells locations are on or near the Black Hills which the Oceti Sakowin Tribes considers sacred, and

**WHEREAS**, the Sicangu Lakota Treaty Council reminds the EPA that according to Lakota oral history there are underground water channels or chambers in the Black Hills region that reach the Oglala Aquifer and that said the injection wells toxic chemicals or substances could harm water sources, wells and supplies that are used by humans within the said Treaty Boundaries, and

**WHEREAS**, The Sicangu Lakota Treaty Council opposes any permits to be granted by the EPA for mining, injection wells, fracking, or any type of activities that will harm the Sacred Black Hills and the Oceti Sakowin Tribes within the Fort Laramie Treaty of 1851 and 1868, and

**THEREFORE, BE IT RESOLVED**, that the Sicangu Lakota Treaty Council hereby strongly urges and requests the EPA to deny both permits and any future permit applications relating to Uranium mining or the extraction of minerals or rare earth elements.

### **CERTIFICATION**

This is to certify that the above Resolution No. 2017-02 was duly passed by the Sicangu Lakota Treaty Council on May 2, 2017, Motion to approve by Shane Red Hawk. Second by Delano Clairmont with a vote of Four (4) in favor, Zero (0) opposed, and One (1) not voting. The said resolution was adopted pursuant to authority vested in the Sicangu Lakota Treaty Council under the laws of the Rosebud Sioux Tribe. A quorum was present.

ATTEST:

[REDACTED]  
[REDACTED] - Chairman

[REDACTED]  
[REDACTED] Vice-Chairman

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, June 13, 2017 5:25 PM  
**To:** Shea, Valois  
**Subject:** public comment: PROTECT BLACK HILLS WATER

Dear Valois,

I am a Black Hills land owner and concerned citizen writing with regard to the pending permits that benefit the company Powertech at the expense of land, health and water.

Please DO NOT grant the proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota OR the two Draft UIC Area Permits to Powertech for injection activities related to uranium mining.

I encourage you to heed common sense. Make a sane and honorable decision which respects life and the future generations. Say NO to Powertech!

We who call the Black Hills home will not stand idle if you take the side of corporate exemption and high risk contamination. Water is more valuable than uranium, the costs of which are far too high and will inevitably fall on the people, not the corporation, through illness and long term pollution.

May the EPA protect clean water!

Thank you for listening.

Kind regards,

[REDACTED]  
[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 10:16 AM  
**To:** Shea, Valois  
**Subject:** Permit and exemptions

Hello, I am concerned that permitting uranium extraction and allowing ANYTHING from this process to be put into a clean water supply will contaminate it and make it dangerous for people to drink. Water is becoming scarce and we must keep what we have safe and protect it from dirty industries. I and many other environmentalists will be extremely disappointed if you allow this to occur.

Thanks,

[REDACTED]

[REDACTED]

[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Friday, March 24, 2017 3:06 PM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock Class III and Class V Injection Well Draft Area Permits  
**Attachments:** removed.txt

Hi Valois,

I am reviewing information provided for in the 'Public Notice: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits' <https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits> . I'm unclear if the "Additional Administrative Record Documents", specifically, the 'Draft Cumulative Effects Analysis' are considered a component of the Class III and V draft permits and thus subject to review and comments. The statement below is copied from the website and if read literally, it could be understood to mean that comments are sought only for the Class III and V draft area permits, and the identification of traditional cultural properties...My agency would like to provide comments on both the contents of the permits and Draft Cumulative Effects Analysis. Please provide us with an explanation of the scope of EPA's request.

In addition to seeking comments on the Class III and V draft area permits, the EPA is seeking public comment on the identification of traditional cultural properties at the Dewey-Burdock Project Site Area of Potential Effects, on the potential adverse effects of the proposed project, and on measures to avoid, minimize or mitigate potential adverse effects on historic and traditional cultural properties pursuant to Section 106 of the National Historic Preservation Act and 36 CFR § 800.2(d) and § 800.6(a)(4).

The EPA is also seeking comment on two options for approval of the aquifer exemption that Powertech requested related to the Class III permit application. The two options are discussed in the Aquifer Exemption Draft Record of Decision available on the EPA Region 8 UIC Program website.

The EPA has performed an Environmental Justice (EJ) analysis for the Dewey-Burdock UIC permitting actions and is seeking comment on the Draft EJ analysis document.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

***"Serving People, Managing Wildlife"***

***The Division of Wildlife will manage South Dakota's wildlife and fisheries resources and their associated habitats for their sustained and equitable use, and for the benefit, welfare, and enjoyment of the citizens of this state and its visitors.***



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 28, 2017 4:00 PM  
**To:** Shea, Valois  
**Subject:** RE: Dewey-Burdock Class III and Class V Injection Well Draft Area Permits  
**Attachments:** removed.txt

Thanks Valois,  
Which EPA program administers the injection well program?

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**From:** Shea, Valois [mailto:Shea.Valois@epa.gov]  
**Sent:** Friday, March 24, 2017 3:09 PM  
**To:** [REDACTED]  
**Subject:** RE: Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

[REDACTED],  
We are also seeking comments on the draft Cumulative Effects Analysis documents, in addition to the other documents you listed below.  
Thanks for checking on this.

*Valois*

---

Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

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**From:** [REDACTED]  
**Sent:** Friday, March 24, 2017 3:06 PM  
**To:** Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)>  
**Subject:** Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

Hi Valois,

I am reviewing information provided for in the 'Public Notice: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits'  
<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits> . I'm unclear if the "Additional Administrative Record Documents", specifically, the 'Draft Cumulative Effects Analysis' are considered a component of the Class III and V draft permits and thus subject to review and comments. The statement below is copied from the website and if read literally, it could be understood to mean that comments are sought only for the Class III and V draft area permits, and the identification of traditional cultural

properties...My agency would like to provide comments on both the contents of the permits and Draft Cumulative Effects Analysis. Please provide us with an explanation of the scope of EPA's request.

In addition to seeking comments on the Class III and V draft area permits, the EPA is seeking public comment on the identification of traditional cultural properties at the Dewey-Burdock Project Site Area of Potential Effects, on the potential adverse effects of the proposed project, and on measures to avoid, minimize or mitigate potential adverse effects on historic and traditional cultural properties pursuant to Section 106 of the National Historic Preservation Act and 36 CFR § 800.2(d) and § 800.6(a)(4).

The EPA is also seeking comment on two options for approval of the aquifer exemption that Powertech requested related to the Class III permit application. The two options are discussed in the Aquifer Exemption Draft Record of Decision available on the EPA Region 8 UIC Program website.

The EPA has performed an Environmental Justice (EJ) analysis for the Dewey-Burdock UIC permitting actions and is seeking comment on the Draft EJ analysis document.

Thank you,

[Redacted signature block]

***"Serving People, Managing Wildlife"***

***The Division of Wildlife will manage South Dakota's wildlife and fisheries resources and their associated habitats for their sustained and equitable use, and for the benefit, welfare, and enjoyment of the citizens of this state and its visitors.***

<input checked="" type="checkbox"/> <small>Do you have comments on the "Serving People, Managing Wildlife" statement?</small>	<input checked="" type="checkbox"/> <small>Do you have comments on the "Serving People, Managing Wildlife" statement?</small>
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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 12:57 PM  
**To:** Shea, Valois  
**Subject:** RE: Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

Hi Valois,  
A NEPA related question for you:  
Will EPA's "decision" / Administrative Record provide analysis of various alternatives? That is, consideration of No Action (no permit), and alternative actions (permit with various conditions).  
Thank you,

[REDACTED]

---

**From:** [REDACTED]  
**Sent:** Friday, March 24, 2017 3:06 PM  
**To:** 'shea.valois@epa.gov'  
**Subject:** Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

Hi Valois,

I am reviewing information provided for in the 'Public Notice: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits'  
<https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits> . I'm unclear if the "Additional Administrative Record Documents", specifically, the 'Draft Cumulative Effects Analysis' are considered a component of the Class III and V draft permits and thus subject to review and comments. The statement below is copied from the website and if read literally, it could be understood to mean that comments are sought only for the Class III and V draft area permits, and the identification of traditional cultural properties...My agency would like to provide comments on both the contents of the permits and Draft Cumulative Effects Analysis. Please provide us with an explanation of the scope of EPA's request.

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The EPA is also seeking comment on two options for approval of the aquifer exemption that Powertech requested related to the Class III permit application. The two options are discussed in the Aquifer Exemption Draft Record of Decision available on the EPA Region 8 UIC Program website.

The EPA has performed an Environmental Justice (EJ) analysis for the Dewey-Burdock UIC permitting actions and is seeking comment on the Draft EJ analysis document.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 17, 2017 9:14 AM  
**To:** Shea, Valois  
**Subject:** RE: Dewey-Burdock Class III and Class V Injection Well Draft Area Permits - EPA has extended the public comment period through June 19

Morning Valois

144.4 includes state wildlife agency consultation as well as federal ESA. Was that consultation complete with sending SD GF&P the notice back in March 2017 or should we expect something more formal? GF&P intends to submit comments as a part of the scoping/public hearings. Submitting comments ensure our concerns are recognized but if you require consultation with us that also offers a better opportunity to present them.  
Thanks for your help.

[REDACTED]

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**From:** Shea, Valois [mailto:Shea.Valois@epa.gov]  
**Sent:** Wednesday, May 17, 2017 9:00 AM  
**To:** [REDACTED]  
**Cc:** [REDACTED]  
**Subject:** RE: [EXT] Dewey-Burdock Class III and Class V Injection Well Draft Area Permits - EPA has extended the public comment period through June 19

Hi [REDACTED]

First I want to let you know that the EPA has extended the public comment period through June 19, so we have some time to talk about consultation under § 144.4.

Those radon settling ponds are considered to be impoundments. Bruce Suchomel has been working on the ESA consultation. Would you like me to set up a call later this week so we can talk about the work Bruce has done?

Thanks!

*Valois*

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Valois Shea  
U.S. EPA Region 8  
MailCode: 8WP-SUI  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Fax: (303) 312-6741  
Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 4:58 PM

**To:** Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)>

**Subject:** RE: Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

Thanks,

Are the Dewey Burdock radon settling ponds considered an impoundment and if so will 144.4 apply? I am debating options of sending comments or requesting 144 consultation. I see you provided a telephone number in your last email message. I can call you with this question if it necessitates a lengthy discussion.

§ 144.4 Considerations under Federal law.

(e) The *Fish and Wildlife Coordination Act*, 16 U.S.C. 661 *et seq.*, requires the Regional Administrator, before issuing a permit proposing or authorizing the impoundment (with certain exemptions), diversion, or other control or modification of any body of water, consult with the appropriate State agency exercising jurisdiction over wildlife

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**From:** Shea, Valois [<mailto:Shea.Valois@epa.gov>]

**Sent:** Tuesday, May 16, 2017 1:36 PM

**To:** ■

**Subject:** RE: [EXT] Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

Hi ■

The UIC Program is not required to do a NEPA analysis for our permitting actions, so therefore, the Administrative Record does not provide analysis of various alternatives such as No Action or alternative actions. Under the UIC regulation 40 CFR §144.33 (c)(3) *The cumulative effects of drilling and operation of additional injection wells are considered by the Director during evaluation of the area permit application and are acceptable to the Director.* That is why we have the Draft Cumulative Effects Analysis document for the area permits on the record for review and comment.

The NRC SEIS evaluated the No Action and alternative actions. That document can be found at:

<https://www.nrc.gov/docs/ML1402/ML14024A477.pdf>

*Valois*

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Valois Shea

U.S. EPA Region 8

MailCode: 8WP-SUI

1595 Wynkoop Street

Denver, CO 80202-1129

Fax: (303) 312-6741

Email: [shea.valois@epa.gov](mailto:shea.valois@epa.gov)

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**From:** ■

**Sent:** Tuesday, May 16, 2017 12:57 PM

**To:** Shea, Valois <[Shea.Valois@epa.gov](mailto:Shea.Valois@epa.gov)>

**Subject:** RE: Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

Hi Valois,  
A NEPA related question for you:  
Will EPA's "decision" / Administrative Record provide analysis of various alternatives? That is, consideration of No Action (no permit), and alternative actions (permit with various conditions).  
Thank you,

██████████

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**From:** ██████████  
**Sent:** Friday, March 24, 2017 3:06 PM  
**To:** 'shea.valois@epa.gov'  
**Subject:** Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

Hi Valois,

I am reviewing information provided for in the 'Public Notice: Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits' <https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>. I'm unclear if the "Additional Administrative Record Documents", specifically, the 'Draft Cumulative Effects Analysis' are considered a component of the Class III and V draft permits and thus subject to review and comments. The statement below is copied from the website and if read literally, it could be understood to mean that comments are sought only for the Class III and V draft area permits, and the identification of traditional cultural properties...My agency would like to provide comments on both the contents of the permits and Draft Cumulative Effects Analysis. Please provide us with an explanation of the scope of EPA's request.

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The EPA is also seeking comment on two options for approval of the aquifer exemption that Powertech requested related to the Class III permit application. The two options are discussed in the Aquifer Exemption Draft Record of Decision available on the EPA Region 8 UIC Program website.

The EPA has performed an Environmental Justice (EJ) analysis for the Dewey-Burdock UIC permitting actions and is seeking comment on the Draft EJ analysis document.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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## Shea, Valois

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**From:** S [REDACTED]  
**Sent:** Monday, March 13, 2017 5:38 AM  
**To:** Shea, Valois  
**Subject:** Uranium Mining Waste

Dear Shea Valois,

The EPA must not allow Uranium mining waste to be disposed of in a South Dakota aquifer, or any aquifer for that matter.

We cannot risk the further contamination of our underground water systems.

Kind regards,

[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 5:17 PM  
**To:** Shea, Valois  
**Subject:** Uranium waste

Please do not allow a uranium mining company to dispose of waste on a way that could polute a SD auqifer.

[REDACTED]

[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 3:02 PM  
**To:** Shea, Valois  
**Subject:** Underground Injection Control (UIC) Area Permits to Powertech (USA) Inc.

Please do not allow Powertech or any company to dispose of ISR process waste fluids into the Minnelusa Formation below the Inyan Kara.

Putting waste, especially this type of toxic waste, into aquifers makes no sense and will lead to pollution that will have effects for generations to come.

Putting short term industrial gain ahead of clean water is poor public policy.

Thank you.

[REDACTED]  
[REDACTED]  
[REDACTED]  
  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 11:17 AM  
**To:** Shea, Valois  
**Subject:** EPA

Dear Valois Shea- I am very concerned about Pruitt denying climate science. The science is clear and we rely on the EPA for protecting our water, air, and land. We cannot rely on each state to clean up after themselves and not affect other states. We need federal regulation.

Sincerely, [REDACTED]

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 21, 2017 12:51 PM  
**To:** Shea, Valois  
**Subject:** Do not grant an aquifer exemption for the UIC permits to Powertech

Please do not grant an aquifer exemption for the UIC area permits to Powertech USA. We must protect our aquifers from contamination. They are a non-renewable resource, and contaminating them would likely have long-term consequences for humans. I object to risking a public resource that belongs not only to this generation but to future generations to come.

Allowing the aquifer to be contaminated short sighted and inexcusable especially if it is for private profit.

Thank you, [REDACTED]

[REDACTED]

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 10:55 PM  
**To:** Shea, Valois  
**Subject:** Uranium in SD aquifer

No it's not OK to dispose of uranium in an aquifer - in South Dakota or anywhere else. That is our water.

[REDACTED]

## Shea, Valois


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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 12:30 PM  
**To:** Shea, Valois  
**Subject:** Draft permits and aquifer exemption for uranium mining in southwestern SD

Dear EPA,

I oppose the draft permits and aquifer exemption for uranium mining in southwestern South Dakota. These are our public lands and uranium mining should not sully our national treasures. I wholeheartedly oppose any such mining on our public lands.

Thank you,  
[REDACTED]



May 17, 2093

To: Ms. Valois Shea  
U.S. EPA Region 8 Mail Code: 8WP-SUI  
1595 Wynkoop St.  
Denver, CO 80202-1129  
[Shea.valois@epa.gov](mailto:Shea.valois@epa.gov)([shea.valois@epa.gov](mailto:shea.valois@epa.gov))

Re: Comments on two draft Underground Injection Control (UIC) Area permits to Powertech (USA) Inc., now known as Azarga Uranium Corporation, for uranium mining permits in the Dewey Burdock area near Edgemont, SD, to include an aquifer exemption for the uranium bearing portions of Inyan Kara Group aquifers from protection under the Safe Drinking Water Act.

By this letter, I wish to object to the three parts of this Powertech permit application and ask the EPA to fully deny the Class III and Class V well permits and to fully deny the aquifer exemption which I understand relates to the Inyan Kara aquifer protection under the Safe Drinking Water Act.

#### **I. General Information:**

The Henderson Family has owned and operated the 8000 acre Henderson Ranch since my grandfather, Andrew Murray Henderson came to South Dakota in 1902. I currently own and operate this ranch.

The ranch is located about 8 miles as the crow flies from the town of Edgemont which was the site of extensive open pit uranium mining activities in the 1950's and 1960's. The mining companies involved are long bankrupt and they abandoned over 200 open pit mines, of which four are huge, mile across lakes of highly radioactive and heavy metal laden water often 90 feet deep. See Rapid City Journal 6 part series on uranium mining history in Edgemont written by Seth Tupper in 2015.

These mines are leaching into the two tributaries of the Cheyenne River, Pass Creek and Beaver Creek. The Cheyenne River feeds Angostura Dam, the largest fresh water irrigation and recreation dam in western South Dakota. Recent studies by the EPA Region 8 have identified contaminants, including radiation, arsenic, heavy metals, and a host of other damaging contaminants in Pass and Beaver Creeks, the Cheyenne River, and Angostura Dam which flows into the Missouri River.

**I believe this Dewey Burdock mining site should be a designated SuperFund Site.** The 10,500 acre Powertech Project Site contains at least 7,650 bore holes made by exploration companies which have never been properly sealed and which have leaked rainwater and mine runoff into the aquifers below for at least 40 years. In addition there are many fissures, fractures, breccia pipes and sinkholes naturally occurring in the area which are also communicating with water below ground. Thus the site is like Swiss Cheese. The extreme erosion that has occurred has contaminated underground water and ultimately the aquifers used by Fall River and Custer County for drinking and livestock water. These are the Minnelusa and Inyan Kara formations with some utilizing the Madison Aquifer, depending on the area.

It is my contention that these aquifers communicate with each other and mining activities that disturb, or inject any type of waste in this aquifers would forever ruin the water for drinking, livestock, and household water.

## **II. Effect on Agriculture:**

Fall River and Custer Counties are primarily rural in nature. The principal business is agriculture, followed by tourism, hunting, and a very small amount of government based activities such the county courthouses, and the VA Hospital in Hot Springs.

Our area is semi-arid and has periods of severe drought. Over the years, ranchers, and Angostura Dam irrigation farmers have developed underground water wells or rely on some large pipeline projects which bring water from Madison springs or wells in various parts of the area. The loss of the underground water of the purity levels it is now would be catastrophic for the agriculture producers.

I have a Minnelusa Spring and an Inyan Kara (Lakota Sandstone) deep water well on my ranch and I can buy some water from the Madison Well nearby at Provo. Without these water sources, I could not run reasonable numbers of cattle on my ranch.

Indeed, this project which will contaminate huge amounts of water will destroy most of the ranch operations in the two counties.

Powertech /Azarga has now amended its original water permit request from the State of South Dakota from 9,000 gallons per minute to 15,000 gallons per minute, to run indefinitely. This water right, if granted, will be the largest water permit ever granted in South Dakota.

We do not have enough water now and can ill afford a project which will consume and squander these huge amounts of water.

It is my understanding that both the EPA permits and the water permit from SD can be sold opening up the potential loss of an irreplaceable commodity, water.

### **III. The Danger of the Black Hills Army Depot:**

I would refer you to my extensive comments regarding the Black Hills Army Depot (BHAD) to include the town of Igloo which operated on a 21,000 site 8 miles south of Edgemont from 1941 to 1968 written as comments in the NRC hearings for the Dewey Burdock Project.

Hundreds of thousands of tons of deadly chemical warfare agents were stored underground, buried in cement bunkers, or buried in 200 miles of trenches during this time period. These include but are not limited to sarin, soman, toman, toban, GB, VX, phosgene, Lewisite, and mustard gas. By now the canisters have leaked into the shale and the weapons and cannisters stored underground have the potential to auto ignite according to a study conducted by the Sandia Labs at the request of congress.

This site is a military SuperFund Site and was studied by the Corps of Engineers from 1991 to 2001. I served as chairwoman of the Restoration Advisory Board for the projected clean-up which at that time had a budget of \$5 Billion. After extensive investigations the Army concluded that a clean- up was not safe to attempt nor could it be afforded.

Further the Wind Cave Structure underlies the BHAD extending northward toward Edgemont and the Dewey Burdock site as well as the Wind Cave and Jewel Cave visitors' center.

It is my contention that if we begin to disturb this area underground, we run the risk of spreading these terrible chemicals and their residues. These are soluble in water and oil and in their current burial/storage state cannot decompose.

The danger is gigantic and there would be no way to contain the damage except to cordon off huge areas of contamination.

Please refer to the BHAD Archive Search Report which has been revised and is now dated October 1992 and was prepared by the Huntsville, Alabama Corps of Engineers.

### **IV: Suitability of Azarga Uranium Company:**

A huge number of mineral leases including those for uranium were acquired over time by a company called Energy Metals Corporation. Vladimir Putin through a company he formed in the United States called Uranium One was allowed by Hillary Clinton when she was Secretary of State to begin mining extensively for uranium in the American West. Uranium ultimately bought Energy Metals Corporation and thus acquired at least 20% of uranium mining leases in the United States.

At least 30% of the minerals in the Dewey Burdock Project were owned by Energy Metals Corporation and are now owned by Uranium One, a wholly owned Russian Company. The Russians also own leases in the surrounding area.



Powertech has issued at least 420,000,000 shares of stock and garnered over \$68,000,000 from stock sales. It has never earned any money from mining or other legitimate endeavors. Instead it has spent the shareholder money. Many SD investors paid \$10 to \$20 per share. The stock is now about 35 cents when it trades. The hedge fund founders have paid themselves huge amounts. Many shareholders have lost large investments.

For years the Powertech stock was sold by the Toronto, Canada exchange or those in Germany. No filings were made with the US Securities and Exchange Commission nor the SD Securities Commission. For years there were no audited financial reports, merely “shareholder communications” which had the effect of encouraging more stock sales.

Powertech also entered into lease agreements with landowners near or abutting the Project Site. Landowners were to be paid \$50,000 per year for 10 years for the uranium leases on their land. In many cases, the lease amounts were more than the land would sell for. Some lease holders bragged that they already knew that there was no recoverable uranium on their land but they signed up anyway. The lease agreements prohibited the leaseholders from objecting to the Powertech Project. Many thought that Powertech would provide Madison Water at no charge and of good quality to their lands after the project was over.

About two years, Powertech/Azarga abruptly stopped paying the leases. The fact that they do not live up to their lease arrangements should be a red flag for rejecting this proposal.

## **V. Why Mine Uranium with Foreign Countries?**

Azarga is a Hong Kong Company with many ties to mainland China interests. We have noted above that Russia through Uranium One has extensive uranium mining interests in the United States.

Energy production through nuclear power plants is decreasing dramatically worldwide. General Electric, the premier designer of nuclear power plants which was bought out by Toshiba (Japan) has now gone bankrupt and the losses from GE are threatening Toshiba.

The nuclear power plant industry has been heavily damaged by the Fukushima Power Plant disaster in Japan. Nuclear power plants are having increasing trouble securing insurance and it now takes 25 years at best to site a new one. Shale gas power plants can now go from design to operation in 18 months in most places and shale gas is now plentiful and much cheaper to use.

Nuclear power plants worldwide have huge and dangerous stockpiles of radioactive waste that threatens the environment wherever they are.

Technology now exists to reuse portions of the spent fuel to run America’s 100 or so operating plants. America is awash in uranium based by products and fuel. We do not need to mine uranium now at all; and probably not for 300 years.

So why would we allow Russia and China to damage our environments with uranium mining?

Their motives are simple to deduce. They both want to enhance their stockpiles of weapons grade uranium. Russia and China are both doing business with some of the most dangerous groups on the planet including North Korea, Iran, Pakistan, Syria and various muslim organizations. Continued mining of uranium will only increase the amounts of bomb grade uranium products which will eventually lead to global nuclear war.

**If you do nothing else think of denying this permit to limit the proliferation of nuclear weapons.**

## **VI. Protecting Water For The Future:**

I have previously advised that these permits can be sold. I question whether Powertech/Azarga really intends to mine uranium. I am unable to see how with the current price of uranium this can be a profitable endeavor, except and unless the clandestine market for uranium fueled by our enemies intends to pay an unholy premium for yellowcake.

That aside, the wells they have asked for can be used to dump hideous toxic waste into our aquifers. I am aware that several states now do not want to dump oil and gas fracking waste or uranium waste in their production locations because of environmental concerns.

This project if permitted opens the way to make a dumping ground out of Fall River and Custer Counties and will over time have profound effects on the water quality in the entire area. I remind you that the EPA and the NRC in the past have granted “exemptions” to the Safe Drinking Water Act and have allowed the reinjection of contaminated and radioactive waste water into aquifers near project sites. Please refer to the excellent study done by the Natural Resources Defense Council called “The Dirty Little Secret of Uranium Mining”. This report examines all of the uranium mining projects in the American west. There is no project in which the water in the mining areas has not been dangerously contaminated and ruined.

Huge areas of our vital underground water supplies are now being contaminated and will soon be forever ruined. Without good water, we cannot run agriculture in this country.

The Comeco Uranium Mining Project in Crawford, NE called Crowe Butte is a case in point. After 23 years of mining and dumping contaminated water back into the aquifers, the water is now hopelessly polluted. Tests by the USGS reveal radiation, and arsenic many times the EPA standards. Crowe Butte was given a full exemption by the NRC, the EPA, and the State of Nebraska. Residents thought that the mine was “in compliance” not realizing the status of the exemptions. People there are experiencing high rates of cancer. Many are abandoning their homes and leaving the area. This should never happen.

**Please protect our water.**

## **VII: Conclusion:**

I am more than aware that because of the antiquated 1872 mining law, almost entity including foreign countries can submit mining claims, lease mining rights, and apply for projects such as the Powertech/Azarga Dewey Burdock Project.

The EPA is compelled by law to examine these proposals and render a decision. The mining industry also pays permit application fees which enhance the revenue streams of the EPA and the NRC.

But I would remind you that the EPA has a fiduciary responsibility to protect the public and the water resources which are so vital to the ongoing health of our country.

I urge you to set aside the political and financial ramifications of this permit and move as a proper fiduciary would to protect the environment.

Thank you for the opportunity to submit these comments.

A large black rectangular redaction box covering the signature and name of the author.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 7:58 AM  
**To:** Shea, Valois  
**Subject:** No

No to uranium mining waste disposal in SD aquifer.

[REDACTED]

[REDACTED]

[REDACTED]

Sent from my iPhone

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 12:34 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining waste

Please do not allow an exception to regulations and let companies dump uranium mining waste in an aquifer in SD. Please protect our clean water supplies.

[REDACTED]  
[REDACTED]  
[REDACTED]

Sent from my Verizon, Samsung Galaxy smartphone

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 8:21 PM  
**To:** Shea, Valois  
**Subject:** No uranium in treaty territory

Dear Ms. Valois,

I understand that the EPA is considering permits for in situ recovery of uranium using deep injection wells within the Inyan Kara group of aquifers in the Southern Black Hills region. Part of this Proposed draft would exempt the project from the Safe Drinking Water Act. There are no guarantees that the mining would not contaminate the aquifer. As a concerned citizen, I ask that the EPA not grant this permit.

Thank you,

[REDACTED]  
[REDACTED]  
[REDACTED]

**Shea, Valois**

---

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 8:46 AM  
**To:** Shea, Valois  
**Subject:** Aquifer Exemption South Dakota

Dear Shea,

I am writing to strongly oppose injecting uranium mining waste into an aquifer! I oppose the aquifer exemption. People depend on clean water for life! Until this current administration, the EPA mandate was to protect the environment, not pollute it. Please reconsider.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Thursday, May 11, 2017 7:52 PM  
**To:** Shea, Valois  
**Subject:** Powertech/Azarga Dewey Burdock proposal public commentary

I am against the Dewey Burdock proposal for injection wells and hazardous waste disposal. First of all it is too close to Yellowstone caldera. We do have earthquakes in this area with one being a year or two ago in Ardmore. There are buried bombs and chemical weapons on the other side of Edgemont in Igloo. Wind cave is not very far off and new passageways are being discovered all the time.

I believe despite assurances that public water sources will not be safe and will propose grave danger to all of the people in the Black Hills and surrounding areas.

Please do not allow this to take place.

Thank you,

[REDACTED]



April 30, 2017

Valois Shea  
U.S. Environmental Protection Agency  
1595 Wynkoop Street  
Denver, CO 80202-1129

**RE: Proposed Draft Permits and Aquifer Exemption for Uranium Mining in South Dakota**

Dear Ms. Shea,

For your review, please find my personal comments on the *draft permits and aquifer exemption for uranium mining project in southwestern South Dakota*, as proposed by the Environmental Protection Agency on March 6, 2017 (EPA, 2017). This letter will address the background of the situation as well as potential issues that could arise from the uranium injections. Powertech (USA) Inc. is requesting a Class III Area Permit from the EPA for the injection wells for in-situ retrieval of uranium, a Class V Area Permit for deep injection wells to be used to dispose of the necessary process fluids into two aquifers, and approval to be exempt from Safe Drinking Water Act standards within the aquifers (EPA, 2017).

**I. Background**

The EPA is contemplating issuing Powertech (USA) Inc. permits to allow uranium waste injection and exempt a portion of the aquifer from the Safe Drinking Water Act in Custer County and Fall River County, South Dakota (EPA, 2017). The drinking water exemption would allow Powertech additional time in order to achieve compliance with regulation (EPA, 2017).

Powertech has designed security measures to protect the aquifer, but even though these measures are in place, the risks are too great to grant Powertech the requested permits (EPA, 2017).

Allowing these permits would contaminate two aquifers temporarily, as well as risk irreversible

uranium contamination, could potentially expose the aquifers and surrounding areas to excursions, and violate the EPA's Safe Drinking Water Act exemption guidelines.

The two potential aquifers for injection are the Inyan Kara and Minnelusa Aquifers, which are the main sources of groundwater in the Northern Black Hills of South Dakota and Wyoming as well as Bear Lodge Mountains in Wyoming (Kyllonen & Peters, 1987). Municipalities are the primary users of this water source but both these aquifers are already in danger. The Inyan Kara has surpassed recommended levels of selenium, gross alpha radiation, dissolved solids, iron, manganese, and sulfate (Kyllonen & Peters, 1987). The Minnelusa Aquifer exceeds the recommended and permissible levels of fluoride, dissolved solids, iron, and sulfate (Kyllonen & Peters, 1987). Exposure to additional toxins like uranium will only add to these current unsafe chemical levels, putting people who rely on these aquifers for drinking water at high risk.

## **II. Scientific Issues**

As mentioned above, the sources of the various pollutants currently found in the Inyan Kara and Minnelusa Aquifers are not thoroughly understood (Kyllonen & Peters, 1987). Additionally, the interconnectedness between these two aquifers as well as the nearby Madison Aquifer is also uncertain (Kyllonen & Peters, 1987). Because of how unclear the connectivity between these three aquifers is, it would be dangerous to expose two of them to uranium because it could lead to contamination of the unprotected Madison aquifer.

Furthermore, there have historically been numerous problems nation-wide with in-situ uranium leach mines. The Rapid City Journal published an article detailing many complications arising from this practice and sent their list to Powertech to respond on how to prevent these issues (Simmons-Ritchie, 2013). One very similar example is Christensen Ranch in Wyoming. Christensen allows companies to access minerals, oil, and gas beneath the ranch. The EPA

granted a permit that now allows 200,000 gallons of toxic waste from uranium mining to be pumped into aquifers under Christensen Ranch every day (Lustgarten, Dec. 11, 2012). Now, the aquifer has uranium levels more than 70 times greater the maximum limits (Lustgarten, Dec. 11, 2012). This aquifer could have provided an immense source of drinking water but is now so contaminated it may never be able to be used for that purpose.

Additionally, aquifers are frequently worse off after mining. Often times, the water is not restored to the pre-mining contaminant level (Lustgarten, Dec. 11, 2012). The Nuclear Regulatory Commission has even declared areas as restored even if contaminants within the aquifer are above natural levels (Lustgarten, Dec. 11, 2012). In a U.S. Geological Survey study, zero out of eleven sites in the state of Texas had been completely resorted to pre-mining contaminant levels (Lustgarten, Dec. 11, 2012). In the past 30 years, the EPA has granted over 1,500 permits to exempt companies from complying with the Safe Drinking Water Act (Lustgarten, Dec. 11, 2012). It is clear that effective clean-up to restore aquifers is not occurring which puts the Inyan Kara and Minnelusa aquifer in danger during and after this project.

Powertech's response addressing these concerns greatly justified the design of the project, which includes measures to prevent the excursions of toxins (Simmons-Ritchie, 2013). An excursion occurs when water quality exceeds limits established in a license and is often a precursor to a wellfield, the land above wells that is drilled into the aquifer, imbalance (Marion County, 2017). Even though many preemptive measures are employed, if an excursion were to occur, Powertech's system is made to quickly detect and stop the excursion so it would not be able to infiltrate the groundwater (Simmons-Ritchie, 2013). A trained operator will also monitor the station 24 hours a day (Simmons-Ritchie, 2013). Additionally, the company is obligated to

report the discharge of any chemicals to the Department of Environmental Quality within 24 hours of the spill (Simmons-Ritchie, 2013).

While these regulations and precautionary measures are ideal, there is still a risk associated with uranium injection. A majority of past complications at injection sites in South Dakota involved spills of injection fluids, broken pipes, or excursions of process fluid beyond production zone limits (Source 6). While Powertech has worked to make this site as safe as possible, uranium injection cannot be guaranteed to be safe and without errors. If a spill were to occur, it would not be contained to the protected area and could infiltrate the ground and groundwater outside the project boundary. This risk puts the people of South Dakota in danger by jeopardizing their right to safe drinking water.

### **III. Legal Issues**

An investigation by Pro Publica deemed that allowing permitting to allow chemical injections and Safe Drinking Water Act exemptions conflicts with the EPA's mandate to protect drinking water (Lustgarten, Dec. 11, 2012). Legally, the EPA is only permitted to grant exemptions to aquifers that are unable to supply drinking water because they are too remote, unclean, or deep (Lustgarten, Dec. 11, 2012). This permit would violate these requirements because the Inyan Kara and Minnelusa Aquifers do not fit the given conditions to be unfit for drinking water.

### **IV. Conclusion**

I greatly appreciate your willingness to review public comments on the draft permits and aquifer exemption for the uranium mining project in southwestern South Dakota. I encourage you to strongly consider the risks uranium injection poses to the affected aquifers. Exemptions on policies like this make laws less stringent and could set a precedent for future miners. Since the late 1980s, the EPA has permitted energy and mining operations to pollute portions of more

than 100 aquifers of drinking water (EPA, N.d.). The Safe Drinking Water Act is in place to protect United States' citizens from ingesting harmful substances and no exemption should be permitted to compromise that, as it is clear that even after "clean-up," there is the potential for lasting contamination. Thank you for your consideration.

Cordially,

| [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## References

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:29 PM  
**To:** Shea, Valois; [REDACTED]  
**Subject:** Uranium waste dumping in aquifers

Hello, I am writing you to give you my opinion about dumping uranium waste from mining in South Dakota in aquifers. It would seem that common sense would answer this question for you and no poll would need to be taken. So I ask you this, would you drink a glass full of water with uranium mining waste in it? Would you give uranium waste to your children, or grandchildren to drink or wash in? Would you water your vegetable garden with it? Would you give it to your livestock? Would you eat meat, take eggs, or drink milk from livestock fed on uranium waste?

Water does not just sit idly and obediently by where you dump it, it seeps, moves, and goes where it wants. There is not a surface or substance on this planet it cannot wear its way through. What you are asking people for is permission to pollute drinking water for eternity for a few dollars in profit for corporate bosses, who don't have to drink the water they pollute.

The answer is no, don't do it. Don't exempt aquifers from the Clean Water Act. That you are even asking tells me you KNOW you will be polluting for generations to come, in which case, I say shame on you. Stand up for what is right here, for what is good, for what is best. Don't let corporate polluters make a disaster site for America. Don't kill people, don't give us cancer, don't hurt us.

It is the job of the government to protect and serve the people of this country. Dumping uranium waste into aquifers is counter to all that entails.

Sincerely,

[REDACTED]  
[REDACTED]

**Shea, Valois**

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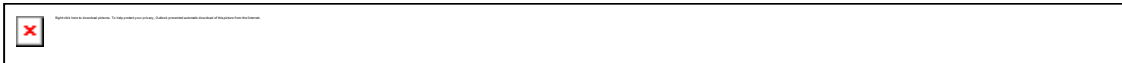
**From:** [REDACTED]  
**Sent:** Monday, April 17, 2017 3:57 PM  
**To:** Shea, Valois  
**Subject:** Fw: ACTION NEEDED: Uranium Mining Black Hills ☒

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

I am writing to let you know that not only is this a concern for the Black Hills area, but should be a concern of the whole SD state. Why on Earth are we letting others in to mine and drill on SD land who are not even from here? regardless though, This is horrible! Please know that myself and many others are against this Uranium mining and pollution of our water and lands. I am from Eastern SD but my husband and I have been seriously considering moving our family to the Hills in the near future (Preferably the Hot Springs area) If the water is polluted, there is no way that will happen, we will just stay put! Please do not let big companies (or anyone for that matter) pollute our wonderful state! Without water, life dies.

[REDACTED]  
*"Do not meddle in the affairs of Dragons, for you are crunchy and good with ketchup!"*

On Monday, April 10, 2017 3:06 PM, [REDACTED] > wrote:



[REDACTED]

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**TAKE ACTION TODAY**

**Help Us Stop Uranium Mining in the Black Hills**





Thank you for signing a petition opposing ISL (in-situ leach) uranium mining in South Dakota! I thought you'd like to know about an important development - the Environmental Protection Agency (EPA) has issued draft permits for Powertech Uranium (Azarga). If these permits were to be finalized, they would allow the company to inject waste water into the Minnelusa aquifer, and to drill 4,000 wells into the Inyan Kara aquifer to conduct the mining process. The Minnelusa and Inyan Kara aquifers are currently being used by people for drinking water and agricultural operations. Yes, the mining would occur in an aquifer being used by people!

If they were finalized, these permits would be a license to pollute our groundwater. We need to stand up once again and say that we don't want uranium mining in the Black Hills.

As you know, water is precious in western South Dakota. Why risk our scarce water for a foreign company that has never mined uranium, and for a mining technique that has never returned water to its original condition?

The EPA is holding hearings in **Rapid City** (May 8 and 9), **Hot Springs** (May 10), and **Edgemont** (May 11) to gather public input on the proposed permits. Please attend the hearings. We hope that you will speak to state your concerns -- but just being present is also important. Show the EPA that we are watching. The details can be found here:

<https://www.dakotaruralblackhills.org/uranium-mining>

If you are unable to attend, please submit a written comment by May 19, 2017. The EPA needs to hear from concerned citizens like you!

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[Click Here to download our 2017 Uranium Mining Fact Sheet](#)



[Read More](#)

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## **Protect Black Hills Water**



Tell the EPA that Uranium Mining &  
Milling are Not Worth the Risk!  
Public Comment Period Open Until  
May 19, 2017.

Write Now! Attend the Local  
Hearings!

A foreign holding company is seeking  
three EPA permits to pollute the  
precious water tables underlying the  
Black Hills of South Dakota, which is  
the recharge area for our streams  
and lakes, municipal supplies,  
private wells, and agricultural use in  
the entire western state.

[CLICK HERE TO READ MORE](#)

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**Learn More and Take Action!**

To keep up to date on this and other issues in the Black Hills, please sign up on our website to continue to receive these important updates. [www.dakotaruralblackhills.org](http://www.dakotaruralblackhills.org)



**Join the Black Hills Chapter of Dakota Rural Action on Facebook!**



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[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 10:23 AM  
**To:** Shea, Valois  
**Subject:** Uranium Mining comment

Dear Valois Shea,

My name is [REDACTED] and that means [REDACTED] in Lakota. I am Hunkpapa, Mnicoujou, and Itazipco Lakota of the Cheyenne River Tribe in South Dakota. I am 24 years old and am a mother to a beautiful six year old boy.

I want to submit my comment in OPPOSITION of the draft permits wishing to be granted by company, Azarga for the reasons listed below:

-First and foremost, according to the treaties of 1851 and 1868, this is completely illegal-- the Black Hills belong to the Lakota and for over a century, the US government allows companies to commit these crimes that circulate around the using indigenous soils and waters as ways to profit for their own selfish needs.

-The Mnilusa groundwater aquifer (where the in situ leach mining will take place) runs straight to the Cheyenne River which then flows into the Missouri River, a water source for over 20 million people downstream and if radon or radium leak from the sites, all of my reservation's water will be contaminated.

-Exposure to radon and radium found in uranium causes cancer: here is a paragraph from the EPA site: "Chronic (long-term) inhalation exposure to uranium and **radon** in humans has been linked to respiratory **effects**, such as chronic lung disease, while **radium** exposure has resulted in acute leukopenia, anemia, necrosis of the jaw, and other **effects**. Cancer is the major **effect** of concern from the radionuclides."

-The Crow Butte Uranium Mine is a prime example of what can go wrong with uranium mining and STILL the mines continues to spew toxic radiation from its site with no immediate intention from the EPA or PowerTech to clean it up.

-This project poses yet ANOTHER threat to our land, water and all that is life.

These are specific reasons to why I am in opposition to the proposed drafts to be granted. Should you have any questions regarding my comment please contact me via email at [REDACTED]

Thank you for your time and consideration in review of my comment.

--  
[REDACTED] [REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Saturday, March 11, 2017 6:22 PM  
**To:** Shea, Valois  
**Subject:** re: draft permits and aquifer exemption for uranium mining project in South Dakota

To Whom it May Concern:

The EPA has been held in high regard in generations past, and the American people trusted that our taxpayer funded EPA would protect our air, water and soil.

Clearly, the EPA has made poor decisions due to the political climate of late. But it is time to take our country back AND WE NEED YOU TO PROTECT US!

We are at a critical juncture environmentally, and hopefully we can trust you to make the hard decision to protect us from any and all uranium mining projects. You know the science--you know the truth. Please make the hard decision and do the right thing. Please protect the American Citizens from this terrifying move toward environmental destruction.

Sincerely, [REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Wednesday, May 31, 2017 7:56 AM  
**To:** Shea, Valois  
**Subject:** Azarga Uranium Hazardous Waste Injection Application

Dear Ms. Shea,

I am writing to request that the SPA reject Azarga Uranium's permit seeking to inject waste water into the aquifers below the Black Hills.

Thank you.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

---

**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 7:22 AM  
**To:** Shea, Valois  
**Subject:** Dewey-Burdock

On hearing of this proposal, I find it disturbing. If the water is treated safe enough to inject into water safe for human consumption than give it to livestock, irrigation, or dump right in nearest stream or river! If you haven't gathered I am totally against this idea as well as the proposed uranium mining operation. Thank you for your time and please think of further generations and not the interest of some corporate bottom line. [REDACTED]

Sent from my iPhone



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 8:50 PM  
**To:** Shea, Valois  
**Subject:** draft permits and aquifer exemption for uranium mining project in southwestern South Dakota

I am writing to state my opposition to the draft Underground Injection Control Area Permits issued to Powertech Inc. for injection wells for the in-situ recovery of uranium in Inyan Kara Group aquifers. I am opposed to the approval of an aquifer exemption, which would exempt portions of this aquifer from protection under the Safe Drinking Water Act. This exemption would set a dangerous precedent by exempting drinking water protections at the federal level. I am concerned for the health and safety of the citizens of South Dakota and Wyoming that utilize this aquifer; and for the tourists that visit the Black Hills and Mount Rushmore. Deep injection wells have the potential to leak. ProPublica completed a review of more than 220,000 well inspections from October 2007 to October 2010, finding that structural failures were routine. More than 17,000 integrity violations were handed out and more than 7,000 of these wells were found to be leaking (<https://www.propublica.org/article/injection-wells-the-poison-beneath-us>). I am concerned that the current administration's planned cuts to the EPA will result in insufficient funding and personnel to monitor these wells. In addition, research has linked deep injection wells to local earthquakes. These earthquakes have the potential to cause damage to the wells and may also cause structural damage that will impact local populations.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 12:22 PM  
**To:** Shea, Valois  
**Subject:** UIC Area Permits to Powertech (USA)

Dear Madam

My initial thought when I heard of the proposed permits was "are they out of their minds?"

Who in their right minds would risk the drinking water for tens of millions of people, and the irrigation water of millions of acres of land for uranium mining?

I've worked in industrial hygiene and I can tell you that there's no way to make a project like this safe enough, secure enough to risk water for.

Do you realize that around the world there are major droughts happening? On at least three continents? And that has included this continent? Water is our most precious resource right now and it is not worth one penny's worth of profit to risk permanently damaging an aquifer like the one in South Dakota.

Drop this insane plan.

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 12:38 PM  
**To:** Shea, Valois  
**Subject:** uranium and deep well  
**Attachments:** Hollenbeck1.docx

Attached is my letter, which is self explanatory, to the local newspaper (Hot Springs Star).

I object to the proposed uranium mining and the deep well waste injection for the following:

Putting carbonated water (carbonic acid) and oxygenated water (hydrogen peroxide) into the Inyan Kara aquifer will dissolve toxic and radioactive heavy metals and these will travel horizontally in the aquifer and reach many existing wells. The uranium company claim that the liberated oxidized soluble uranium ions, will after being reduced cease to travel through the aquifer may be true, however the other heavy metals will travel in a plume indefinitely horizontally contaminating any wells in the pathway. (Oxidized and Reduced refer to the oxidation state of the cation.)

The deep well waste injection proposals in the aquifer just above the Madison will likely poison the Madison even over into Wyoming where there are many deep wells. New Castle, Wyoming gets its drinking water from the Madison. High pressure is required to inject waste toxic and radioactive waste.

A few years ago I put a questionnaire in the Hot Springs Star to determine those who oppose and those who favor uranium mining. 95% oppose and 5% favor.

Thank your for considering my comments.

Regards, [REDACTED]  
[REDACTED]

To the Editor:

Mark Hollenbeck, in the May 23, 2017 issue of the Hot Springs Star is quoted as saying: "Southwest of the Black Hills, and in Edgemont, Inyan Kara is poor quality. Some wells having a salinity of 7,600 ppm, twice as salty as sea water, not usable..."

Sea water is about 3.5% in salt (NaCl) which by multiplying by 10,000 gives 35,000 ppm. Thus to be twice as salty as sea water these wells would have to be 70,000 ppm. It appears that Mr. Hollenbeck has made a ten-fold error in his calculations.

Regards,

[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 9:13 AM  
**To:** Shea, Valois  
**Subject:** Aquifer Exemption for Powertech (USA) Inc.

Hello,

OBVIOUSLY, there should be no aquifer exemption for Powertech (USA) Inc.'s uranium recovery project.

NO.

Again... NO.

Thank you,  
[REDACTED]

P.S. I'm sorry you have to work for Scott Pruitt.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 3:41 AM  
**To:** Shea, Valois  
**Subject:** uranium mining project in south dakota

Allowing radioactive and other waste fluid into the aquifers sounds like a crazy idea. If there is any kind of mistake how would this be contained? I am against allowing this to happen.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 1:56 PM  
**To:** Shea, Valois  
**Subject:** Proposed uranium mine in South Dakota

Hello Shea,

I am writing you out of concern of the idea of putting a uranium mine that would be going directly through an aquifer. This is very risky and does not seem appropriate to put many people's water at risk. With all the environmental atrocities that are happening in this country and across the planet, due to human activity, it does not seem wise to put one of our most important resources at risk. With that being said this project appears to be putting the aquifer at risk twice over by mining through it and then returning the waste back below it. And also circumventing the clean water act in the process.

With an understanding of how mining damages an environment before(with consideration of constructing the mine itself and mining equipment), during, and after mining is completed I don't wish to allow another mine to open in this country.

Another subject about this project that gives me reason to pause is the proposal to do this on Native American land. I was able to witness the lack of respect given to Natives during the construction of the Dakota access pipeline. Sacred sites were not respected nor was a cease order given, when requested from other government agencies, when sacred sites where at risk.

With all that is considered in this project I don't think the E.P.A. would be standing up to their name by allowing these permits. Please consider rejecting the permits for these projects.

Thank you for your time.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, June 18, 2017 9:40 PM  
**To:** Shea, Valois  
**Subject:** Comment: Uranium Mining in the Southern Black Hills

**Importance:** High

Dear Valois Shea:

Thank you for the opportunity to comment, and especially thanks to the EPA for holding so many hearings in the Black Hills about this proposed project. It was a rare chance for everyone to be heard. I attended many hours of your public hearings in Rapid City.

I am a Black Hills agricultural landowner and I have many years of experience in managing both public and private lands. I am also a biologist. I don't claim to be a uranium expert, but I have extensive experience with energy companies and investors who try to behave like energy companies (as in this case).

Please do not grant an exemption to the Safe Drinking Water Act for this project and do not allow either deep injection disposal wells or injection wells for the ISR of uranium. It is hard to believe that something like this would be proposed, let alone approved, in this area.

Azarga/Powertech consists of investors who are not uranium miners as such. Yes, they may hire people who know what they are doing, but some things they are proposing have never been done before. We only get one chance at this. If it doesn't go well, it could destroy a large part of the Southern Hills and associated agriculture. In this rural area, we depend on agriculture and tourism. I know a few people are in favor of this project for the jobs, but that is not the reason to approve something that is this potentially damaging. This proposal trades long term incomes for many and the health of the larger environment for the *potential* short term financial gain of a foreign company.

The Southern Hills are extremely dry. The climate is changing and the hills are becoming warmer and drier. The huge amount of water that would be used by Azarga would not be in the best interest of agriculture, tourism, residents or wildlife. We do not have the luxury of using that much water for uranium mining, even in the best case scenario. This alone could be devastating. Pumping waste into the ground is also a bad proposition when water is scarce.

Nearly everyone at the hearings was against the uranium mining. I realize that these things are not "a vote" as such, but I heard many compelling reasons why this mining should not take place. Please deny all of Azarga's requests.

Thank you.

[REDACTED]

[REDACTED]



[REDACTED]

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 12:51 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining project - South Dakota

I'm writing in regards to the aquifer exemption for Powertech Inc and their uranium disposal.

I really don't see a single reason to grant them this exemption. This will not only endanger those that rely on the water supply surrounding these well fields, but is a threat to the surrounding environment. It sets a dangerous precedent, as long as a company pays off someone high up in the EPA or current administration, they can break what ever laws and regulations they want. Be better than this EPA. Stand up for something.

[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 2:35 PM  
**To:** Shea, Valois  
**Subject:** Region 8 comment

It is my understanding that you are the contact person for public comments regarding Powertech's application for a permit to mine in the Wind Cave area of western South Dakota.

I am opposed to mining of any kind in this particular area due to the radioactive waste and other weaponry already buried in the Dewey Burdock area.

I am particularly opposed to Powertech's application which does not limit the amount of water the company can remove from the area; it does not provide any mechanism to prevent the company from selling the water to third parties; it does not provide for any payment to the landowners or the State for water removed; and it certainly does not require the company to provide enough of a bond to ensure the company is responsible for payment of all costs associated with reclaiming the land and sufficiently treat the water to ensure its safety.

Please notify me of all activity associated with this application. Thank you.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 6:20 AM  
**To:** Shea, Valois  
**Subject:** Protect our water!

Destroying an aquifer in South Dakota to store uranium mining waste is insane when climate change is leading to water crisis around the world.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Saturday, March 11, 2017 4:32 PM  
**To:** Shea, Valois  
**Subject:** proposed uranium recovery project in the southern Black Hills of South Dakota

Dear Ms Shea,

How about NOT approving the mining of uranium? How about NOT approving an exemption allowing toxic wastewater to be injected into an aquifer? We already know how toxic uranium mining can be; I am from New Mexico, and am quite familiar with cases where people bodies and homes are forever contaminated by mining operations, so my vote is that we don't do that anymore.

Thank you!

[REDACTED]

Valois Shea  
US EPA Region 8  
1595 Wynkoop street  
Denver CO 80201-1129

To Whom it may concern:

I was unable to attend the comment session regarding the Dewey Burdock Injection Well Project in Edgemont SD. However, as the Edgemont Area Chamber of Commerce President, I felt it was my duty to express our dismay at the EPA's continued postponement of the Powertech permits.

We believe it is time to let science and level heads lead this decision not emotion without foundation. Science has proven this project to be safe. It is time to let it move forward.

I have attached a resolution from the Edgemont Area Chamber of commerce in support of the Powertech Inc Dewey Burdock project. This resolution was adopted on 2/27/2013, at our last chamber meeting we renewed our commitment to this project.

Thank you

A solid black rectangular box used to redact the signature of the Chamber of Commerce President.

Chamber of Commerce President



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, June 09, 2017 4:49 PM  
**To:** Shea, Valois  
**Subject:** Re: Uranium Mining in the Black Hills

My wife and I are totally against permits regarding the two underground injection control Draft area Permits and the associated aquifer exemptions for the Dewey Burdock (SR) near Edgemont SD. These experiments can damage the aquifers. Please reject the applications.

[REDACTED]  
[REDACTED]  
[REDACTED]



## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, May 24, 2017 9:05 AM  
**To:** Shea, Valois  
**Subject:** In Situ Mining

To Whom It May Concern:

This e-mail is being written to comment on the proposed in situ mining near Edgemont SD. I do not understand what it takes for you people to get the MESSAGE! My husband and I live southeast of Gilt Edge Mine, which is STILL not cleaned up from the late 1980s when Brohm Mine (a Canadian company) abandoned the site and left the taxpayers with a \$10 million cleanup that is still ongoing. If you are not familiar with Gilt Edge, GOOGLE IT! What part of no do you not understand?

We do not need anymore mining in our beautiful Black Hills. Our lands have been abused and have suffered enough. Your time would be better well spent trying to change the 1872 mining laws that are no longer reasonable and should be brought up to date for the 21st century!

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Wednesday, March 15, 2017 10:24 AM  
**To:** Shea, Valois  
**Subject:** Underground Injection Control (UIC) Area Permits for Powertech Inc. - duplicate

I am opposed to the mining of uranium for nuclear power use. There has been many irresponsible decisions fueled by greed made by present American nuclear power plants; causing radioactive leaks, explosions, and even leaks in the waste disposal sites. Such accidents put the wellbeing of our country in jeopardy. Mining for more fuel for these types of plants will only cause more health issues in the future. Due to just one nuclear power plant mistake in Japan, scientists now believe all aquatic life will be extinct before 2050. Surely you don't want to have such future catastrophes on your hands by allowing access to more uranium. Thank you for taking the time to hear my concerns.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, May 19, 2017 8:11 PM  
**To:** Shea, Valois  
**Subject:** Uranium mining!!!

Hello my name is [REDACTED] I am writing you today because of concern about mining of uranium in the Black Hills.

I see many issues with this mining project:

1. Its uses a lot of water. 551 gallons per minute, totaling 94 billion gallons of water during a 20 year period. That uses up all of the resources of the people who actually live and love this place. The long term effect of water availability cause a drought and forcing people to buy their water from the else where, and cause a drought.
2. Uranium affects humans and animals on cellar level. Meaning it breaks down your whole body an organs. People over profit!!!
3. Short term profit with long term pollution, and unemployment.
4. Uranium mining has already leaked in these ares causing damage to the land, waters, and polluting the aquifers. Don't you want a place where you can eat the plants right from the ground and have water you can swim in?
5. Weather phenomena such as tornados spread Uranium, and radiation. Which is also causing cancer all around your area and starting to see the effect the radiation has on people.

Please I hope you do the right thing and stop uranium mining.

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, May 11, 2017 11:45 AM  
**To:** Shea, Valois  
**Cc:** Nancy Hilding; Lillas Jarding  
**Subject:** Comments on Dewey Burdock. - Bonds and NEPA

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

May 11th, 2017

Valois Shea ([shea.valois@epa.gov](mailto:shea.valois@epa.gov))  
Fax: 303-312-6741  
U.S. EPA Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

Comments on the 2 Underground Injection Control (UIC) Draft Area Permits to Powertech (USA) Inc. & the associated aquifer exemption & Cumulative Effects Analysis, -- One Permit is a potential UIC Class III Area Permit for injection wells for the ISR of uranium; the second is a potential UIC Class V Area Permit for deep injection wells that will be used to dispose of ISR process waste fluids into the Minnelusa Formation

### BONDS,

Please fully disclose all bonds or other financial assurances that the various federal, State, Local and/or tribal governments require for the entire Project, under all potential scenarios for potentially permitted actions.

Please discuss if the project can go forward as just a waste disposal project, before mining begins or completely independent of any mining activities ever occurring at all.

Please discuss if the project can go forward as disposal for in-situ leach mining waste, that was never associated with the mining of uranium, thorium, rare earth minerals or other mining that might be under the NRC's regulatory jurisdiction.

Can not-radioactive wastes from other types of in-situ leach mines, that are not currently regulated by the NRC be placed into a disposal site regulated by the NRC? Does the NRC have jurisdiction to make a decision about placement of wastes from a mine, that the NRC does not regulate into a facility that the NRC does in fact regulate or permit? If the facility never is associated with handling of any radioactive material... does the NRC have any regulatory jurisdiction, any ability to make regulatory decisions and if so which NRC bonds apply (if any)?

If the facility never does any mining... which bonds or financial assurances of state, local, tribal or federal government apply?

NEPA

Please identify all ACTION ALTERNATIVES in any related NEPA document, that discuss all the possible mining and waste disposal scenarios . including listing of the pages showing where any related NEPA document discusses disposal of other remote mines ISR wastes at the facility?

Where is the ACTION ALTERNATIVE that that envisions a 4,000 well well field instead of 642 wells?

Thanks

[REDACTED]

cc [REDACTED]

=====

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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& it does not accept text or voice mail

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Thursday, May 11, 2017 1:15 PM  
**To:** Shea, Valois  
**Subject:** Purpose and Need of NRC/BLM SEIS - PHAS letter # 2

[REDACTED]  
[REDACTED]  
[REDACTED]

and

[REDACTED]

[REDACTED]  
[REDACTED]  
May 11th, 2017

Valois Shea ([shea.valois@epa.gov](mailto:shea.valois@epa.gov))  
Fax: 303-312-6741  
U.S. EPA Region 8  
Mail Code: 8WP-SUI  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

Comments on the 2 Underground Injection Control (UIC) Draft Area Permits to Powertech (USA) Inc. & the associated aquifer exemption & Cumulative Effects Analysis, -- One Permit is a potential UIC Class III Area Permit for injection wells for the ISR of uranium; the second is a potential UIC Class V Area Permit for deep injection wells that will be used to dispose of ISR process waste fluids into the Minnelusa Formation

From page xxx of the Executive Summary of SEIS on Dewey Burdock:

*"The purpose and need for the proposed federal action is to either grant or deny the applicant a license to use ISR technology to recover uranium and produce yellowcake at the proposed project site."*  
*From page xxx of Executive Summary "Environmental Impact Statement for the Dewey-Burdock Project in Custer and Fall River Counties, South Dakota Supplement to the Generic Environmental Impact Statement"*

How is any intention to deposit ISR wastes from other facilities part of the SEIS's "Purpose and Need"?

If actions allowed under license are additional to and not included in the SEIS's - Purpose & Need, how is that justified? How can NRC have created a sufficient "range of alternatives"?

Thanks,

[REDACTED]

=====

[REDACTED]

[REDACTED]

[REDACTED]

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 15, 2017 4:54 PM  
**To:** Shea, Valois  
**Subject:** Question on Dewey-Burdock Class 3 and 5 injection well permits

[REDACTED] Valois Shea,

RE: "Administrative Record for the Dewey-Burdock Class III and Class V Injection Well Draft Area Permits

The public notice says:

**"Written comments must be received by midnight on May 19, 2017."**

How does this apply to comments sent by postal mail... must they be in your mail box arriving during the work day on May 19th?

Sometimes Federal agencies.. require it received and sometimes they require it postmarked by a certain date for postal mail.

Denver may have a post office open till midnight... so what is the rule for postal mail deadlines.

How does this apply to faxes... must faxes be sent during the working hours, or does the fax record transmissions till 11:59 pm on May 19th?

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 11:39 AM  
**To:** Shea, Valois  
**Subject:** Dewey Burdock In-situ Leach Mining Injection well comments

[REDACTED]  
[REDACTED]  
[REDACTED]

Dear Valois Shea

Here is a link to the National Environmental Policy Act:

<https://www.fws.gov/r9esnepa/RelatedLegislativeAuthorities/nepa1969.PDF>

If the EPA is allowed an equivalent process to NEPA... please discuss how are you meeting NEPA's goals and objectives

in an equivalent way, especially please discuss how you meet Sec. 102 [42 USC § 4332 (C) (iii) and (E).]:

I quote some of the text below

"Sec. 102 [42 USC § 4332.....

*(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;*

*(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on --*

- (i) the environmental impact of the proposed action,*
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,*
- (iii) alternatives to the proposed action,*
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and*
- (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.*

*Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available*

to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;.....

(E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;" (Emphasis added.)

Thanks,

██████████  
comments submitted on behalf of the Society and myself  
as an individual.

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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Friday, June 16, 2017 3:45 PM  
**To:** [REDACTED] Shea, Valois  
**Cc:** [REDACTED]  
**Subject:** Dewey Burdock Mine Permit- Federal Register review of EPA's CRF 40 CFR 124.9 (b) (6)

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Dear [REDACTED] and Valois Shea,

RE: Rule creation for EPA's CRF 40 CFR 124.9 (b) (6)

Can either of you give me the publication date for the Federal Register Notice of publication of the CFR rule set that CRF 40 CFR 124.9 (b) (6) belongs within. This rule exempts EPA permitting via underground injection control (UIC) from NEPA.

I wish to see the justifications for adoption of this rule set and that would normally be explained in a preamble for the rule in the Federal Register, when it was adopted.

I ask for this information to help write my comments on Dewey Burdock In-situ Leach Application.

I wish to understand which legal argument EPA uses to exempt itself from NEPA for UIC.

As I understand it courts have exempted agencies from the procedural requirements under NEPA where the court thinks that either:

- (1) a direct conflict between NEPA and the organic statute authorizing agency action exists, or
- (2) NEPA procedures will be redundant with those provided for under the organic statute due to either displacement or functional equivalence.

I ask that you fully disclose those legal arguments in your final permit documents... fully explain how and why EPA chose to pass CFRs exempting itself from NEPA for UIC. Please fully disclose which legal rationale you tier to. If it is "functional equivalence"; we believe you need to show how you are achieving "functional equivalence" or have redundant procedures to NEPA.

Thanks,

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
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## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, June 19, 2017 9:15 PM  
**To:** Shea, Valois  
**Cc:** [REDACTED]  
**Subject:** Additional Comments, on Dewey Burdock In-situ Leach Uranium Mine application  
**Attachments:** Dewey\_Burdock\_Project Sign-On Letter 6-17.docx

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Dear Valois Shea,

Prairie Hills Audubon Society attaches the Clean Water Alliance (CWA) letter. We thank Liliias Jarding for writing this "sign on letter" and we incorporate the CWA comments by reference & we would love to see you do NEPA analysis on this project..

[REDACTED] repeatedly argues a NEPA argument and asks you to achieve NEPA standards & compliance. We wish to present CWA letter's points skewed in a slightly different way. We are aware that the EPA adopted 40 CFR 124.9 (b) 6, which the EPA uses to avoid NEPA on UIC approvals. We have not found in writing the EPA's justification, in which it explains why it believes can avoid federal law (NEPA) , but we suspect it is tiering to the legal precedent for "functional equivalence" - an winning argument from various court cases. We don't know if 40 CFR 124.9 (b) 6, has ever been put to a court challenge, to see if the EPA's UIC application review process meets a Judge's view of "functional equivalence". We are not sure if the EPA has ever directly approved an In Situ Leach Uranium mine vs allowing States primacy over UIC. Has the EPA done such an mine waste injection UIC approvals, (citing 40 CFR 124.9 (b) 6 to escape NEPA) & actually survived a court challenge?

Since you all believe you can escape NEPA, we suggest you reread/reconsider all Liliias's NEPA arguments, to say you must demonstrate "functional equivalence" with NEPA. If you must supplement the record to address the issues Liliias raises.. you must then release the revised/supplemented set of EPA review documents also for public comment. If you don't do this additional step, there will be another NEPA or NEPA "functional equivalence" argument that maybe can be litigated.

We believe that the project is being approved by multiple entities (EPA, SD-WMB, SD-BME and NRC) and ironically the project description changes. Is the project a slippery moving target? We fear the Applicant will incrementally ratchet up the scope of the project each time some new entity reviews it and expect the new entity to be impressed by and tier to the older reviewing entity's prior approval, who actually reviewed and approved a different and maybe smaller project. We then fear the Applicant will go back to the earlier entity with the later approval of the revised project from the second agency. Maybe this could be an agency manipulation strategy? This also creates special review confusion as the NRC review follows NEPA and the EPA review does not but does "functional equivalence" of NEPA.

Please be extremely clear about how the project morphs constantly. Please present all it's modalities, perhaps as a "range of action alternatives" . Liliias Jarding lays out the conflicting project versions out for you in her Clean Water Alliance letter. You must develop the various alternatives in detail -- with smaller footprint and larger footprint "action alternative" versions. And you must do each alternative's impact analysis. NRC must then do another SEIS.

If ISR wastes from other remote ISR mining sites are allowed to be injected, then mining at those sites would be "connected actions" and/or "cumulative actions" and the remote sites and all the impacts from them must be also considered. For example Uranium mines

in Wyoming may be closer to active greater sage grouse leks, than in SD. Future processing of the mine's yellow cake is also a "connected actions" and/or "cumulative actions" as is the waste disposal of stuff from the mine site. The eventual use of the processed mineral and the waste and exposures that future unknown use will create and the future radioactive wastes generated by future use is also a cumulative or connected action. Radioactive material is not benign and it can keep on releasing pollution -- sort of like the energizer bunny.

If it is the NRC who has ordered/concluded that third party remotely generated ISR waste is allowed into injection wells, why did they not discuss that in their SEIS? The NRC has authority over radioactive material..so how can they have jurisdiction to make decisions in ISR mining wastes from other recovery of a mineral that is not radioactive (such as potash or copper).

Thanks,

[illegible]

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Response	Percentage
Yes, the U.S. should take action to address climate change	95%
No, the U.S. should not take action to address climate change	5%

cell account is not currently activated,  
& it does not accept text or voice mail

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, April 03, 2017 6:35 AM  
**To:** Shea, Valois  
**Subject:** Black Hills

**Follow Up Flag:** Follow up  
**Due By:** Thursday, April 06, 2017 11:00 AM  
**Flag Status:** Completed

I am respectfully asking that you stop the Chinese mining company from ruining the black hills. The uranium mining is something we need to stop doing to our planet and we have learned too much about the damages to our fresh water sources and the damage we can cause with these practices. Thank you very much. [REDACTED].

Sent from my iPhone

**Shea, Valois**

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**From:**  
**Sent:** Saturday, March 11, 2017 7:07 PM  
**To:** Shea, Valois  
**Subject:** No TO FRACKING FOR URANIUM OR ANYTHING ELSE!!! from [REDACTED]

Sir or Madam,

## **USGS FINALLY ADMITS THAT FRACKING CAUSES EARTHQUAKES**

Posted by [Aaron Kesel](#) | Mar 2, 2017 |

NO, I SAY A THOUSAND TIMES NO! NO FRACKING TYPE ACTIVITY!  
PERIOD!

Underground Injection Control

## **USGS FINALLY ADMITS THAT FRACKING CAUSES EARTHQUAKES**

Posted by [Aaron Kesel](#) | Mar 2, 2017 | Powertech (USA) Inc., for injection activities related to a proposed uranium recovery project in the southern Black Hills region in Custer and Fall River Counties of South Dakota. NOT- BIGLY!!

No permits, exceptions whatever! Water is life. I was alive during the time of the Times Beach Dioxin pollution, EXXON MOBIL Valdez and Deep Horizon. I also am a student of the problem with Chevron extracting oil, Etc in the previously pristine Ecuadorian Forest 30 years ago and leaving those poor natives with a mess from that process. The natives of had an ongoing legal dispute to get remedies for 25 years!!! Please stop insulting our intelligence!!

I am a retired RN I have a BSN from major University and I practiced in Healthcare Management for 30 years. Don't reinvent the wheel. Healthcare has proven that PREVENTION is a million times better than trying to treat the disease once you get it.

Don't let these big companies make profit by destroying our public resources such as water in the aquifers and above ground on the land and in the water and the air.

What don't you get? Your grandchildren and great-grandchildren are going to be around during this time in the future and they'll be the ones having to deal with this if we don't stop it before it starts.

You cannot eat, drink and breathe CASH 💰 💰 💰 💰.

Do you not remember the rivers being on fire back in the sixties and seventies and the Erie Lake almost being dead from pollution? REMEMBER SMOG?????



I belong to the Intelligentsia. The half life of uranium is 4.5 billion years! You cannot bribe us with short-term job security!!!

The white men from Europe have already stolen the whole of America from the original Aborigines who lived here and almost committed genocide on their population. Now you want to go and commit more pollution and ravage their land so it's uninhabitable forever. Have you no conscience?? Even considering this proposal is absurd!

Sent from my Verizon, Samsung Galaxy smartphone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Sunday, March 12, 2017 8:19 PM  
**To:** Shea, Valois  
**Subject:** Storage of uranium in aquifer

Are you seriously considering this? I cannot believe the agency designed to protect the environment is actually asking civilians this question and not going to science...oh wait I forgot under Trump you can forget reality and be completely stupid!!!

[REDACTED]  
[REDACTED]

Sent from my iPhone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 12:34 PM  
**To:** Shea, Valois; Chin, Lucita; McClain-Vanderpool, Lisa  
**Subject:** FW: Dewey-Burdock Project Question - Reply to Dr. Liliias Jarding

Fyi and for our admin record...

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 12:33 PM  
**To:** [REDACTED]  
**Subject:** RE: Dewey-Burdock Project Question

[REDACTED] [REDACTED] The UIC Draft Class V Area Permit authorizes up to four deep injection wells that Powertech proposes using for the disposal of treated in-situ recovery waste fluids into the Minnelusa Formation. At this time, Powertech has proposed locations for two of these wells.

In their Class V permit application, Powertech originally proposed the construction of four to eight deep disposal wells (DDWs): up to four DDWs in the Minnelusa Formation and up to four DDWs in the Deadwood Formation. The EPA classified the DDWs proposed for injection into the Deadwood Formation as Class I wells, which are banned by South Dakota regulations. Powertech later withdrew their request for the Deadwood injection wells, so now only the two to four wells injecting into the Minnelusa Formation are proposed.

We hope this answers your questions. More information on these proposed wells can be found in the UIC Draft Class V Area Permit and associated documentation posted on our website at: <https://www.epa.gov/uic/administrative-record-dewey-burdock-class-iii-and-class-v-injection-well-draft-area-permits>.

Sincerely,

[REDACTED]

**From:** [REDACTED]  
**Sent:** Monday, March 13, 2017 12:02 PM  
**To:** [REDACTED]  
**Subject:** Dewey-Burdock Project Question

Greetings --

We are getting conflicting information here in the Black Hills of South Dakota, and I'm hoping you can clarify things. The topic is deep disposal wells in Fall River and Custer Counties in the general area of the Dewey-Burdock uranium mining project. I am preparing expert testimony for the draft permit process and want to be operating from accurate information.

Linsey McLean, who met with you in December, says that you indicated that there are as many as twelve deep disposal wells planned in the general area of the Dewey-Burdock project. The recently issued draft permit for the project says that there will be two to four DDWs. Are there other projects planned that we haven't heard about here yet? Or is there some other way to account for the 8 "missing" DDWs?

Thanks much for your help in clarifying things.

[REDACTED]

**Shea, Valois**

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**From:** [REDACTED]s  
**Sent:** Friday, March 24, 2017 12:04 PM  
**To:** Shea, Valois  
**Cc:** [REDACTED]  
**Subject:** FW: Dewey-Burdock Fact Sheet Question

fyi

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**From:** [REDACTED]  
**Sent:** Friday, March 24, 2017 12:01 PM  
**To:** [REDACTED]  
[REDACTED]

[REDACTED]: after checking our records, we do not showing any terminations under 40 CFR 144.40 from the past several years.

[REDACTED]

**From:** [REDACTED]  
**Sent:** Tuesday, March 21, 2017 3:53 PM  
**To:** [REDACTED]  
**Subject:** Dewey-Burdock Fact Sheet Question

Hi, [REDACTED]

In the Fact Sheet for the Class V wells for the proposed Dewey-Burdock uranium mine, it says that the Class V area permit would last for 10 years, "unless terminated for reasonable cause under 40 CFR s 144.40."

Do you know how often a Class V permit has been terminated by EPA?

Do you know how often a Class III permit has been terminated by EPA?

If you don't have this information, please let me know who might have it. It's important to clarifying the meaning of the information in the Fact Sheet.

Thank you --

[REDACTED]  
[REDACTED]

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, March 14, 2017 11:05 PM  
**To:** Shea, Valois  
**Subject:** COMMENTS ON Dewey Burdock Class 3 and Class 5 injection Well Draft Area Permits and on Aquifer Exemption Approval

**From:** [REDACTED]  
**Date:** March 15, 2017 at 12:56:01 AM EDT  
**To:** EPA <[shea.valois@epa.gov](mailto:shea.valois@epa.gov)>

Comment submitted by --

[REDACTED], an interested party who is a US citizen, taxpayer, and user of the natural resources of the state of South Dakota, including but not limited to drinking water and consuming food while in South Dakota for travel and recreational purposes.

The permittee(s) should NOT be granted a UIC permit or permits that exempt them from applicable regulations that protect human health and the environment, and that protect the quality of the aquifer in the southern Black Hills region in Custer and Fall River Counties of South Dakota, and that protect this aquifer from contamination and deterioration in quality from the disposal of mining waste into or adjacent to the aquifer.

The EPA should not grant permits or exemptions from aquifer protection network to Powertech USA that would allow disposal of uranium mining waste in or adjacent to the aquifer in the southern Black Hills region in Custer and Fall River Counties of South Dakota

Disposal of uranium mining waste in or adjacent to the aquifer will result in the release of Radioactive substances including Selenium, that will poison the animals and other life in the area. The people of the United States, including its children, need this aquifer to be uncontaminated and protected by vigorous application of criteria and regulations applicable to clean water. The EPA should determine that the aquifer is subject to safe drinking water standards and should not approve an aquifer exemption.

Thank you for your serious consideration of this comment. Please weigh this comment in your deliberations.

Sent from phone

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, May 22, 2017 10:32 AM  
**To:** Shea, Valois  
**Subject:** Public Comments about Uranium mining

Im writing to state my opposition to the Underground Injection Control Programs draft permits for the Dewey-Burdock Uranium Mine and Deep Disposal Wells project. It is yet another project that threatens our underground water sources, the faults located in that area and is an overall threat to the Earth and therefore the people.

Invest in renewable sources of energy! We all win with that route!

[REDACTED]

Tags:

Uranium Mining

**Shea, Valois**

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**From:** [REDACTED]  
**Sent:** Tuesday, May 16, 2017 10:55 AM  
**To:** Shea, Valois  
**Subject:** Comment on Dewey Burdock In Situ Leach Uranium mining injection wells

[REDACTED]  
[REDACTED]  
[REDACTED]

To Valois Shea,

Here is an e-mail from the lady at the EPA in DC I was directed to, when I asked my NEPA questions.  
See the second sentence in 40 CFR § 124.9 (b) (6).

It is alleged by others that in order for EPA to put this in EPA's administrative CFRs, EPA may be relying on "functional equivalence" doctrine, for which precedent was established in court cases. You might ask Allison about that - see what her opinion is of this and if EPA's CRF 40 CFR 124.9 (b) (6) below, is based in "functional equivalence" legal precedent - how do you comply with that legal precedent parameters?

I suggest once you figure it out, you explain it to the public in your final writings on this permitting and I suggest offer us another extended comment period, once your EPA's alternative to NEPA duties are fully understood.

If I have time, I will write a better letter later.

Thanks,

[REDACTED]

Begin forwarded message:

**From:** [REDACTED]  
**Subject:** NEPA information  
**Date:** May 11, 2017 at 2:04:02 PM MDT  
**To:** [REDACTED] >

Hi [REDACTED]

Here is the information we talked about. Let me know if you have any further questions.

40 CFR § 124.9 Administrative record for draft permits when EPA is the permitting authority.

- **(a)** The provisions of a draft permit prepared by EPA under § 124.6 shall be based on the administrative record defined in this section.
- **(b)** For preparing a draft permit under § 124.6, the record shall consist of:
  - **(1)** The application, if required, and any supporting data furnished by the applicant;



- **(2)** The draft permit or notice of intent to deny the application or to terminate the permit;
- **(3)** The statement of basis (§ 124.7) or fact sheet (§ 124.8);
- **(4)** All documents cited in the statement of basis or fact sheet; and
- **(5)** Other documents contained in the supporting file for the draft permit.
- **(6)** For NPDES new source draft permits only, any environmental assessment, environmental impact statement (EIS), finding of no significant impact, or environmental information document and any supplement to an EIS that may have been prepared. NPDES permits other than permits to new sources as well as all RCRA, UIC and PSD permits are not subject to the environmental impact statement provisions of section 102(2)(C) of the National Environmental Policy Act, [42 U.S.C. 4321](#).
- **(c)** Material readily available at the issuing Regional Office or published material that is generally available, and that is included in the administrative record under paragraphs (b) and (c) of this section, need not be physically included with the rest of the record as long as it is specifically referred to in the statement of basis or the fact sheet.
- **(d)** This section applies to all draft permits when public notice was given after the effective date of these regulations.

<https://www.epa.gov/uic/aquifer-exemptions-underground-injection-control-program>

<https://www.epa.gov/nepa/epa-compliance-national-environmental-policy-act>

Best,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

=====

[REDACTED]  
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[REDACTED]  
[REDACTED]

[REDACTED]  
[REDACTED] cell account is not activated all the time & it does not accept text,

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Tuesday, June 13, 2017 4:01 PM  
**To:** Shea, Valois  
**Subject:** NO to uranium mining!

Thank you for the opportunity, once again, to say NO to uranium works, test hole, exploration, WHATEVER it is the companies want to do. It is WRONG, it is insane the propaganda about job creation and the fantasy the process is safe. Please, NO MORE!  
sincerely,

[REDACTED]  
[REDACTED]

Sent from my iPad

## Shea, Valois

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**From:** [REDACTED]  
**Sent:** Monday, March 06, 2017 3:26 PM  
**To:** Shea, Valois  
**Subject:** Public comment on proposed Uranium mining project

Valois Shea

U.S. EPA Region 8 Mail Code: 8WP-SUI

1595 Wynkoop Street

Denver, CO 80202-1129

Dear Ms. Shea,

I am writing this email to express my concern for the proposed uranium mining project in southwestern South Dakota. My concerns are mainly for future generations and the of course the environment.

Coming from both a scientific background and from an Indigenous background, I urge you to deny this project in whole. Seeing and living the long term effects of uranium mining in my own community as well as on my reservation, I have seen and experienced all the negative impacts uranium mining has on both people that live in close proximity as well as the environment surrounding the mines. I personally seen the destruction to the land, the air and especially the water.

My research is focused on finding a solution to the water contamination by uranium, arsenic, sulfates and a number of other metals/elements of concern. Uranium chemistry is very complicated and it is difficult to imagine the environmental impacts by this proposed project. Though I feel optimistic that we are closer to solving a portion of the problem, it will cost more to remediate a contaminated sites in the future which is inevitable.

I am deeply saddened of this news and I sincerely hope that this project is not allowed to move forward.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED]  
[REDACTED]

