

STATE OF WYOMING  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
UNDERGROUND INJECTION CONTROL PERMIT ISSUED UNDER  
WYOMING WATER QUALITY RULES AND REGULATIONS  
CHAPTER 27

CLASS I INJECTION WELL

<input type="checkbox"/>	New	Permit Number: <b>16-145</b>
<input checked="" type="checkbox"/>	Modified	Previous Permit: 13-409
<input type="checkbox"/>	Renewal	Facility Number: WYS-037-00122

In compliance with the Wyoming Environmental Quality act (W.S. 35-11-101 through 1104, specifically 301(a)(i) through 301 (a)(iv), Laws 1973, Ch. 250, Section 1) and Wyoming Water Quality Rules and Regulations (WQRR), Chapter 27.

Applicant: Lost Creek ISR, LLC  
5880 Enterprise Drive, #200  
Casper, WY 82609  
307-265-2373

Lost Creek ISR, LLC, hereafter referred to as the permittee, is authorized to operate injection wells **DW No. 1**, **DW No. 3**, and **DW No. 4** and to drill, complete, and operated **DW No. 2** and **DW No. 5** according to the statements, representations, procedures, terms and conditions of application 16-145 and requirements and other conditions of this permit. Issuance of this permit does not obligate the Wyoming Department of Environmental Quality (WDEQ) to approve injection if doing so would endanger human health or the environment or if the wells do not comply with all terms and conditions of this permit (WQRR Chapter 27, Section 7(d)).

This is an individual permit for five (5) wells located at the Lost Creek ISR facility in Sweetwater County, Wyoming. No additional wells shall be constructed under this permit without prior permit modification. This permit shall become effective on date of issuance and is valid until **XXXX XX, 2028**.

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Kevin Frederick, Administrator  
Water Quality Division  
200 West 17<sup>th</sup> St.- 2<sup>nd</sup> Floor, Cheyenne, WY 82002

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Date

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Todd Parfitt, Director  
Department of Environmental Quality  
200 West 17<sup>th</sup> St.- 4<sup>th</sup> Floor, Cheyenne, WY 82002

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Date

## ACRONYMS/ABBREVIATIONS

AEW	area of emplaced waste
AOR	area of review
bbl	barrels (standard barrels equal to 42 gallons)
bbl/d	barrels per day (standard barrels equal to 42 gallons)
CAS	Chemical Abstracts Service
CFR	Code of Federal Regulations
CBL	Cement bond log
COI	cone of influence
°F	degrees Fahrenheit
ft	feet
ft bgs	feet below ground surface
gpm	gallons per minute
LSIP	limiting surface injection pressure (maximum injection pressure that cannot be exceeded at any time other than well stimulation)
MIT	mechanical integrity test
mg/L	milligrams per liter
P&A	plug and abandon
psig	pounds per square inch - gage
psi/ft	pounds per square inch per foot
RCRA	Resource Conservation and Recovery Act
SIP	surface injection pressure
s.u.	standard units
USEPA	United States Environmental Protection Agency
USDW	underground source of drinking water (Classes I, II, III, IV(A), Special(A))
WDEQ	Wyoming Department of Environmental Quality
WQD	Water Quality Division of WDEQ
WQRR	Water Quality Rules and Regulations

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**1. WELL LOCATIONS AND AREA OF REVIEW**

a. The well(s) authorized by this permit are located as shown on Table 1.

**Table 1. Well Location(s)**

<b>Well Name</b>	<b>Legal Description</b>	<b>Latitude</b>	<b>Longitude</b>
DW No. 1 (existing)	NE $\frac{1}{4}$ of SW $\frac{1}{4}$ Section 25; T25N; R93W	42.10696	-107.88607
DW No. 2 (proposed)	NE $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 19; T25N; R92W	42.12115	-107.85636
DW No. 3 (existing)	SE $\frac{1}{4}$ of SW $\frac{1}{4}$ Section 13; T25N; R93W	42.13335	-107.88443
DW No. 4 (existing)	NW $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 18; T25N; R92W	42.13545	-107.85915
DW No. 5 (proposed)	NW $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 17; T25N; R92W	42.13900	-107.83840

NOTE: Latitude and Longitude are using North American Datum 83

b. The area of review (AOR) for an injection well is the area in which the potential for breaches of the upper and lower confining zones must be evaluated. The AOR is based on the larger of the radius of area of emplaced waste (AEW), the radius of the cone of influence (COI), or the minimum radius required. The COI is the area around a well within which increased discharge zone pressures caused by the injections could be sufficient to force fluids into an underground source of drinking water (USDW) if a conduit is present. The results of the AOR calculations (WQRR Chapter 27, Section 6(f)(iv)) are shown in Table 2. For this facility the AOR is based on the COI. The calculations for the COI are based on the critical pressure rise between the top of the discharge zone and an assumption of a hypothetical artificial penetration represented by a mud-filled borehole with an assumed 9.0 pound per gallon mud density. This COI calculation approach was previously utilized in the 13-409 permit modification due to the similar pressure gradient between the Fort Union Formation, Lower Battle Spring Formation, and Upper Battle Spring Formation. Calculations for the COI assumed a 20-year operational life of the facility, an injection rate of 1,714 barrels per day (bbl/d), a porosity of 12%, an intrinsic permeability of 2 millidarcies, and net sand thicknesses for the injection zone defined in Table 3. The AEW calculations were also based on the above assumptions. The cylindrical volume of potentially injected fluid for each well is defined in Table 2. A dispersion factor of 10% was applied to the radius of the cylinder for each well.

**Table 2. Area of Review Summary**

<b>Well Name</b>	<b>Fort Union AEW Radius (ft)<sub>1</sub></b>	<b>Lower Battle Spring AEW Radius (ft)<sub>2</sub></b>	<b>Radius of COI (ft)</b>	<b>Minimum Radius of Area of Review (ft)</b>
DW No. 1	666	614	<b>2,170</b>	1,320
DW No. 2	475	--	<b>1,630</b>	1,320
DW No. 3	772	669	<b>2,920</b>	1,320
DW No. 4	876	730	<b>3,840</b>	1,320
DW No. 5	475	--	<b>1,630</b>	1,320

<sup>1</sup> The Fort Union AEW for DW No. 1, DW No. 3, and DW No. 4 incorporates the net sand thickness in the injection zone, the volume of waste injected into the Fort Union for each existing well reported through the end of March 2017, 20 years of continued injection into the Fort Union, and a 10% dispersion factor.

<sup>2</sup> The Lower Battle Spring AEW for DW No. 1, DW No. 3, and DW No. 4 incorporates 20 years of injection into the Lower Battle Spring and a 10% dispersion factor.

“--” indicates not applicable.

c. The AOR (Chapter 27, Section 6(f)(iv)(E)) for each well is described using the Public Lands Survey System to the nearest sixteenth section in Table 4.

**2. DISCHARGE ZONES**

a. The authorized discharge zone is the Fort Union Formation and Lower Battle Spring Formation in existing DW No. 1, DW No. 3, and DW No. 4 wells and the Fort Union Formation is the authorized discharge zone in the proposed DW No. 2 and DW No. 5 wells within the intervals specified in Table 3:

**Table 3. Discharge Zone**

<b>Well Name</b>	<b>Surface Elevation (ft above mean sea level)</b>	<b>Depth to Top of Perforated Interval (feet below ground surface (ft bgs))</b>	<b>Depth to Bottom of Perforated Interval (ft bgs)</b>	<b>Net Sand Thickness (ft) within Perforated Interval</b>	<b>Well Depth (ft bgs)</b>
DW No. 1	6,816	5,622	9,561	598	9,978
DW No. 2	6,873	5,954	8,700	400	8,800
DW No. 3	6,984	5,680	8,324	504	8,426 <sub>1</sub>
DW No. 4	6,964	5,752	8,532	423	8,601 <sub>1</sub>
DW No. 5	6,995	5,954	8,700	400	8,800

NOTE: \*All depths referenced to below ground surface (not Kelly Bushing). Proposed wells are estimates.

<sub>1</sub> Plug back well depth

b. The authorized discharge zone in existing wells DW No. 1, DW No. 3, and DW No. 4 shall be restricted to the intervals in the Lower Battle Spring and Fort Union Formations specified in Table 3. The authorized discharge zone for proposed wells DW No. 2 and

DW No. 5 shall be restricted to the intervals in the Fort Union formation specified in Table 3. The wells listed as proposed have previously been permitted, but have not been constructed. If the permittee determines that the perforated intervals identified in Table 3 are inadequate, and additional perforations are necessary, prior authorization is required. The authorization request shall be supported by data and approved by the Administrator. The depths for proposed wells are estimated and shall be confirmed during well construction activities. The confirmed discharge zone depths will be listed in the permittee's authorization to inject letter.

- c. The upper confining zone for existing wells DW No. 1, DW No. 3, and DW No. 4 consists of shale interbedded with sandstone and siltstone beds at the interface between the Upper and Lower Battle Spring Formation with thicknesses of 278 feet, 171 feet, and 208 feet, respectively. The interbedded sandstone and siltstone beds have thicknesses of up to 10 feet in DW No. 1, 39 feet in DW No. 3, and 24 feet in DW No. 4. The upper confining zone for proposed wells DW No. 2 and DW No. 5 consists of approximately 306 feet of shale interbedded with minor sandstone, siltstone, and coal beds less than 20 feet thick at the base of the Lower Battle Spring Formation (formerly described as the Wasatch formation in UIC permit 13-409). The lower confining zone consists of approximately 1,900 feet of low permeable shales and siltstones of the Lance Formation.

**Table 4. Legal Description(s) of the Area(s) of Review**

Well Name	Quarter-Quarters or Lots	Section	Township/Range
DW No. 1	All of SW $\frac{1}{4}$	25	T25N; R93W
	S $\frac{1}{2}$ of NW $\frac{1}{4}$		
	W $\frac{1}{2}$ of SE $\frac{1}{4}$		
	SWNE	26	
	E $\frac{1}{2}$ of SE $\frac{1}{4}$		
	SENE	36	
	N $\frac{1}{2}$ of NW $\frac{1}{4}$		
NWNE			
DW No. 2	All of SE $\frac{1}{4}$	19	T25N; R92W
	S $\frac{1}{2}$ of NE $\frac{1}{4}$		
	E $\frac{1}{2}$ of SW $\frac{1}{4}$		
	W $\frac{1}{2}$ of SW $\frac{1}{4}$	20	
	SWNW		
	NWNW	29	
	N $\frac{1}{2}$ of NE $\frac{1}{4}$	30	
DW No. 3	All of SW $\frac{1}{4}$	13	T25N; R93W
	All of SE $\frac{1}{4}$		
	S $\frac{1}{2}$ of NW $\frac{1}{4}$		
	SWNE		
	All of SE $\frac{1}{4}$	14	

**Table 4. Legal Description(s) of the Area(s) of Review**

Well Name	Quarter-Quarters or Lots	Section	Township/Range	
	SENE	23		
	E ½ of NE ¼			
	All of NW ¼	24		
	W ½ of NE ¼			
	NENE			
DW No. 4	All of SW ¼	17	T25N; R92W	
	S ½ of NW ¼			
	NWNW			
	All of NW ¼	18		
	All of NE ¼			
	All of SW ¼			
	All of SE ¼			
	All of NE ¼	19		
	All of NW ¼			
	NENE	24		
	E ½ of SE ¼	13		T25N; R93W
	DW No. 5	SWNW		16
NWSW				
All of NE¼		17		
SENW				
NESW				
All of SE¼				

d. There are no wells located within the AOR that penetrate the receiver.

### 3. GROUNDWATER CLASSIFICATION

#### a. Fort Union Formation

- i. Total dissolved solids concentrations in the Fort Union Formation are 12,960 mg/L at DW No. 1, 5,570 mg/L at DW No. 3, and 5,410 mg/L at DW No. 4. Additionally, concentrations of Benzene from samples collected in the Fort Union Formation ranged from 0.486 mg/L in DW No. 3 to 0.051 mg/L in DW No. 4.
- ii. The groundwater in the Fort Union Formation is classified as Class VI (unusable/unsuitable) in accordance with WQRR, Chapter 8 as described in 3 (b). This classification was made for the following reason(s):

1. Due to excessive concentrations of total dissolved solids or specific constituents (WQRR, Chapter 8, Section 4 (d)(ix)(A)).
  2. The depth of this formation is such that production of water from it is not economically or technically practical (WQRR Chapter 8, Section 4 (d)(ix)(C)).
  - iii. The aquifer Class VI designation is limited to the larger of the AEW or 1,320 ft. In this case the Class VI designation is based on the minimum AOR that extends 1,320 ft in all directions from each injection well. All waste injected over the proposed 20-year life of this facility is calculated to remain within the AEW radii identified in Table 2.
  - iv. The US Environmental Protection Agency (USEPA) has previously authorized aquifer exemptions for the aquifer in the Fort Union formation in wells DW No. 3 and DW No. 4. Authorization for aquifer exemptions for the aquifer in the Fort Union Formation in wells DW No. 2 and DW No. 5 is pending construction of the wells and collection of a representative water sample and submittal of results to the USEPA for review and approval.
- b. Lower Battle Spring Formation
- i. Total dissolved solids concentrations in the Lower Battle Spring Formation are expected to exceed 3,000 milligrams per liter (mg/L) and be less than 10,000 mg/L based on estimates from resistivity logs from the DW No. 1, DW No. 3 and DW No. 4 wells.
  - ii. The groundwater in the Lower Battle Spring Formation is classified as Class VI (unusable/unsuitable) in accordance with WQRR, Chapter 8 as described in 3 (b). This classification was made for the following reason:
    1. The depth of this formation is such that production of water from it is not economically or technically practical (WQRR Chapter 8, Section 4 (d)(ix)(C)).
  - iii. The aquifer Class VI designation is limited to the larger of the AEW or 1,320 ft. In this case the Class VI designation is based on the minimum AOR that extends 1,320 ft in all directions from each injection well. All waste injected over the proposed 20-year life of this facility is calculated to remain within the AEW radii identified in Table 2.

#### **4. PRE-INJECTION REQUIREMENTS**

Injection into a well may not begin until written authorization to discharge is provided by the Administrator. In addition, injection into an existing well modified to include injection into the Lower Battle Spring Formation shall not begin until written authorization to discharge is provided by the Administrator. The authorization to discharge will not be provided until the following are completed to the satisfaction of the Administrator:

- a. Well construction is complete (Chapter 27, Section 6 (h)(iii)(X)).
- b. The permittee has submitted an as-built well completion and testing report and the “Notification of Construction Completion of Injection Well” (available at <http://deq.wyoming.gov/wqd/underground-injection-control/resources/forms>). Note that these documents require a Wyoming Professional Engineer or Professional Geologist certification.
- c. For each new well, the permittee shall report the depth to the top of each formation from ground surface to the total depth drilled.
- d. For each new well or newly perforated zone within an existing well, the permittee shall collect a baseline groundwater quality sample from each aquifer or formation within the new discharge zones (Chapter 27, Section 15(a)(iii)) and submit results for all the analytes and parameters in WQRR Chapter 8, Table I, Volatile Organic Compounds (VOCs), and Semi-volatile Organic Compounds (SVOCs). The methods and procedures for sample collection and analysis must be approved by the Water Quality Division (WQD) prior to sampling.
- e. The permittee has demonstrated cement bond integrity by submitting cement bond logs (CBL) that are sensitive enough to identify channels in the cement annulus (cement to long string casing and cement to formation) that could result in a poor hydraulic seal. CBL output tracks shall include: gamma, amplitude, CBL waveform, and cement image. CBL shall be conducted no sooner than 72 hours from the last cement job to ensure adequate cement curing. A cement design shall also be included on a well schematic showing depth of fill for lead and tail cement (with compressive strength curves) for all stages.
- f. Mechanical integrity of the well has been demonstrated (see Section 11 of this permit).
- g. The permittee has demonstrated financial assurance (Chapter 27, Section 19(a)).
- h. Aquifer exemptions for each USDW to be injected into have been obtained from the USEPA. For area permits, upon well completion and groundwater confirmation sampling of the injection zone, a USEPA approved aquifer exemption shall be obtained for each injection well covered under this permit.

## **5. AUTHORIZED OPERATIONS**

- a. The maximum instantaneous injection rate for each well shown in Table 5 is allowed provided that the limiting surface injection pressure (LSIP) is not exceeded.

**Table 5. Maximum Injection Rates, Annulus Pressures and Limiting Surface Injection Pressures**

Parameter	DW No. 1	DW No. 2	DW No. 3	DW No. 4	DW No. 5
Maximum Injection Rate (bbl/d)	1,714	1,714	1,714	1,714	1,714
Maximum Injection Rate (gallons per minute (gpm))	50	50	50	50	50
Maximum Annulus Pressure (pounds per square inch gage (psig))	800	800	800	800	800
Minimum Annulus Pressure (psig)	200	200	200	200	200
Estimated Fracture Gradient, $F$ (pounds per square inch per foot (psi/ft))	0.542	0.542	0.590	0.584	0.542
Fracture Pressure, $P_f = F \cdot D_p$	3,008	3,227	3,311	3,301	3,227
Depth to Top of Formation, $D_p$ (ft bgs)	5,549	5,954	5,612	5,652	5,954
Temperature at Mid-Point of Perforations (degrees Fahrenheit °F) <sub>1</sub>	170	150 <sub>2</sub>	160	150	150 <sub>2</sub>
Maximum Total Dissolved Solids of Injectate (mg/L)	20,000	20,000	20,000	20,000	20,000
Density of Injectate, $\rho_j$ (grams per cubic centimeter)	1.01	1.01	1.01	1.01	1.01
Injectate Fluid Gradient (psi/ft) $grad_j = \rho_j \cdot 12 \frac{in}{ft} \cdot 16.387 \frac{cm^3}{in^3} / 453.592 \frac{g}{lb}$	0.4378	0.4378	0.4378	0.4378	0.4378
Hydrostatic Pressure (psi) $P_h = D_p \cdot grad_j$	2,429	2,607	2,457	2,474	2,607
Tubing Length, $T_L$ (ft)	5,606	5,975	5,668	5,707	5,975
Tubing Inside Diameter, $d$ (inches)	2.441	2.441	2.441	2.441	2.441
Tubing Friction Loss Factor, $T$ (psi/1000 ft)	10	10	10	10	10
Average Injection rate, $q$ (gpm)	50	30 <sub>3</sub>	50	50	30 <sub>3</sub>
Pressure Loss due to Tubing Friction (psi/ft)* $P_d = (4.52q^{1.85}) / (c^{1.85} d^{4.8655})$	0.01004	0.00390	0.01004	0.01004	0.00390
Total Pressure Loss from Tubing Friction (psi) $P_L = P_d \cdot T_L$	56	23	57	57	23
$SIP = P_f - P_h + P_L$ (psig)	635	643	911	884	643
$LSIP = 0.9 \cdot SIP$ (psig)	572	579	820	796	579

\*  $c$  = Hazen-Williams design coefficient for steel piping, 130.

<sub>1</sub> Approximate values derived from the pre-injection baseline temperature logs

<sub>2</sub> Estimated value derived from the pre-injection baseline temperature log of DW No. 3.

<sub>3</sub> Based on the injection rate achieved in the Fort Union for DW No. 3 prior to reaching the fracture pressure during the step-rate test (rounded down to 30 gpm).

- b. The injection pressure in each injection well shall be limited to the LSIP shown in Table 5 except as necessary during well stimulation approved by the Administrator (Chapter 27, Section 6(h)(i)(A)).
- i. Exceeding the LSIP in Table 5 or creating or propagating fractures within the receiver or confining zone are violations of this permit and shall be reported pursuant to Section 12 of this permit.

- ii. The LSIP in Table 5 for proposed injection wells (DW No. 2 and 5) is a temporary limit. The temporary limit applies until a step-rate injection test has been conducted and the recalculated LSIP has been approved by the Administrator.
- iii. The LSIP in Table 5 for existing injection wells (DW Nos. 1, 3, and 4) is a temporary limit. The temporary limit applies until a step-rate injection test has been conducted and the recalculated LSIP has been approved by the Administrator.
- iv. The permittee shall conduct a step-rate injection test and a pressure fall-off test on existing injection wells (DW No. 1, 3, and 4) after receiving authorization to discharge from the Administrator and prior to beginning operational injection activities to determine the actual fracture pressure of the receiver (Lower Battle Spring Formation) and the average sustainable injection rate.
- v. The permittee shall conduct a step-rate injection test on proposed injection wells (DW No. 2 and 5) within one year of permit issuance or well construction or modification, whichever comes later, to determine the actual fracture pressure of the receiver (Fort Union Formation), Chapter 27, Sec 6(h)(i)(A).
- vi. The permittee may conduct additional step-rate injection tests at their discretion to refine estimates of the surface injection pressure (SIP) as injection continues. The SIP will be used to recalculate the LSIP.
  - 1. Step-rate injection tests shall be conducted using both surface and down hole pressure gauges or transducers. The down hole device shall be placed within 100 vertical ft of the packer, if possible. For a conclusive result, at least three of the injection rate steps below the fracture threshold will be collinear. Upon completion of the step-rate injection test, the permittee shall recalculate the LSIP.
  - 2. If the recalculated LSIP is greater than the permitted LSIP in Table 5, the permittee must obtain the approval of the Administrator before operating the well at a pressure above the permitted LSIP.
  - 3. If the recalculated LSIP is less than the permitted LSIP in Table 5, the permittee must cease injection and not restart discharge until the wellhead pressure can be maintained below the recalculated LSIP.
- vii. Digital data, analyses, and interpretations for the step-rate tests shall be submitted to the Administrator within thirty (30) days or with the next quarterly report after the test is done, whichever is later.

## **6. PERMITTED WASTES**

### **a. General Information**

- i. All wastes accepted under any authorization contained in this permit shall be neutralized to a pH of greater than 2.0 and less than 12.5 standard units (s.u.).
- ii. Wastes to be injected include liquid waste generated by uranium mining using in-situ leaching at this facility as follows: operation bleed streams, yellowcake wash water, sand filter and ion exchange wash water, non-hazardous on-site laboratory waste water, reverse osmosis brine, groundwater restoration and groundwater sweep solutions, plant wash down water, wash waters used in cleaning or servicing the waste disposal system equipment, and storm water at the mine facilities. Permitted wastes also include fluids produced during the drilling,

completion, testing, or stimulation of wells or test holes related to mining operations at the mine facilities; or during the workover or abandonment of any such well; and drilling equipment wash water.

The radionuclide-bearing waste produced at this facility by in-situ uranium mining has been defined by the Atomic Energy Act as Section 11e.(2) byproduct material and is regulated by the Nuclear Regulatory Commission (NRC) under Title 10 Code of Federal Regulations Part 40. It is not “solid waste” according to Title 40 Code of Federal Regulations Part 261.4(a)4 and is consequently not hazardous waste. Because Wyoming is a “non-agreement” State, the NRC retains jurisdiction over in-situ mining wastes and the permittee shall not use the injection wells for disposal of 11e(2) byproduct material without the proper NRC license.

Waste disposal is prohibited until the requirements for financial assurance (Section P) have been met. The permittee shall obtain written authorization from the Administrator prior to waste disposal. Permission to discharge other non-hazardous waste may be authorized through a permit modification (Chapter 27, Section 7(d)(viii)(e)). Additional monitoring may be required for additional waste types.

- iii. Permittee shall keep records on site concerning quantities all of the above authorized waste sources injected.
- b. Corrosion Inhibitors and Other Additives  
The composite injection stream may also contain a small amount of additives, that have been shown to not meet the definition of hazardous waste under RCRA. A copy of the safety data sheet must be submitted to the Underground Injection Control program prior to use. The categories of additives include:
  - i. Biocides,
  - ii. Scale/gypsum inhibitors,
  - iii. Emulsifying agents,
  - iv. Corrosion Inhibitors,
  - v. Acidizing agents.

## 7. PROHIBITIONS

- a. **This permit does not allow for the injection of any hazardous waste** as defined in 40 CFR 261.3 or in Wyoming Solid Waste Management Rules and Regulations, Chapter 2. Injection of any substance defined as a hazardous waste, whether hazardous by listing or by characteristic is a violation of this permit and requires notification under Section 12 of this permit.
- b. No person shall conduct any authorized injection activity in a manner that results in a violation of any permit condition or representations made in the application (Chapter 27, Section 20(a)(i)).

- c. No person shall conduct any authorized injection activity in a manner that results in a movement of fluids out of the receiver (Chapter 27, Section 20(c)(i)).
- d. No zone or interval other than the discharge zone shall be used as a receiver for the discharge (Chapter 27, Section 20(c)(i)(A)).
- e. No uncased hole shall be used as a conduit for the discharge, excepting that portion of a hole within the discharge zone (Chapter 27, Section 20(c)(i)(B)).
- f. No annular space between the wall of the hole and the outer casing shall be used as a conduit for discharge, excepting in that portion of the space within the discharge zone (Chapter 27, Section 20(c)(i)(C)). The annular space may receive fluids used in cementing casing during the cementing process.
- g. No person shall construct, install, modify, or improve this authorized injection facility except in compliance with this permit (Chapter 27, Section 20(a)(ii)).

**8. GENERAL OPERATION AND MAINTENANCE**

- a. North American Industry Classification System Code 212291 - Uranium-Radium-Vanadium Ore Mining
- b. Each injection well shall be constructed, operated, and maintained to prevent movement of fluid from the well into any USDW (Chapter 27, Section 12(a)).
- c. Injection shall be conducted through tubing that has been secured by a packer set below the top of the confining zone and within one-hundred (100) ft of the top of the authorized discharge zone and within a zone of good quality cement bond (Chapter 27, Section 6(j)(i)(D)).
- d. An automatic kill switch shall be installed on the injection tubing and set to preclude violations of LSIP limits found in Table 5.
- e. The annulus between the injection tubing and the long string casing shall be filled with a corrosion-inhibiting fluid and be monitored and maintained in a way that allows reliable leak detection.
  - i. The annulus pressure shall be maintained within the limits set in Table 5. During periods of continuous injection, the annulus pressure should be reasonably constant but large variations in pressure are allowed during startup and shutdown.
  - ii. The permittee shall set alarms or use daily observations to detect increases or decreases in annulus pressure and shall immediately cease injection and shut the well in when an alarm is triggered; or the permittee shall install a kill switch to stop injection if casing, tubing, packer, or well head leak.
  - iii. Settings for low- and high-pressure alarms shall take into account annulus pressure changes due to variations in temperature of the injected and annulus fluid.

- f. The operator shall maintain all facilities and systems of treatment and control that are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes mechanical integrity of the well, effective performance, adequate funding, operator staffing and training, and laboratory and process controls, including quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit (Chapter 27, Section 20(a)(i)).
- g. The permittee is required to operate in accordance with statements, representations, and procedures presented in the complete permit application and supporting documents as accepted and approved by the Administrator. If such procedures conflict with those in this permit, the conditions in this permit shall take precedence (Chapter 27, Section 20(a)(i)).
- h. Measuring and recording devices shall be tested and calibrated at a frequency sufficient to ensure accurate and precise measurements. A record of the date of the most recent calibration or maintenance shall be retained at the well site.
- i. If a well is re-entered to pull the tubing/packer, a well workover report and Part I mechanical integrity test (MIT) shall be submitted to the Administrator within thirty (30) days or with the next quarterly report after the test is done, whichever is later.
- j. A comprehensive report for any aborted or curtailed operation, that results in the complete termination of discharge or associated activity, shall be submitted to the Administrator within thirty (30) days of termination in lieu of an annual report (Chapter 27, Section 8(d)).

## **9. MONITORING AND REPORTING**

- a. Operational Monitoring
  - i. The permittee shall monitor the injection pressure, both in the annulus and in the tubing, continuously and record the readings on a strip chart recorder, a circular chart recorder, or electronically (Chapter 27, Section 15(e)(iii)(A)).
  - ii. The permittee shall monitor the injection rate continuously and record the rates and volumes on a strip chart recorder, circular chart recorder, or electronically (Chapter 27, Section 15(e)(iii)(A)).
- b. Environmental Monitoring
  - i. The permittee shall furnish the Administrator any information necessary to establish a monitoring program if requested to do so (Chapter 27, Section 6(h)(iii)(J)).
  - ii. There is no groundwater monitoring program required under this permit, other than that described in this section, because of the reduction in risk of pollution due to the depth and confinement of the receiver aquifer (Chapter 27, Section 15(a)(ii)).

- iii. Procedures and methods for sample collection and analyses shall be implemented by the permittee to ensure that the samples are representative of the groundwater, water, or wastes being sampled (Chapter 27, Section 15(h)). Samples of waste must be representative of the waste as it enters the well. A single injectate sample may be obtained from a pipe that services all associated wells provided there are no additional waste streams between the sample point and the wells. The procedures and methods must be included in an approved written waste analysis plan (Chapter 27, Section 15(e)).
- iv. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.
- v. The permittee shall monitor the quality of the injectate quarterly (Chapter 27, Section 8(e)(ii)), and when significant process changes occur, and when operating changes may significantly alter the waste stream (Chapter 27, Section 15(e)(iii)).
- vi. Table 6 lists the parameters and methods to be analyzed quarterly and the associated permitted limits. WQD may approve alternate methods to those in Table 6 upon receipt of a written request describing the procedures, precision, and accuracy of the proposed method and a comparison of the proposed method with that in Table 6.
- vii. In addition to the quarterly parameters listed in Table 6, on a bi-annual basis, the permittee shall obtain detailed chemical and physical analyses of a representative sample of the waste (Chapter 27, Sections 15(e) and 15(e)(iii)(A)). Analytical parameters and constituents shall include those listed in Table 7. The results of these analyses shall be submitted with the first **annual** report following receipt of the analyses.
- viii. The temperature and pH parameters in Table 6 shall be measured at the sample site unless other methods are approved by the Administrator. The other analyses shall be performed by an USEPA-certified laboratory.
- ix. Any pH value that falls outside the range of the values in Table 8 is a violation of the permit and requires notification under Section 12 of this permit.

**Table 6. Parameters, Methods and Limits for Quarterly Analyses of Injectate**

Sampling Schedule	Analyte or Parameter	EPA Analytical Method	CAS Number
Quarterly January 1 – March 31 April 1 – June 30 July 1 – Sept 30 October 1 – December 31	pH	SM4500-H <sup>+</sup> B	None
	Specific Conductance at 25°C	120.1 or SM2510 B	None
	Temperature	SM2550 B	None
	Specific Gravity	none listed	None
	Total Dissolved Solids	160.1 or SM2540 C	None

Note: Methods preceded by “SM” are standard methods.

**Table 7. Parameters, Methods and Limits for Bi-Annual Analyses of Injectate**

Sampling Schedule	Analyte or Parameter	EPA Analytical Method	CAS Number
Bi-Annual	Chloride, Total	300.0 or 300.1	16887-00-6

January 1 – June 30 July 1 – December 31	Sulfate, Total	300.0, 300.1, or 375.2	14808-79-8
	Arsenic, Total	206.5, 200.7, or 200.8	7440-38-2
	Selenium, Total	200.7 or 200.8	7782-49-2
	Vanadium, Total	200.7 or 200.8	7440-62-2
	Uranium, Total	908.1 or 200.8	7440-61-1
	<sup>226</sup> Radium (picoCuries/liter)	903.1	7440-14-4

Note: Methods preceded by “SM” are standard methods.

Limiting Concentrations of Injectate - Upper control limits for this permit are listed in **Table 8**. pH has both upper and lower control limits and concentrations must remain within the range indicated in **Table 8**. Exceedances of these values are a violation of this permit and require notification under Section K of this permit.

**Table 8 (Control Limits for Injected Waste)**

Analyte or Parameter	Lower and Upper Control Limits
pH	$2.0 \leq \text{pH} \leq 12.5$ s.u.

- x. The following units are to be used where applicable:
  1. Pressure - pounds (force) per square inch for pressure with gauge or absolute pressure noted (psig or pounds per square inch absolute)
  2. Volume – barrel (bbl), for fluid volume
  3. Fluid Flow Rate - bbl/d for fluid flow rates
  4. pH - s.u.
  5. <sup>226</sup>Radium - pCi/L
  6. Concentration - mg/L for analyte concentrations other than pH and <sup>226</sup>Radium.
- xi. Quality Assurance - A duplicate sample shall be collected at least once per year. Duplicate results and chain-of-custody forms shall be included in the quarterly reports.
- c. Environmental Reporting Requirements
  - i. Quarterly Reports shall be submitted to the Administrator no later than thirty (30) days after the end of each calendar quarter (Chapter 27, Section 8(a) and 8(e)). The quarterly results shall also be submitted online at <https://gem.wqd.apps.deq.wyoming.gov>, within forty-five (45) days of the end of quarter. The written quarterly report for each well shall include the following information:
    1. Injection rates for each month of the quarter, including:
      - i. Minimum instantaneous
      - ii. Volume-weighted average
      - iii. Maximum instantaneous
      - iv. Maximum permitted injection rate
    2. Injection pressure for each month of the quarter, including:
      - i. Minimum daily
      - ii. Average daily

- iii. Maximum daily
  - iv. Maximum permitted injection pressure
  - v. Pressures at which alarms or kill switches are activated
- 3. Injection volume per well, including:
  - i. Total volume for each month
  - ii. Total volume for the quarter
  - iii. Total volume to date
- 4. Annulus pressures, including:
  - i. Maximum for each month
  - ii. Minimum for each month
  - iii. Pressures at which alarms or kill switches are activated
- 5. Analytical results required by Table 6 of this permit.
- 6. Any permit exceedances within the quarter.
- 7. Description of all events that triggered alarms or shutdowns and the responses taken during the quarter.
- 8. Reports for any well tests or well workovers conducted more than thirty (30) days before the end of the quarter.
- ii. Annual Reports shall be submitted to the Administrator no later than thirty (30) days after the end of each calendar year (Chapter 27, Section 8(e)). The annual report for each well shall include the following information in addition to that required for the quarterly report:
  - 1. A graphical representation of the injection pressures and volumes for the previous five (5) years operation and a digital file (e.g., .csv, .txt, .xls, .xlsx) containing these data. The graph shall have calendar dates as the abscissa and pressure and volume as the ordinates.
  - 2. Graphical representations of the analyte concentrations over time and a digital file (e.g., .csv, .txt, .xls, .xlsx) containing these data. The graphs shall show the injectate quality for the previous five (5) years operation and shall be prepared on scales appropriate to the variation observed.
  - 3. Annual analytical data required in Section 9(b)(vii) above.
- iii. Records of Monitoring Information shall include:
  - 1. The date, exact place, and time of sampling or measurements.
  - 2. The name(s) of individual(s) who performed the sampling or measurements.
  - 3. The types of sample containers used, methods of preservation, and holding times.
  - 4. The date(s) analyses were performed.
  - 5. The name(s) of individual(s) who performed the analyses.
  - 6. The analytical techniques or methods used.
  - 7. The results and precision of such analyses.
  - 8. Chain of Custody forms.
- iv. Record Retention
  - 1. The permittee shall retain records of all monitoring information (Chapter 27, Section 6(h)(iii)(K)), including all calibration and maintenance records and all original chart recordings for a period of three (3) years after closure of the facility (Chapter 27, Section 8(h)), at which time the permittee shall notify the

Administrator and either deliver the records to WQD or discard them as directed by the Administrator.

2. The Permittee shall retain all records concerning the nature and composition of injected fluids until five (5) years after completion of any specified plugging and abandonment procedures. The Administrator may require the owner/Permittee to deliver the records to the Administrator at the conclusion of the retention period.

#### **10. ANNUAL PRESSURE FALL-OFF TEST**

- a. The permittee shall shut-in each well covered by this permit annually for a period of time long enough to observe a valid pressure fall-off curve (Chapter 27, Sec15(f)(i)).
- b. The minimum duration of injection and fall-off shall be longer than wellbore storage and skin effects and sufficient for persuasive analysis and accurate estimates of permeability.
- c. Tests shall be analyzed by the permittee using commonly accepted methods to obtain hydraulic conductivity or permeability, transmissivity, and skin factor and to identify reservoir boundaries (including flow in fractures) and other anomalies such as partial penetration or layering. The test method chosen should be justified by a review of relevant assumptions and actual well and aquifer conditions.
- d. Along with the analysis and interpretation, the permittee shall submit plots of injection rate, pressure, and the pressure derivative versus time on appropriate graphs. If the method used differs from previous methods used for the same well, the analyst should discuss the comparability of the results.
- e. Data required shall include monitoring of pressures for at least one (1) hour prior to test start; and injection duration equal in time to the length of at least one fall-off period prior to the start of the fall-off test. A downhole device to measure pressures for the annual pressure fall-off test should be used.
- f. Digital data, results, analyses, and interpretations for the fall-off test shall be submitted to the Administrator at the address in Section 13 within one (1) month or with the next quarterly report after the test is done, whichever is later (Chapter 27, Section 8(g)).
- g. The results of each pressure fall-off test shall be used to update the COI calculation for each discharge zone. These annual updates shall account for historical injection and remaining project life. The permittee shall provide a map showing the updated COI and all wells that penetrate the confining zone within the old and new radii of influence.
- h. If the updated COI encompasses wells not previously identified as within the area of review:
  - i. The permittee shall demonstrate that the new wells do not represent potential pathways from the receiver to the lowermost non-exempted USDW above the injection zone.

- ii. If this cannot be demonstrated, a corrective action plan to prevent movement of fluid into any USDW shall be submitted to and approved by the Administrator and shall be incorporated as a permit condition (Chapter 27, Section 6(f)(x)).
- iii. COI calculations and figures shall be submitted to the Administrator within thirty (30) days of the annual pressure fall-off test or with the next quarterly report after the test is done, whichever is later (Chapter 27, Section 8(g)).

## 11. MECHANICAL INTEGRITY

- a. Mechanical integrity
  - i. shall be maintained continuously, and
  - ii. shall be tested
    - a. prior to injection, and
    - b. any time the tubing or packer is pulled, and
    - c. at intervals of no longer than five (5) years.
- b. The test used to determine mechanical integrity shall be a two (2) part test approved by the Administrator (Chapter 27, Section 6(h)(i)(B)). The two (2) parts shall be conducted no more than ninety (90) days apart unless prior approval is obtained from the Administrator.
- c. WQD shall be notified a minimum of **thirty (30) days prior** to a MIT.
- d. Part I of MIT shall demonstrate the absence of leaks through the packer, tubing, and casing (Chapter 27, Section 6(h)(i)(B)(I)).
  - i. The casing-tubing annulus of each well shall be tested at a pressure equal to the LSIP (of each well) or 1,000 psig, whichever is greater.
  - ii. A pressure change of less than 10% over a thirty (30) minute test period shall be considered successful.
- e. Part II of the MIT shall demonstrate the absence of fluid movement behind the long-string casing (Chapter 27, Section 6(h)(i)(B)(II)) above the top perforation.
  - i. Each well shall be logged using a radioactive tracer survey (or oxygen activation log) and a temperature survey from the base of the conductor casing to the total depth of the well.
  - ii. The baseline temperature survey shall be logged prior to any injection or other tests.
  - iii. For an active injection well, the temperature survey shall start more than two (2) hours, preferably more than twenty-four (24) hours, after injection has ceased.
- f. Other types of pressure tests or logs may be substituted for those described above if they demonstrate mechanical integrity and are first approved by the Administrator (Chapter 27, Section 6(h)(i)(B)(III)).
- g. Data, results, analyses, and interpretations for the tests shall be submitted to the Administrator at the address in Section 13 within thirty (30) days or with the next quarterly report after the test is done, whichever is later (Chapter 27, Section 8(g)).

- h. **In the case of a failed MIT in a well that has begun waste disposal:**
- i. The well shall be immediately shut-in (Chapter 27, Section 6(h)(i)(C)).
  - ii. The Administrator shall be notified both orally and in writing according to the procedures in Section 12 of this permit (Chapter 27, Section 6(h)(iii)(R)).
  - iii. Injection into any zone not within the authorized discharge zone is a violation of this permit. The operator shall prepare an estimate of the volume and quality of all wastewaters that were injected outside of the discharge zone. In the case where any aquifer meeting the standards for Class I through IV(B) under Wyoming WQRR, Chapter 8, has been contaminated due to out of zone injection, the operator shall prepare and implement a plan to recover these solutions to the extent practicable. The estimate of volume and quality of wastewater, and the plan to recover the solutions, if necessary, shall be provided to the Administrator within ninety (90) days of the notification date. The plan shall be immediately implemented upon WDEQ approval.
  - iv. Injection shall not resume until the well has been repaired, a complete MIT (i.e., Part I and II) has been passed, and written permission to resume operation has been obtained from the Administrator.

## 12. NON-COMPLIANCE REPORTING

- a. Any permit noncompliance constitutes a violation of WQRR Chapter 27 and is grounds for enforcement action, permit termination, revocation, or modification.
- b. Confirmed noncompliance resulting in a migration of injected fluid outside the discharge zone shall be reported to the Administrator at (307) 777-7781 **within twenty-four (24) hours** from the time the permittee becomes aware of the circumstances and a written report shall be provided **within five (5) days** (Chapter 27, Section 6(h)(iii)(R)).
  - i. The oral report should include:
    1. Any monitoring or other information that indicates that any contaminant may cause an endangerment to a useable groundwater of the state.
    2. Any noncompliance with a permit condition or malfunction of the discharge (injection) system that may cause fluid migration into or between useable groundwaters of the state.
  - ii. The written report should include:
    1. A description of the noncompliance and its cause;
    2. The period of noncompliance, including exact dates and times;
    3. The operator shall prepare an estimate of the volume and quality of all wastewaters that were injected outside of the discharge zone. In the case where any aquifer meeting the standards for Class I through IV(B) under Wyoming WQRR, Chapter 8, has been contaminated due to out of zone injection, the operator shall prepare and implement a plan to recover these solutions to the extent practicable. The estimate of volume and quality of wastewater, and the plan to recover the solutions, if necessary, shall be provided to the Administrator within 90 days of the notification date. The plan shall be immediately implemented upon WDEQ approval. Injection shall

not resume until the well has been repaired, a complete (Part I and II) MIT has been passed, and written permission to resume operation has been obtained from the Administrator;

4. If the noncompliance has not been corrected, the anticipated time it is expected to continue, and
5. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance (Chapter 27, Section 6(h)(iii)(R)).

### **13. WHERE TO SUBMIT REPORTS**

All reports submitted in conjunction with this permit including but not limited to permit transfers, monitoring reports, well test reports etc., shall be addressed to: Groundwater Section r, WDEQ – WQD, 200 W. 17<sup>th</sup> St., 2<sup>nd</sup> Floor, Cheyenne, WY, 82002. This includes any information the operator is required to submit to the Administrator.

### **14. PERMIT CONDITIONS**

- a. This permit is valid until the date specified on Page 1 of this permit. If the permittee wishes to continue injection after the expiration date of this permit, he should apply to the Administrator at least four (4) months prior to the expiration date of this permit (Chapter 27, Section 6(h)(iii)(B)).
- b. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit (Chapter 27, Section 6(h)(iii)(C)).
- c. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation.
- d. The filing of a request by the permittee, or at the instigation of the Administrator, for permit modification, revocation, or termination, or the notification of planned changes or anticipated noncompliance shall not stay any condition of this permit (Chapter 27, Section 6(h)(iii)(F)). After notice and opportunity for a hearing, the Administrator may modify or revoke a permit, in whole or in part, during its term for cause. Causes include, but are not limited to, the following:
  - i. Noncompliance with terms or conditions of this permit (Chapter 27, Section 7(d)(xii)(A)).
  - ii. Failure in the application or during the issuance process to disclose fully all relevant facts, or misrepresenting any relevant facts at any time (Chapter 27, Section 7(d)(xii)(B)).
  - iii. Failure of the casing, cement, or the confining layer.
  - iv. A determination that the activity endangers human health or the environment and can only be regulated to acceptable levels by a permit modification or termination (Chapter 27, Section 7(d)(xii)(C)).
- e. Permits will be automatically terminated after closure and release of financial responsibility by the Administrator (Chapter 27, Section 7(d)(xiv)).

- f. This permit will be reviewed by WQD at least once every five (5) years, and may be reviewed more frequently (Chapter 27, Section 6(c)). Permits that do not satisfy the review criteria are subject to modification, revocation and reissuance, or termination (Chapter 27, Section 6(c)).
- g. The conditions in this permit supersede any application content (Chapter 27, Section 20(a)(i)).
- h. To comply with the Governor's Executive Order 2011-5 on Greater Sage-Grouse Core Area Protection, the Permittee shall ensure that all activities and habitat disturbances related to injection well(s) authorized by this permit are covered by the relevant Wyoming Game and Fish Department stipulations to protect sage grouse habitat.

**15. DUTIES OF THE PERMITTEE**

- a. The permittee shall comply with all conditions of this permit (Chapter 27, Section 6(h)(iii)(A)), all rules and regulations of the WDEQ, and all applicable state and federal laws. Nothing in this permit relieves the permittee of any duties under applicable regulations.
- b. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit (Chapter 27, Section 6(h)(iii)(D)).
- c. The permittee shall give advance notice to the Administrator as soon as possible of any planned physical alteration (e.g., well stimulation) or additions, other than authorized operation and maintenance, to the permitted facility and receive authorization prior to implementing the proposed alteration or addition (Chapter 27, Section 6(h)(iii)(M)).
- d. The permittee shall give advance notice to the Administrator of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements (Chapter 27, Section 6(h)(iii)(N)).
- e. The permittee shall furnish the Administrator within a reasonable time, any information that the Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. (Chapter 27, Section 6(h)(iii)(H)).
- f. The permittee shall furnish the Administrator, upon request, copies of records required to be kept by this permit (Chapter 27, Section 6(h)(iii)(H)).
- g. Any modification that will result in a violation of any permit condition shall be reported to the Administrator through the submission of a new or amended permit application and shall not be implemented until a new or modified permit has been issued (Chapter 27, Section 6(h)(iii)(N)).
- h. The permittee shall report all instances where it becomes aware that it failed to submit

any relevant facts in the permit application, or where it submitted incorrect information in a permit application or in any report to the Administrator, and shall promptly submit such facts or information (Chapter 27, Section 6(h)(iii)(T)).

- i. Monitoring results shall be obtained and reported at the intervals specified elsewhere in this permit (Chapter 27, Section 6(h)(iii)(P)).
- j. Test results shall be obtained and reported at the intervals specified elsewhere in this permit.
- k. The permittee shall report any changes to physical or mailing address, phone, or email, and any changes of the personnel responsible for complying with this permit to WQD within one (1) month of the change.

## 16. PLUGGING AND ABANDONMENT

- a. Any well under this permit shall be plugged and abandoned within six (6) months after:
  - i. Permit expiration (unless application for a new permit has been made and has not been denied by the Administrator) or permit termination; or
  - ii. Final cessation of injection activities; or
  - iii. The permittee has removed equipment required for the proper operation and monitoring of the well (except for temporary removal during well maintenance).
- b. The permittee shall notify the Administrator of plans to convert or abandon a well at least **ninety (90) days prior** to the start of any conversion or abandonment activity (Chapter 27, Section 6(h)(iii)(V)). The permittee shall follow the plugging and abandonment procedure described in the application or subsequently prescribed by the Administrator. The procedure shall include well plugging, abandonment, surface reclamation and seeding of the well site, closure of related surge ponds, and removal or purging and plugging of any underground piping. Well plugging shall meet the requirements of Chapter 26, Section 6 for sealing the well annulus and of Chapter 26, Section 9 for sealing within casing. In no case shall the procedure be less stringent than that required by USEPA for Class I non-hazardous waste disposal wells at the time of abandonment (e.g., Title 40 CFR Part 146.10)
- c. The permittee shall submit a plugging and abandonment report **within thirty (30) days** after plugging and abandonment of any wells covered by this permit, detailing the compliance with the plugging and abandonment procedures outlined in the original permit application, and describing any deviation from the original plan (Chapter 27, Section 6(h)(iii)(W)).

## 17. FINANCIAL RESPONSIBILITY

- a. The permittee is required to maintain financial assurance in a form approved by the Administrator, to close, plug, and abandon the injection well operation and to reclaim the surface facilities in a manner approved by the Administrator (Chapter 27, Section 19(a)).

- b. The obligation to maintain financial responsibility survives the termination of the permit or the cessation of injection (Chapter 27, Section 19(c)).
- c. If the institution issuing the financial instrument files for bankruptcy or loses its authority to issue financial instruments, the permittee shall notify the Administrator within two (2) weeks and obtain other financial assurance within two (2) months. If the permittee is named as debtor in any voluntary or involuntary bankruptcy proceeding, it must notify the Administrator within two (2) weeks.

The financial assurance instrument for reclamation and facility restoration resides in Table 6 of Appendix B in the Permit to Mine annual report to the Land Quality Division. The total abandonment cost for the three constructed wells (DW No. 1, DW No. 3, and DW No. 4) is three hundred thirty eight thousand, two hundred seventy four dollars (338,274.00).

- d. The financial assurance amount shall be increased by three percent (3%) each calendar year. Annual financial responsibility document updates shall be submitted to the Administrator no later than **February 14<sup>th</sup> of each year**.

#### **18. PERMIT TRANSFER**

- a. Any transfer of this permit shall be accomplished by the submission of the proper forms for permit transfer to the Administrator. Transfer of this permit must be approved by the Director and the Administrator and no transfer shall be approved unless the proposed permittee agrees to correct any and all noncompliance issues (Chapter 27, Section 6(h)(iii)(O)) and Chapter 27, Section 7(d)(xv)).
- b. The permittee is alone responsible for the operation of the facility covered by this permit. Operation of this facility by another entity is a violation of this permit unless a transfer of this permit has first been accomplished.

#### **19. SIGNATORY REQUIREMENTS**

- a. All reports filed in conjunction with this permit shall contain the following certification (Chapter 27, Section 6(f)(xv) and Section 6(h)(iii)(L)):

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

- b. All reports required by this permit and other requested information shall be signed by a responsible officer as described in WQRR Chapter 27, Section 6(f)(xiv); or by a duly

- authorized representative. A person is a duly authorized representative only if:
- i. The authorization is made in writing by one of the prescribed principals;
  - ii. The authorization specifies either an individual or position having responsibility for the overall operation of the regulated facility or activity; and
  - iii. The written authorization is submitted to the Administrator.
- c. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to the Administrator prior to, or together with, any reports or information to be signed by the new authorized representative.

**20. ENTRY AND INSPECTION**

- a. The permittee shall allow WDEQ personnel and their invitees to enter the premises where the facility is located, or where records are kept under the conditions of this permit, and collect resource data as defined by Wyoming Statute § 6-3-414, inspect and photograph the facility, collect samples for analysis, review records, and perform any other function authorized by law or regulation. The permittee shall secure and maintain such access for the duration of the permit.
- b. If the facility is located on property not owned by the permittee, the permittee shall also secure and maintain from the landowner upon whose property the facility is located permission for WDEQ personnel and their invitees to enter the premises where a regulated facility is located, or where records are kept under the conditions of this permit, and collect resource data as defined by Wyoming Statute § 6-3-414, to inspect and photograph the facility, collect samples for analysis, review records, and perform any other function authorized by law. The permittee shall secure and maintain such access for the duration of the permit.

If the facility cannot be directly accessed using public roads, the permittee shall also secure and maintain permission for WDEQ personnel and their invitees to enter and cross all properties necessary to access the facility. The permittee shall secure and maintain such access prior to spudding and for the duration of the permit.

- c. The permittee shall maintain in its records documentation that demonstrates that the permittee has secured permission for WDEQ personnel and their invitees to access the permitted facility, including (i) permission to access the land where the facility is located, (ii) permission to collect resource data as defined by Wyoming Statute § 6-3-414, and (iii) permission to enter and cross all properties necessary to access the facility if the facility cannot be directly accessed from a public road. The permittee shall also maintain in its records a current map of the access route(s) to the facility and contact information for the owners or agents of all properties that must be crossed to access the facility. The permittee shall ensure that the documentation, map, and contact information are current at all times. The permittee shall provide the documentation, map, and contact information to WDEQ personnel upon request. On closure of a facility, the permittee shall maintain such records for a period of five (5) years.

d. Inspectors shall not be required by the permittee to sign any waiver of liability.

**21. PROPERTY RIGHTS**

a. This permit does not convey any property rights or any exclusive privileges. This permit does not authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations (Chapter 27, Section 6(h)(iii)(G)).

b. The State of Wyoming recently passed Wyoming statute §34-1-152 and amended Wyoming statute §34-1-202 regarding the ownership of pore space within the subsurface. The Permittee shall consider how these laws may apply to their injection of material into the subsurface.

**22. SEVERABILITY**

The provisions of this permit are severable, and if any provision of the permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected.

**END OF PERMIT**