

State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303) 894-2100 Fax: (303) 894-2109



FOR OGCC USE ONLY

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401109127

Date Received:

10/19/2016

UNDERGROUND INJECTION FORMATION PERMIT APPLICATION

Per Rule 325, this form shall be submitted with all required attachments.

A Form 31 – Intent shall be submitted and approved prior to completing an injection zone.

A Form 31 – Subsequent shall be submitted following collection of water samples and injectivity test (if performed) and must be approved prior to injection in any new injection facility.

NOTE: Per Rule 324B, an aquifer exemption is required for any injection formation with water quality less than 10,000 mg/L total dissolved solids (TDS). Contact the Commission for further requirements if the TDS as determined by water analysis for the injection zone is less than 10,000 mg/L.

Form 31 Type [X] Intent [] Subsequent UIC Facility ID 160002 UIC Facility ID Required for Subsequent Form 31

UIC FACILITY INFORMATION

Facility Name and Number: EWS 4 County: WELD
Facility Location: NWSW / 17 / 2N / 63W / 6 Field Name and Number: WATTENBERG 90750
Facility Type: [] Enhanced Recovery [X] Disposal [] Simultaneous Disposal
Single or Multiple Well Facility? [] Single [X] Multiple

Proposed Injection Program (Required):

Two wells, EWS 4 and EWS 4A, will be drilled and linked to the EWS facility #4 by buried lines. Both wells will be completed in the Denver Basin Combined Disposal Zone, which at this site will consist of every formation from the top of the Lyons into the middle of the Fountain. The facility will take a variety of Class II waste, including produced water, flowback water, used workover fluids, and exempt gas plant waste.

OPERATOR INFORMATION

OGCC Operator Number: 10580 Contact Name and Telephone:
Name of Operator: EXPEDITION WATER SOLUTIONS COLORADO LLC Name: Jeremiah Demuth
Address: 1023 39TH AVENUE SUITE E Phone: (303) 290-9414 Fax: ()
City: GREELEY State: CO Zip: 80634 Email: jdemuth@petrotek.com

INJECTED FLUID TYPE

All injected fluids must be Exempt E&P waste per RCRA Subpart C.

(Check all that apply.)

- [X] Produced Water [] Natural Gas [] CO2 [X] Drilling Fluids
[X] Exempt Gas Plant Waste [X] Used Workover Fluids [X] Flowback Fluids

[] Other Fluids (describe):

Commercial Disposal Facility [X] Yes [] No Commercial UIC Bond Surety ID:

Commercial Facility Description: Describe the physical region of the facility, the details of the operations, and the type of fluids to be injected.

The EWS Facility #4 will serve the Greater Wattenberg area and the surrounding fields. The facility will accept for injection the following fluids: produced water, drilling fluids, flowback fluids, exempt gas plant waste, and used workover fluids. The EWS 4 and 4A wells will be linked to the EWS Location #4 by buried pipelines. This will allow the two vertical wells to have a standoff of one mile from each other. An unloading station will be constructed at the EWS Facility #4 where there will be water and oil tanks. Produced water will be pumped through buried 4" heavy duty pipelines to the EWS 4 and 4A wells.

PROPOSED INJECTION FORMATIONS

FORMATION (Name): <u>ADMIRE</u>			Porosity: <u>0</u> %		
Formation TDS: <u>15000</u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					
FORMATION (Name): <u>AMAZON</u>			Porosity: <u>8</u> %		
Formation TDS: <u>15000</u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					
FORMATION (Name): <u>COUNCIL GROVE</u>			Porosity: <u>7</u> %		
Formation TDS: <u>15000</u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					
FORMATION (Name): <u>DENVER BASIN COMBINED DISPOSAL ZONE</u>			Porosity: <u> </u> %		
Formation TDS: <u> </u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					
FORMATION (Name): <u>FOUNTAIN</u>			Porosity: <u>0</u> %		
Formation TDS: <u>14000</u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					
FORMATION (Name): <u>LOWER SATANKA</u>			Porosity: <u>0</u> %		
Formation TDS: <u>11000</u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					
FORMATION (Name): <u>LYONS</u>			Porosity: <u>5</u> %		
Formation TDS: <u>11000</u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					
FORMATION (Name): <u>MISSOURI</u>			Porosity: <u>3</u> %		
Formation TDS: <u>14000</u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					
FORMATION (Name): <u>VIRGIL</u>			Porosity: <u>15</u> %		
Formation TDS: <u>14000</u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					
FORMATION (Name): <u>WOLFCAMP</u>			Porosity: <u>5</u> %		
Formation TDS: <u>15000</u> mg/L		Frac Gradient: <u>0.69</u> psi/ft		Permeability: <u>52</u> mD	
Proposed Stimulation Program: <input type="checkbox"/> Acid <input type="checkbox"/> Frac Treatment <input checked="" type="checkbox"/> None					

ANTICIPATED FACILITY OPERATIONS CONDITIONS

Under normal operating conditions, estimated TOTAL fluid injection rates and pressures for this facility:

FOR WATER: Daily Injection Rate Range From 20000 to 30000 bbls/day
 Surface Injection Pressure Range From 2200 to 2600 psi

FOR GAS: Daily Injection Rate Range From _____ to _____ mcf/day
 Surface Injection Pressure Range From _____ to _____ psi

Estimated Initial Injection Date: 2/27/2017

AREA OF REVIEW OIL and GAS WELL EVALUATION SUMMARY

Review all existing wells within 1/2 mile for injection formation isolation.

Area Review Date: 9/14/2016

Total number of Oil & Gas Wells within Area of Review:

9

ABANDONED WELLS (All wells that have been plugged: PA and DA status))

Total within Area of Review	4
Number To Be Re-Plugged	0

ACTIVE WELLS (All wells that have not been plugged: AC, DG, DM, IJ, PR, SU, SI, TA, WO, XX, UN status)

Total within Area of Review	5
Number Requiring Casing Repair	0
Number To Be Plugged	0

Operator's Area of Review Contact Email: jdemuth@petrotek.com

No Wells within 2,640'

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Jeremiah Demuth Signed: _____

Title: Engineering Technician Date: 10/19/2016 2:29:20 AM

COGCC Approved:  Date: 04/13/2017

Form 31 - Intent Expiration Date: 10/13/2017

Per Rule 325.o, a 90 day extension of the Expiration Date may be requested via a Sundry Notice, Form 4 submitted prior to Form 31- Intent expiration

Order Number: _____

UIC FACILITY ID: 160002

CONDITIONS OF APPROVAL, IF ANY:

COA Type	Description
	Commercial UIC Surety Bond ID # on Injected Fluid Tab must be provided before Form-31-Subsequent or Form 33-Subsequent will be approved.
	<ol style="list-style-type: none"> 1. Injection is not authorized until approval of Subsequent Forms 31 and 33. 2. PRIOR TO PERFORMING OPERATIONS: Operator is required to contact COGCC to discuss Step Rate Test or Injectivity Test criteria for Maximum Surface Injection Pressure determination. Prior approval of Form 4 is required for step rate and injectivity tests. 3. For ALL NEW DRILL UNDERGROUND INJECTION WELLS a suite of open-hole Resistivity/Gamma Ray and Density/Neutron logs IS REQUIRED from Surface Casing shoe to TD. A PDF, TIFF, or PDS visual image and a LAS or DILS file version of each log is required. 4. For all new and converted Underground Injection Control wells a Cement Bond Log (CBL) is required on the cased portions of the hole from the bottom of the casing to the top of the next shallower casing string for all casing strings other than the Surface Casing. Only a PDF, TIFF, or PDS visual image is required. 5. Operator must provide all tops of formations encountered from surface to TD on the Form 5 when submitted.

Attachment Check List

Att Doc Num	Name
401109127	FORM 31-INTENT-SUBMITTED
401109256	OFFSET WELL EVALUATION-COGCC
401126332	LIST OF MINERAL OWNERS ¼-MILE
401126334	NOTICE TO SURFACE & MINERAL OWNERS
401126335	CERTIFIED MAIL RECEIPT(S)
401126336	REMEDIAL CORRECTION PLAN FOR WELLS ¼-MILE
401131259	WELLBORE DIAGRAM-PROPOSED EWS-4
401131260	WELLBORE DIAGRAM-PROPOSED EWS-4A
401131263	MAP OF MINERAL OWNERS ¼-MILE
401131264	LIST OF SURFACE OWNERS ¼-MILE
401131265	MAP OF O&G WELLS IN AREA OF REVIEW
401131266	MAP OF SURFACE OWNERS ¼-MILE
401131343	LIST OF WATER WELLS ¼-MILE
401133060	SURFACE FACILITY DIAGRAM
401160030	WELL LOCATION PLAT
401160032	WELL LOCATION PLAT
401160215	OFFSET WELL EVALUATION-Operator
401174026	LIST OF O&G AND WATER WELLS 1/2-MILE
401174037	MAP OF O&G WELLS IN AREA OF REVIEW
401258556	PROOF OF PUBLICATION-GENERAL

Total Attach: 20 Files

General Comments

User Group	Comment	Comment Date
UIC	COGCC agrees that the injection zone water analyses as described in the Submittal Comment by the Operator will be acceptable for the EWS-4 UIC application. Injection Zone water samples from the EWS #4A approximately 1/2-mile away will be acceptable. This will fulfill COA requirements of injection zone water sampling in the Form 2.	01/11/2017

Total: 1 comment(s)