



1120 Lincoln Street, Suite 801  
Denver, CO 80203

July 1, 2019  
Mr. James Goddard  
President  
EWS 4 DJ Basin LLC  
2015 Clubhouse Drive, Suite 201  
Greeley, CO. 80634

RE: Injection Well Application Approval  
Underground Injection Control ("UIC") Facility Name/Number: EWS 4/160002  
Injection Well: EWS-4B API: 05-123-48766 NESE 18-2N-63W 6<sup>th</sup> P.M.  
Weld County, Colorado

Dear Mr. Goddard,

The Colorado Oil and Gas Conservation Commission ("COGCC") has reviewed the EWS 4 DJ Basin LLC ("EWS 4") application to complete the (top down) Blaine, Lyons, Lower Satanka, Wolfcamp, Amazon, Council Grove, Admire, Virgil, Missouri, and Fountain Formations as injection zones in the EWS-4B well and has found it acceptable. This letter serves as final approval for adding the EWS-4B well to UIC Facility EWS 4 (#160002). The Subsequent Form 31-Underground Injection Formation Permit (Document # 401270179), the disposal application for the EWS 4 Facility, was filed April 28, 2017 and approved May 5, 2017. The Form 33-Subsequent Injection Well Permit Application for the EWS-4B well (Document # 401036372) was received May 9, 2019. (The Form 33-Intent (Document # 4011716061) for the EWS-4B was received on September 11, 2018 and approved May 31, 2019.)

Approval of this application for the EWS-4B assigns the well to UIC Facility Number 160002. UIC Facility 160002 is now one facility with three (3) wells. The maximum injected fluid volume limitation for the EWS-4B is 50,000,000 bbl (barrels) from the date of this approval. These volumes are based on a 1,320 ft radius and the thickness and porosity of the injection zone formations. The maximum authorized surface injection pressure is 2,250 psig for the EWS-4B, the same as in both the EWS-4 and EWS-4A. This pressure is based on fracture gradients calculated for EWS-4 and EWS-4A wells plus a safety factor. The fracture gradient at the EWS-4 was 0.881 psig/ft and at the EWS-4A 0.874 psi/ft. The maximum authorized daily injection rate shall be 10,000 bbl/day for the EWS-4B. After 30 days if there is no seismic activity greater than 2.5M Richter within 5 miles of the facility then EWS may request an increase in daily injection rate by submitting a Form 4 Sundry Notice.



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Within thirty (30) days of initial injection at the EWS-4B, EWS will submit a Form 5A Completed Interval Report to notify the COGCC of the date of initial injection and update the well status.

Because the proposed daily injection rate is equal to or greater than 10,000 bbl/day EWS is required to continue monitoring for seismic activity in the EWS 4 Facility area. EWS has been monitoring for seismic activity at the EWS 4 Facility since construction of the EWS-4 and EWS-4A wells. EWS 4 DJ is responsible for maintenance of the seismometer. Data gathered by the seismometer will be made available to one or more third parties (such as the USGS, CU-Boulder, CSM, or CSU) for analysis.

Only approved fluids from approved source wells can be disposed of in Class II disposal wells. Approved fluids include produced water, used drilling fluids, used workover fluids, used stimulation fluids, and used fluids from circulation during cementing operations recovered from production, injection, and exploratory wells. The EWS-4B well is currently permitted to inject fluids from wells listed on Form 26s (Source of Produced Water for Disposal) submitted between May 4, 2017 and April 30, 2019. These Form 26s register source wells to UIC Facility #160002. Sources of produced water and other approved Class II fluids may be added or deleted by submitting supplemental Form 26's.

The nature of the injected fluids will be monitored with sufficient frequency to yield data representative of their characteristics. Therefore, as a condition of approval a water analysis of fluids injected into the EWS-4B is required within one year of the commencement of injection. The injected water will be analyzed for total dissolved solids ("TDS"), major cations and major anions. This analytical data set will be submitted to COGCC via a Form 4-Sundry Notice. If possible COGCC asks that EWS also submit the data via COGCC's Electronic Data Deliverable ("EDD") Format. Instructions for submitting EDD laboratory reports can be found on the COGCC website under: HELP/Submitting Laboratory Analytical Data Electronically.

Additional analyses, as described above, of the fluids injected into the EWS-4B well is required at 5-year intervals. The first 5-year interval begins with the 1-year sample discussed in the preceding paragraph. Five year analytical results are to be submitted by Sundry Notice and EDD as above.

TDS analyses of fluids derived from individual source wells or as comingled batch samples from multiple wells that are to be injected into the EWS-4B should continue to be reported on Form 26's when source wells are added or deleted.

The volume of all produced water, used drilling fluids, used workover fluids, used stimulation fluids, and used fluids from circulation during cementing operations recovered from production, injection, and exploratory wells injected into each Facility well will be measured and reported on individual COGCC Form 7s (Monthly Report of Operations) 45 days following the month covered by the report.

Class II fluids, other than those described above, must be approved on Form 14A (Authorization of Source of Class II Waste for Disposal) by COGCC Staff prior to

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injection. These fluids must be reported on Form 14 (Monthly Report of Non-Produced Water Injected).

These Facility wells are not permitted for the disposal of fluids that are not Class II waste (e.g., unused stimulation fluids, amine, motor oil, solvents, field-generated sanitary waste, storm water run-off, or other fluids from unapproved sources).

In accordance with COGCC Rule 326.a.(5), mechanical integrity tests ("MIT's") will be performed at 5-year intervals on the EWS-4B well, as long as it is used for the injection of fluids. The first 5-year period shall commence on the date the initial mechanical integrity test was performed. A MIT is also required after resetting the tubing or packer, whenever the tubing or packer is disturbed during workover operations. All injection well MIT's will have a Form 42 filed at least 10 days before the well is to be MIT'd. All UIC injection well MITs must be witnessed by COGCC Staff.

If you have any questions regarding this approval, please do not hesitate to call me.

Sincerely,



Robert P. (Bob) Koehler, PhD  
Underground Injection Control Lead

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