



COLORADO

Oil & Gas Conservation Commission

Department of Natural Resources

1120 Lincoln Street, Suite 801
Denver, CO 80203

Mr. Charles Ohlson
Senior Operations Engineer
Whiting Oil and Gas Corporation
1700 Broadway, Suite 2300
Denver, CO 80290

October 7, 2015

RE: Injection Permit Application Approval
Wildhorse 16-13L
API No. 05-123-37374-00
NWSW, Section 16, Township 9 North, Range 59 West, 6th P.M.
Weld County, Colorado

Dear Mr. Ohlson:

The Colorado Oil and Gas Conservation Commission ("COGCC") has reviewed the Whiting Oil and Gas Corporation ("Whiting") application to complete the (top down) Entrada and Lyons Formations as injection zones in the Wildhorse 16-13L well and has found it acceptable. This letter serves as final approval of the disposal application submitted on November 18, 2014.

This application has been assigned **UIC Facility Number 159962**. The maximum injected fluid volume limitation is **15,084,488 bbl** from the date of this approval. This volume is based on a **1,320 ft** radius and the thickness and porosity of the injection zone formations. The maximum authorized surface injection pressure is **2,390 psig**, based on a calculated fracture gradient of **0.75 psig/ft**. The initial maximum authorized daily injection rate shall be **10,000 bbbl/day**. Whiting must confer with COGCC if in the future it wishes to increase the daily injection rate above **10,000 bbbl/day**. Whiting shall submit a Form 4 Sundry Notice notifying the COGCC of the date of initial injection within thirty (30) days of initial injection.

Whiting is required to monitor for seismic activity in the Wildhorse 16-13L area. Whiting is required to install a seismometer at a location to be determined by the Whiting and COGCC from which seismic activity in the vicinity of the Wildhorse 16-13L injection well can be monitored. The Whiting will be 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 Wildhorse 16-13L well is currently permitted to inject fluids from wells listed on Form 26 (Source of Produced Water for Disposal), received March 16, 2015 and approved October 7, 2015. Sources of produced water and other approved Class II fluids may be added or deleted by submitting supplemental Form 26's.

P 303.894.2100 F 303.894.2109 www.colorado.gov/cogcc

Commissioners: Thomas L. Compton - Chairman, Richard Alward, John H. Benton, DeAnn Craig,
James W. Hawkins, Tommy Holton, Andrew L. Spielman, Mike King, Dr. Larry Wolk
John W. Hickenlooper, Governor | Mike King, Executive Director, DNR | Matthew J. Lepore, Director



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The nature of the injected fluids shall 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 Wildhorse 16-13L is required within one year of the commencement of injection. The injected water must be analyzed for total dissolved solids ("TDS"), major cations and major anions. This analytical data set must be submitted to COGCC via a Form 4-Sundry Notice and in 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 Wildhorse 16-13L well are 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 to be injected into the Wildhorse 16-13L well on an individual source well basis or as comingled batch samples from multiple wells should continue to be reported on Form 26's when sources 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 this well must be measured and reported on COGCC Form 7 (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 injection. These fluids must be reported on Form 14 (Monthly Report of Non-Produced Water Injected).

This well is 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") shall be performed at 5-year intervals on the Wildhorse 16-13L 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 is 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 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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