

Proposed Revisions to Water Quality Rules and Regulations, Class VI Injection Wells and Facilities, Underground Injection Control Program

State Geologist Review and WDEQ Response



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Introduction

Per Wyoming Statutes 35-11-313 (f), the Department of Environmental Quality, Water Quality Division (WDEQ/WQD) requested a review of the proposed revisions to Water Quality Rules and Regulations, Chapter 24, Class VI Injection Wells and Facilities by the Oil and Gas Conservation Commission and the State Geologist. The following comments were noted by Mr.. Karl Toboga of the Wyoming State Geological Survey.

Comments and Responses

Section 1

Wyoming State Geological Survey: Mr. Toboga noted that Wyoming Statutes 35-11-313 refers to the statutory permit requirements for Carbon Sequestration.

Department Response: Wyoming Statutes (W.S.) 35-11-313 contains permitting requirements, and at 35-11-313 (f) the Statutes direct the Water Quality Administrator to recommend rules for carbon sequestration wells under the Underground Injection Control program.

Section 2

2(m)

Wyoming State Geological Survey: Mr. Toboga recommended changing “subsurface disposal” to “underground injection” as the existing term seems to contradict the passage that refers to “injection well, drywell, or fluid distribution system.”

Department Response: WDEQ/WQD considered the comment and has revised the passage as requested.

2(o)

Wyoming State Geological Survey: Mr. Toboga recommended changing “overlying and underlying” to “overlying or underlying” as it is rare that one formation is both overlying and underlying.

Department Response: WDEQ/WQD considered the comment. The definition is derived from the federal definition located at 40 Code of Federal Regulations (CFR) §146.81(d). The passage specifically discusses Class VI wells and injection depth waivers. For an owner or operator to qualify for an injection depth waiver, Section 15(a)(ii) requires that the supplemental injection depth waiver report demonstrate that “the injection zones are bounded by laterally continuous, impermeable confining units above and below the injection zones adequate to prevent fluid movement and pressure buildup outside of the injection zones.” WDEQ/WQD will leave the passage as written.

2(ff)

Wyoming State Geological Survey: Mr. Toboga recommended adding a comma after “cessation of injection” to clarify that cessation does not refer to the cessation of plugging and abandonment.

Department Response: WDEQ/WQD considered the comment and has revised the passage as requested.

2(pp)

Wyoming State Geological Survey: Mr. Toboga recommended changing “aquifer” to “geologic unit” as an overlying confining unit may be saturated but may not store or transmit sufficient water to be an “aquifer”.

Department Response: WDEQ/WQD considered the comment. During the review of the chapter to determine the context that “vadose zone” was used, WDEQ/WQD discovered the term is not used in the chapter and proposes to remove the term from the definitions list.

2(tt)

Wyoming State Geological Survey: Mr. Toboga recommended changing “interval” to “geologic interval”.

Department Response: WDEQ/WQD considered the comment and believes it is self-explanatory that the interval is geologic. The passage will remain as written

Section 12

12(b)

Wyoming State Geological Survey: Mr. Toboga recommended changing “Vertical faults and fractures” to “vertical and inclined faults and fractures” or removing “vertical” as “Vertical faults”, alone is too limiting and most faults depart from the vertical, (aka “sub-vertical”).

Department Response: WDEQ/WQD considered the comment and has removed “vertical” as suggested.

Section 14

14(b)(vii)

Wyoming State Geological Survey: Mr. Toboga recommended adding a statement that requires the owner or operator to provide a cement bond log (CBL) to the administrator with a notarized evaluation of:

- 1) Quantitative estimations of cement compressive strength,
- 2) Bond index
- 3) Qualitative interpretation of the cement-to-formation bond

Department Response: WDEQ/WQD considered the comment and has added the requested passages and has noted the evaluation shall be certified by a licensed professional engineer or a licensed professional geologist.

Section 15

15(b)(vii)

Wyoming State Geological Survey: Mr. Toboga is in favor of the passage as proposed.

Department Response: WDEQ/WQD appreciates the support of the proposed passage.

Section 16

Wyoming State Geological Survey: Mr. Toboga recommended revising the title of Section 16 to “Expansion to the Areal Extent of Existing Class II Injection Well Aquifer Exemptions for Class VI Injection Wells” to clarify that the section does not refer to Class II and Class IV Groundwaters of the State.

Department Response: WDEQ/WQD considered the comment and made the revision as requested.

16(b)(i)(B)

Wyoming State Geological Survey: Mr. Toboga asked why the threshold is not 5,000 mg/L.

Department Response: WDEQ/WQD considered the comment. The passage is based on the range noted at 40 CFR §146.4(d)(2).

16(b)(ii)(C)(II)

Wyoming State Geological Survey: Mr. Toboga recommends that the passage cover a time period beyond the lifetime of the geologic sequestration project, the magnitude and extent of contamination may not be known until years after the project shutdown.

Department Response: WDEQ/WQD considered the comment. Section 13(a) requires periodic evaluations of the area of review based on computational modeling that accounts for all phases of the carbon dioxide stream, including post-injection site care and plume stabilization. The passage at Section 16(b)(ii)(C)(II) will remain as written.

Section 17

17(a)(ii)(B)

Wyoming State Geological Survey: Mr. Toboga is in favor of the passage as proposed.

Department Response: WDEQ/WQD appreciates the support of the proposed passage.

Section 19

19(b)

Wyoming State Geological Survey: Mr. Toboga asked if there is a qualitative definition of "significant".

Department Response: WDEQ/WQD considered the comment. The term is not defined, either qualitatively or quantitatively. Leaving the term undefined gives the Administrator flexibility in determining significance in a variety of ways, instead of limiting to strict criteria, which works to the benefit of WDEQ/WQD.

Section 20

20(a)

Wyoming State Geological Survey: Mr. Toboga recommended adding a specific of number of years beyond "accessing sites for all necessary monitoring and testing during the life of the project."

Department Response: WDEQ/WQD considered the comment. Section 9(b)(x) requires a permit condition that includes "The permittee shall secure and maintain such access for the duration of the permit and the post-injection site care and site closure period." As the comment is already handled via permit conditions, the passage will remain as written.

20(b)(iv)

Wyoming State Geological Survey: Mr. Toboga is in favor of the passage as proposed.

Department Response: WDEQ/WQD appreciates the support of the proposed passage.

Section 21

21(a)(i) - (ii)

Wyoming State Geological Survey: Mr. Toboga recommended changing the time frame in both paragraphs from three years to ten years.

Department Response: WDEQ/WQD considered the comment. The time frames noted in paragraphs (i) and (ii) are consistent with the requirements of the code of federal regulations (CFR) at 40 CFR 144.51(j)(2)(i) and (ii). The section is written to give the Administrator flexibility to maintain the records longer if needed. Additionally, WDEQ/WQD will receive electronic copies of the records in addition to requiring the retention by the owner/operator.

Section 26

26(a)

Wyoming State Geological Survey: Mr. Toboga recommended revising “Class VI wells” to “Class VI injection wells.”

Department Response: WDEQ/WQD considered the comment. The definition of Class VI well includes the function of injection, so the passage will remain as written.