Permit No.: 06S126 P5
Scan Code: 07

[DATE]
STATEMENT OF BASIS

For proposed Underground Injection Control Permit No.06S126 P5 to [change well # to] [construct] [convert well # to] [a salt water disposal] [an enhanced oil recovery] injection well.

Issuing office: U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Applicant: [PERMITTEE NAME & ADDRESS]

1. As described in the application, the well is located in Osage County, (State), ####' F?L, ####' F?L, ??/4, Section ##, Township ##N, Range ##E.

2. On the basis of preliminary staff review, the Environmental Protection Agency has made a tentative determination to draft a permit for the [conversion/ change/ construction] of this well as described in the application.

3. The following is an explanation of the derivation of the conditions of the draft permit and the basis for them as required under 40 CFR §147.2929 dated November 15, 1984/ §147.3002 dated October 25, 1988 {for NM}/ or §147.3101(c)dated October 25, 1988 {for OK}:

<u>40 CFR §147.2904 [§147.3009(a) for NM/ or §147.3106(a) for OK]</u>

The area around the proposed injection well or project must be evaluated to ensure that the proposed injection will not cause movement of fluid into an Underground Source of Drinking Water (USDW) through improperly sealed, completed, or abandoned wells. The permit applicant submitted information on all wells of public record penetrating the injection interval within 1/4 mile of the proposed injection site and requested an average injection rate of #### barrels per month (B/M) and not to exceed #### B/M [#### cubic feet per day (cf/D) of nitrogen gas and/or produced gas]. Since (the reason), the permittee will be authorized to inject at a maximum injection rate of B/M.

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OPTIONS

* EPA did not calculate a "zone of endangering influence" (the lateral area around the proposed injection in which injection pressures may cause movement of fluid into a USDW) because the permeability of the [formation name] is so high due to fractures, that pressure buildup is not a concern.

* Taking into consideration that ## % of the gas injected would be extracted during production, EPA then calculated a "zone of endangering influence" (the lateral area around the proposed injection in which injection pressures may cause movement of fluid into a USDW). This was calculated to be approximately #### feet and a review of the area found that there are [no/###] known improperly sealed, completed, or abandoned wells within this area.

* EPA then calculated a "zone of endangering influence" (the lateral area around the proposed injection in which injection pressures may cause movement of fluid into a USDW) to be #### feet and found that there are [no/###] known improperly sealed, completed, or abandoned wells within this area.

* There are [no/###] known improperly sealed, completed, or abandoned wells within this area. EPA then calculated a "zone of endangering influence" (the lateral area around the proposed injection in which injection pressures may cause movement of fluid into a USDW). In order for the zone of endangering influence not to exceed 1320 feet, it was necessary to reduce the injection rate to an average of ### barrels per day.

* EPA then attempted to calculate a "zone of endangering influence" (the lateral area around the proposed injection in which injection pressures may cause movement of fluid into a USDW). However, calculated future reservoir pressure put the static fluid level in the subject well above the base of the USDW. Therefore, the average injection rate was reduced to ### barrels per day. There are ### known improperly sealed, completed, or abandoned wells within 1/4 mile of the proposed injection.

* Taking into consideration that the subject injection well is classified as an enhanced oil recovery well, the permittee will be allowed to inject ### barrels of water per month in excess of the total liquids (oil and water) produced from the [FORMATION NAME] formation within one quarter mile of the proposed injection.

* Taking into consideration that the subject injection well is classified as an enhanced oil recovery well, the permittee will be allowed to inject #### barrels of water per month in excess of the total liquids (oil and water) produced from the [FORMATION NAME] formation from well number ##, located ####' F?L, ####' F?L' ??/4 Sec. ##, T ##N, R ##E.

* The draft permit requires that the ### abandoned well(s) (permit condition I.A.4.) be properly plugged and the ### production well(s) (permit condition I.B.5.) be monitored to prevent fluid migration from the injection zone into a USDW.

40 CFR §147.2919(a[§146.22(a) for NM or OK]

The well must be sited so that injection is into a formation which is separated from USDWs by a confining zone free of known open faults or fractures within the area of review. The proposed injection interval in the [FORMATION NAME] is at a depth of #### feet to #### feet below land surface and is approximately #### feet below the base of the USDW. A review of available data has shown no evidence of faults or fractures in the confining zone within the area of review.

40 CFR §147.2919(b)[§146.22(b) for NM or OK]

The well must be cased and cemented to prevent fluid movement into or between USDWs. The base of the USDW occurs at #### feet below land surface. [Since the/The] surface casing [has already been/will be] set and cemented at #### feet below land surface and the long string casing [has been/will be] set at #### feet below the land surface and cemented [back to surface] with #### sacks of cement, [well construction is adequate in this case].

OPTIONS

* The long string casing must also be cemented from #### feet (50 feet below the USDW) back to the land surface because the surface casing is not set and cemented through the base of fresh water.

* Since the surface casing is not set and cemented through the base of the USDW, the permittee will be required to test the well's mechanical integrity once every three years

* A bridge plug [must be/has been] set inside the long string casing between #### and #### feet of depth below the land surface, to isolate the open [perforations/hole] in the well from the injection zone.

40 CFR §147.2920 [{146.23(a) for other Indian Lands}]

To assure the protection of USDWs adjacent to the well bore, injection must be through an adequate tubing and packer. The packer must be set within 75 feet of the top of the injection interval. Since the top of the injection interval is at #### feet, the packer in this well must be set inside the casing between #### and #### feet of depth below land surface [40 CFR §147.2920(a){§146.23(a)(2)for other Indian Lands}].

Injection pressure at the wellhead shall be limited so that it does not initiate new fractures or propagate existing fractures in the confining zone adjacent to any USDW [40 CFR §147.2920(c){§146.23(a)(1)for other Indian Lands}].

OPTIONS

* In this well, the maximum injection pressure at the wellhead shall not exceed ### psig, as calculated by the formula

[Pm = (0.75 - 0.433 Sg) d] where:

Pm = injection pressure at the wellhead in pounds per square inch
Sg = specific gravity of injected fluid (unitless)
d = injection depth in feet

* In this well, the maximum injection pressure at the wellhead shall not exceed #### psig. The maximum wellhead pressure is being limited due to an insufficient confining layer between the base of the USDW and the top of the injection zone to prevent the movement of fluid into a USDW.

* In this well, the maximum injection pressure at the wellhead shall not exceed #### psig. The maximum wellhead pressure is being limited due to insufficient cement behind the longstring casing, the initial reservoir pressure, and a localized deep USDW. This is to prevent the movement of fluid into a USDW.

To assure that USDWs are protected from injection fluids, the well must maintain mechanical integrity. Mechanical integrity must be demonstrated prior to operation and at least once every [five/three] years thereafter [40 CFR '147.2920(b) for Osage/ '146.23(b)(3) for other Indian Lands].

For additional information, please contact:

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