

INJECTION WELL PLUGGING PLAN 40 CFR 146.92(b)

Kern River Eastridge CCS

Facility Information

Facility name: Kern River Eastridge CCS
MC19001INJ, ANO9004INJ, MC19002INJ, ANO9005INJ

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Well location: Bakersfield, Kern County, CA 93308
35.4404°/-118.9983°; 35.4465°/-119.0012°; 35.4401°/-118.9981°;
35.4462°/-119.0010°

Chevron U.S.A., Inc. (Chevron) will conduct injection well plugging and abandonment (P&A) according to the procedures below.

Planned Tests or Measures to Determine Bottomhole Reservoir Pressure

The Class VI injection wells will be completed with downhole pressure gauges for monitoring pressure throughout the life cycle of the well. Prior to commencing P&A activities, the bottomhole pressure will be determined using these downhole pressure gauges.

Planned External Mechanical Integrity Test(s)

Chevron will conduct a mechanical integrity test to verify external mechanical integrity prior to plugging the injection wells, as required by 40 code of federal regulations (CFR) 146.92(a) and as listed in **Table 1**.

To verify external mechanical integrity, Chevron plans to run an oxygen activation wireline log. The survey data will be evaluated for anomalies that would indicate a loss of mechanical integrity. If anomalies are detected, this will be taken into consideration during plugging operations, and the plugging plan will be modified accordingly.

Table 1. Planned MITs.

Test Description	Location
Oxygen Activation Log	Run on wireline either through tubing or casing of CO ₂ injector

Information on Plugs

Chevron will use the materials and methods noted in **Table 2** to plug the injection well. The volume and depth of the plug or plugs will depend on the final geology and downhole conditions of the well, as assessed during construction. The cement(s) formulated for plugging will be compatible with the carbon dioxide stream. The cement formulation and required certification documents will be submitted to the Underground Injection Control (UIC) Program Director with the well plugging plan.

Cement blends will be utilized that have a minimum 1,000 psi compressive strength and a maximum liquid permeability of 0.1 mD. The wells will have this cement barrier across all casing strings from total depth (TD) of the well to surface. The cement will be placed using multiple plugs in compliance with Chevron standards and current regulations.

Table 2. Plugging details.

Plug Information	Plug #1	Plug #2	Plug #3
Diameter of boring in which plug will be placed (in)	6.366	6.366	6.366
Depth to bottom of tubing or drill pipe (ft)	6150	4900	3650
Sacks of cement to be used	144	144	420
Slurry volume to be pumped (ft ³)	276	276	807
Slurry weight (lb./gal)	13	13	13
Calculated top of plug (ft)	4900	3650	0
Bottom of plug (ft)	6150	4900	3650
Type of cement or other material	CO ₂ Resistant Blend	CO ₂ Resistant Blend	CO ₂ Resistant Blend
Method of emplacement (e.g., balance method, retainer method, or two-plug method)	Balance	Balance	Balance

Narrative Description of Plugging Procedures

Notifications, Permits, and Inspections

In compliance with 40 CFR 146.92(c), Chevron will notify the regulatory agency at least 60 days before plugging the well and provide an updated Injection Well Plugging Plan (if applicable).

Plugging Procedures

1. Perform external mechanical integrity test.
2. Move in rig and/or coil tubing unit and rig up.
3. Use the bottomhole pressure from the downhole pressure gauge to calculate the kill weight density fluid.
4. Kill the well to allow for the removal of the completion string.
5. Pull completion equipment, including tubing and packers from well.
6. Cleanout well to effective depth (ED).
7. Use a rig and/or a coil tubing unit to perform the following operations:
 - a. Section mill a minimum of two (2) 100' length sections of 7" casing above the top of the Vedder sands to isolate the casing conveyed fiber optic line so the fiber optic line does not provide a conduit for CO₂ migration.
 - b. Spot CO₂ resistant cement plugs from effective depth (ED) to surface in stages utilizing balanced plugs. After spotting the balanced plug, pull above the top of the cement and circulate the hole clean.
 - c. Wait on cement to set. After the cement has set, run in the hole and tag the top of the cement plug to verify the depth and hardness of the plug before initiating the next cement plug.
 - d. Repeat steps b and c until cement is placed at surface.
8. Cut the wellhead and casing at a minimum of 5' below grade and weld a permanent steel plate with well identifying information onto the casing stub.
9. Backfill hole above the casing stub to original grade.