SECTION 6 – INJECTION WELL PLUGGING PLAN

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6.1 Injection Well Plugging Plan and Regulatory Requirements

As described in *Section 4 – Engineering Design and Operating Strategy*, Orchard [redacted] will be completed as a single injection interval [redacted] After the conclusion of [redacted] injection operations, the well will be permanently plugged. Complete plugging and abandonment prognoses have been included in [redacted] of this application.

The following outline describes the procedures and types of plugs that will be set to isolate the injection interval, to prevent contamination of the Underground Sources of Drinking Water (USDWs), and to properly plug and abandon Orchard [redacted] according to Title 16, Texas Administrative Code (16 TAC) **§5.203** and 16 TAC **§3.14** [Title 40, U.S. Code of Federal Regulations (40 CFR) **§146.92**] regulations.

6.1.1 Wellbore Profile Prior to Plugging and Abandonment

The original wellbore schematic for Orchard [redacted], prior to beginning plugging operations, is provided in Figure 6-1.

[redacted]

[redacted]

6.1.2 Pre-Plugging Activities

1. Orchard Storage will comply with all reporting and notification provisions.
   a. The Environmental Protection Agency (EPA) Underground Injection Control (UIC) Program Director will be notified 60 days in advance of planned plugging efforts [40 CFR ***§*146.92(c)**].
   b. The Texas Railroad Commission (TRRC) UIC Director will be notified at least 60 days before plugging a well. If any changes are proposed to the original well plugging plan, a revised well plugging plan will be submitted [16 TAC ***§*5.201(k)(3)(A)**].
   c. A notice of intention to plug and abandon (Form W-3A) will be filed with the appropriate TRRC district office and the UIC Director at least five days prior to the beginning of plugging operations.
   d. Plugging operations will not start until the proposed procedure has been approved by the UIC Director.
   e. The district office will be notified at least four hours before commencing plugging operations.
2. Casing inspection and cement bond logs will be run prior to plugging.
3. Bottomhole reservoir pressure will be measured [redacted] *Section 5 – Testing and Monitoring Plan* (16 TAC **§5.203 (h)(1)(C)** [40 CFR **§146.89(b)**]).
4. External mechanical integrity will be demonstrated through approved temperature logging methods as described in *Section 5*, per 16 TAC **§5.203 (h)(1)(D)** [40 CFR **§146.89(c)**].
5. Orchard [redacted] will be flushed with a buffer fluid prior to pulling the injection tubing and packer (16 TAC **§5.203** and **§3.14** [40 CFR **§146.92(a)**]).
6. All uncemented, non-permanent components of the well will be removed.

[redacted]

6.1.3 Plugging Activities

1. Pull seal assembly from the packer to just above the packer.
2. Fill the wellbore with at least 9.5 pounds per gallon (ppg) of 40 viscosity-treated drilling mud, and ensure the well is in static condition.
3. Pull tubing and seal assembly and remove from the well.
4. Isolate the gross injection interval:
   a. Set a permanent bridge plug made of corrosion resistant alloy (CRA) at [redacted]

b. Place a 300' acid-resistant cement plug above the permanent bridge plug to cover [redacted]
c. Displace the cement with at least 9.5 ppg of 40 viscosity-treated drilling mud.
d. The plug will be qualified by tagging the top and conducting a successful pressure test.

5. Spot a ~400' cement [redacted] Displace cement with at least 9.5 ppg of 40 viscosity-treated drilling mud.
6. Set a 50' cement plug from 50' to the surface.
7. Cut casing 3' below ground level and weld on a ½" steel plate.

Within 60 days after plugging, Orchard Storage will submit, pursuant to 40 CFR **§146.91(e)**, a certified plugging report to the UIC Director. The well plugging report will be retained for 10 years following site closure. Also note that a complete well plugging record (Form W-3), pursuant to 16 TAC **§5.203**, will be filed within **30 days** to the appropriate TRRC District Office after plugging operations are completed.

6.1.4 Plug Details

Table 6-2 shows the planned plugging details for Orchard #1. Figure 6-2 shows a schematic of Orchard #1 after the well is plugged.

[redacted]

[redacted]

[redacted]

6.2 Monitoring Well Plugging Plan and Regulatory Requirements

As described in *Section 4 – Engineering Design and Operating Strategy*, Orchard [redacted] At the conclusion of the post-injection site care period, the well will be permanently plugged. Complete plugging and abandonment prognoses have been included in *Appendix G* of this application.

The following outline describes the procedures and types of plugs that will be set to isolate the perforated interval and to prevent contamination of the USDWs. Orchard [redacted] will be properly plugged and abandoned according to 16 TAC **§5.203** and 16 TAC **§3.14** [40 CFR **§146.92**] regulations.

6.2.1 Monitoring Wellbore Profile Prior to Plugging and Abandonment

The original wellbore schematic for Orchard [redacted] prior to beginning plugging operations, is provided in Figure 6-3.

[redacted]

[redacted]

6.2.2 Monitoring Well Pre-Plugging Activities

1. Orchard Storage will comply with all reporting and notification provisions.
    a. The EPA UIC Program Director will be notified 60 days in advance of planned plugging efforts [40 CFR ***§146.92(c)***].
    b. The TRRC UIC Director will be notified at least 60 days before plugging a well. If any changes are proposed to the original well plugging plan, a revised well plugging plan will be submitted [16 TAC ***§5.201(k)(3)(A)***].
    c. A notice of intention to plug and abandon (Form W-3A) will be filed with the appropriate TRRC district office and the UIC Director at least five days prior to the beginning of plugging operations.
    d. Plugging operations will not start until the proposed procedure has been approved by the UIC Director.
    e. The district office will be notified at least four hours before commencing plugging operations.
2. Casing inspection and cement bond logs will be run prior to plugging.
3. External mechanical integrity will be demonstrated through approved temperature logging methods as described in *Section 5* per 16 TAC **§5.203 (h)(1)(D)** [40 CFR **§146.89(c)**].
4. Orchard [redacted] will be flushed with a buffer fluid prior to pulling the injection tubing and packer seal assembly (16 TAC **§5.203** and **§3.14** [40 CFR **§146.92(a)**]).
5. All uncemented, non-permanent components of the well will be removed.

[redacted]

Within **60 days** after plugging, Orchard Storage will submit, pursuant to [40 CFR **§146.91(e)**], a certified plugging report to the UIC Director. The well plugging report will be retained for 10 years following site closure. Also note that a complete well plugging record (Form W-3), pursuant to 16 TAC **§5.203**, will be filed within **30 days** to the appropriate TRRC District Office after plugging operations are completed.

[redacted]

[redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]