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Comment submitted by Michael K

Submitter Information

Name: Michael K
Address:
Putnam, IL, 61560
Email: keelejunior@yahoo.com

General Comment

My Concerns with Docket EPA-R05-OW-2025-1612

1. Legacy Wells and Leakage Risk

The draft record identifies the J&L well penetrating the Eau Claire confining zone and several additional historic wells entering the Mount Simon and overlying strata. Many were drilled prior to Class VI standards with incomplete abandonment documentation. Any unsealed or poorly cemented borehole represents a potential conduit for CO₂ or displaced brine once injection raises formation pressure. CO₂-charged fluids are corrosive and can exploit micro-annuli or degraded cement.

EPA should require independent mechanical-integrity testing and re-logging (cement-bond, temperature, noise, and pressure tests) of every known borehole within and near the Area of Review before injection. Results should be public in the administrative record. Modeling cannot substitute for physical verification of seal integrity.

2. Pressure Management and Fracturing Controls

The permit defers fracture-pressure limits until post-construction testing. That approach leaves margin for underestimation in heterogeneous formations. Elevated pressure can reopen sealed fractures or legacy annuli. EPA should define numeric automatic shut-down thresholds: e.g., any sustained pressure deviation > 10 % above model prediction or microseismic event > M 1.5 must trigger injection suspension and investigation. Annual pressure-front recalibration should be mandatory when field data diverge from projections.

3. Seismic Response Plan

Although regional seismicity is low, induced events as small as M 2 can compromise casing or old plugs. The permit should formalize a transparent “traffic-light” seismic plan with real-time public reporting and automatic pauses tied to magnitude and depth criteria.

4. Monitoring Network and Data Transparency

The plan's two deep wells, one above-zone well, and five shallow wells within roughly one mile provide limited spatial coverage. EPA should require at least one off-site sentinel well downgradient of the modeled plume, continuous soil-gas and surface-flux monitoring from project startup, and public posting of well-pressure, geochemical, and seismic data on a near-real-time online dashboard. Continuous disclosure ensures accountability and rapid anomaly detection.

5. Post-Injection Site Care (PISC)

The proposed 12-year PISC period is inadequate. Pressure equilibration and CO₂ plume stabilization can require decades. EPA should extend monitoring to a minimum of 20 years or until reservoir pressure and groundwater chemistry return to baseline. Closure should not occur until those criteria are verified by field measurements, not models.

6. Financial Assurance

The draft mentions a letter of credit and insurance coverage but omits dollar amounts, expiration terms, and indexing provisions. EPA should require public disclosure of total financial-assurance amounts allocated for plugging, corrective action, emergency response, and extended monitoring. Instruments must automatically renew and adjust for inflation until EPA certifies site closure.

7. Corrective-Action Triggers and AoR Reevaluation

AoR reevaluation every five years is too infrequent given the injection volume (up to 1.5 million metric tons CO₂ per year × six years). Any pressure or geochemical deviation exceeding model uncertainty bounds should trigger immediate model update and AoR expansion review.

8. Surface and Community Coordination

Although UIC authority focuses on underground sources of drinking water, surface components—CO₂ compression, transport pipelines, and truck traffic—carry environmental and safety risks. EPA should coordinate with the Illinois EPA, IDNR, and local emergency management to integrate air-emission, noise, and spill-response plans. A public emergency-response protocol should be required before injection authorization.

9. Requested Permit Modifications

1. Mandatory re-logging and integrity testing of all legacy wells before injection.
2. Defined automatic shut-down thresholds for pressure or seismic anomalies.
3. Required off-site sentinel wells and continuous soil-gas monitoring.
4. Real-time public access to monitoring and seismic data.
5. Minimum 20-year PISC or until pressure stabilization.
6. Transparent, inflation-indexed financial assurance.
7. Annual pressure-front recalibration and adaptive AoR management.
8. Coordinated surface-risk and emergency-response planning.

10. Summary

Protection of underground drinking water depends not only on modeling but on verified well integrity, conservative pressure control, and transparent, long-term oversight. The current draft underestimates legacy-well uncertainty, limits post-closure monitoring to an insufficient period, and withholds critical financial information from the public. Incorporating the modifications above would materially strengthen the permit's ability to prevent endangerment of USDWs and ensure accountability for the full duration of the sequestration project.