Injection/Disposal Permit Restrictions by Geography and Geology

Statewide

Deep Disposal

- UIC Staff will not administratively grant a permit for disposal into a formation immediately overlying basement rocks (e.g. Cambrian or Hickory sand) without a substantial demonstration that the proposed disposal well will not cause seismicity.
- Therefore, any deep disposal well (typically considered to be disposal into Devonian-age and older in the Permian Basin) are required to plugback at least 150 feet from the base of the formation overlying Cambrian-age strata or any formation that immediately overlies the basement. In the Midland basin, this is often the base of the Ellenburger group. A well log or mud log annotated with formation tops must be submitted to demonstrate compliance with this permit condition.

Districts 01, 02, 04

Austin Chalk

- UIC Staff will administratively deny any commercial disposal permit application.
- UIC staff will consider non-commercial low-volume applications on a case-by-case basis.

Districts 02/03/04

Gulf Coast Counties – Shallow Injection

- Applicable to Texas counties that border the Gulf of Mexico: Jefferson, Galveston, Matagorda, Calhoun, Aransas, Nueces, Kleberg, Kenedy, Willacy, Cameron counties.
- Maximum surface injection pressure will be limited to 0.25 psi/ft for wells injecting with shallow injection intervals less than 2000 feet.

Districts 05/6E/7B/09

Formations overlying the Newark East Barnett Shale (NEBS) Field in North Central Texas

- For applications for commercial disposal or high-volume non-commercial disposal.
- Expanded area of review (AOR) from ¼ to ½ mile, within which the applicant must demonstrate whether all wells are plugged or cased and cemented in a manner that insures they do not represent a conduit for non-confinement of fluid to the proposed injection interval.
- Reduce the maximum surface injection pressure by 50%.
    1. Limit the maximum injection rate to 5000 barrels per day.
    2. Submit pressure influence calculations prepared by a registered professional engineer in Texas to show that the zone of endangering influence (ZEI – the distance from the proposed injection well to where the pressure increase due to injection will not be sufficient to raise a column of oil field brine to the base of the useable quality groundwater) is less than ½ mile.
    3. If ZEI is greater than ½ mile, demonstrate that all wells within ZEI are plugged or completed in a manner sufficient to prevent non-confinement.
    4. Core Counties: Denton, Johnson, Tarrant, Wise
    5. Permit applications in non-core counties will be evaluated on a well-by-well basis.
    6. Non-Core Counties: Archer, Bosque, Clay, Comanche, Cooke, Coryell, Dallas, Eastland, Ellis, Erath, Hamilton, Hill, Hood, Jack, Montague, Palo Pinto, Parker, Shackelford, Somervell, Stephens

Ellenburger Formation underlying Newark East Barnett Shale (NEBS) Field in North Central Texas

- Top of the injection interval must be at least 250 feet below the top of the Ellenburger.
- Injection volumes are limited to no more than 25,000 Barrels per Day (BPD).
- Core Counties: Denton, Johnson, Tarrant, Wise
- Permit applications in non-core counties will be evaluated on a well-by-well basis.
- Non-Core Counties: Archer, Bosque, Clay, Comanche, Cooke, Coryell, Dallas, Eastland, Ellis, Erath, Hamilton, Hill, Hood, Jack, Montague, palo Pinto, Parker, Shackelford, Somervell, Stephens

Districts 05, 06

Nacatoch Sand

- Different from our standard tech review:
    1. AOR 1/2 mi (vs 1/4 mi)
    2. Volume and Pressure limitations may apply
    3. CBL, RTS/DTS, PFC &/or SRT may be required
- Options to be added as part of the initial required data:
    1. Porosity and permeability
    2. Historical H-10 for all 2 mi radius, back 2 years
    3. BHP monitoring. Frequency determined by available data on pressure hazard
    4. Cement to surface in all strings

District 7B, 7C

Coleman Junction

- All applications in District 7B & 7C to dispose into the Coleman Junction formation must undergo further review, such as:
    1. Approval from the District Office.
    2. Approval from UIC manager and Chief Geologist.
    3. Monitoring conditions such as annual H-5, weekly tubing casing monitoring, and bottom hole pressure testing may be requested.
- The Coleman Junction is a highly corrosive and over pressured formation that has caused multiple casing leaks across both districts.
- In 2012, commercial disposal permits were administratively denied due to public complaints of salinization of cropland.
- The applicant must differentiate the Coleman Junction across the Eastern Shelf and the Permian Basin.

Districts 7C, 08

San Andres

- Disposal applications in the San Andres formation in Irion, Reagan, and Upton counties require an accounting of any known bradenhead pressure concerns or well plugging concerns within a quarter-mile radius around the subject well location.
- The UIC review requests the district office to identify any known concerns. The reviewer will consult with the district office to determine whether to administratively grant the permit and what permit conditions are appropriate if granted.

Districts 7B, 08, 8A

Santa Rosa

- Disposal applications in 8A must have detailed area of review and district approval. The reviewer will consult with the district office to determine whether to administratively grant the permit and what permit conditions are appropriate if granted.

Districts 7C, 08, 8A

Permian Basin

- All disposal well applications will be subject to the Permian Basin Disposal Well Review. The review consists of an enhanced area of review (AOR) demonstration, reservoir characterization, and additional application attachments.
- All offset wells within ½-mile of the proposed well will require cement across the injection interval and/or proper annular and wellbore plugging to prevent movement of fluids out of the permitted interval.
- Fracture gradients of the upper confining, injection, and lower confining interval are required to establish the permit's Maximum Surface Injection Pressure (MSIP). A recent and accurate interpretation of the initial average reservoir pressure at the proposed site is required to establish a Maximum Daily Injection Volume (MDIV).
- A stratigraphic cross section to characterize the continuity and confining ability of the upper and lower confining intervals within the 2-mile AOR is required. The required application template, checklist, and detailed explanations are available at the Permian Basin Disposal Well Review webpage.

District 01

Deep Maverick Aquifer, Glen Rose Formation

- UIC Staff will administratively deny any injection permit application. Investigation is on-going into this newly recognized freshwater source.

District 03

Sour Lake Salt Dome

- Special order requirements for all injection/disposal permits.
- Applications may be subject to additional monitoring conditions as Fluid Source Limit (FSL) and annual Radioactive Tracer Survey.

District 06

East Texas

- Harrison, Panola and Shelby Counties:
    1. Any disposal application will undergo a formation over-pressurization review.
    2. This applies to all formations and is not limited to the Rodessa formation.
    3. Operator is required to submit ½ mile top of cement table showing that all wells in AOR have cement across injection interval.
    4. Required to submit porosity and permeability data for the disposal formation.
    5. Must submit annotated log including formation tops.
    6. Submit historical H-10 data for any injection/disposal well within a 2-mile radius going back for at least 2 years in both pdf and excel.
    7. All wells undergoing an over-pressurization review will require bottom hole pressure monitoring. The frequency of the monitoring will be determined by the UIC staff using available information on the pressure hazard. The operator should be advised that volume and/or pressure limitations may be required in areas with elevated bottom hole pressure.
    8. Additional conditions such as cement bond logs, injection tracer surveys, pressure front calculations and step-rate tests may be requested during the over-pressurization review.

District 7B

Flippen formation

- Formation fracture pressure may be relatively low. Applicant must submit documentation of the formation fracture gradient with any disposal permit application.

District 08

Capitan Reef

- Capitan Reef is a minor aquifer as described by the Texas Water Development Board and contains freshwater (TWDB/Daniel B. Stephens: Capitan Reef Complex Report).
- UIC staff will use the recommendations of the Groundwater Protection Determination, Form GW-2, to protect the Capitan Reef aquifer.

Delaware Mountain Group

- Geologic group name for the Brushy Canyon, Cherry Canyon, and Bell Canyon formations.
- ¼ psi/ft maximum surface injection pressure in areas of seismic activity.

District 10

Brown Dolomite

- Disposal applications in the Brown Dolomite formation in counties bordering Oklahoma may require bottom-hole pressure tests when MITs are performed, a maximum daily injection volume of no greater than 10,000 bbl/day and a maximum surface injection pressure cap no greater than 1,000 psig. The reviewer will consult with the district office to determine whether to administratively grant the permit and what permit conditions are appropriate if granted.