Session Overview

Overview:
• UIC Online Manual
• Safe Drinking Water Act & Primacy
• Application requirements
• Permit Details
  – Forms and Attachments
  – Administrative Review
  – Technical review
• Contact Information

Where is it?

UIC ONLINE MANUAL
Find Permitting Manual

Place cursor over Oil & Gas, then click Publications and Notices.

Find Permitting Manual - 1

Click Injection/Disposal Well Permitting, Testing and Monitoring Manual
Where does RRC get their authority? What does RRC have authority over?

SAFE DRINKING WATER ACT & PRIMACY

Safe Drinking Water Act

- Safe Drinking Water Act – 1974
- To protect human health and drinking water
- Underground Injection Control (UIC)
  – Prohibits contamination of USDWs
- Underground Sources of Drinking Water (USDW)
- Enforcement Primacy
  – RRC: April 1982
Water Quality Terms & Uses

- USDW < 10,000 ppm Total Dissolved Solids (TDS)
  - SDWA protects
- Usable-Quality Water < 3,000 ppm TDS
  - RRC standard for casing
- Freshwater / Superior Water < 1,000 ppm TDS
  - RRC may recognize and require additional protection

Jurisdiction in Texas

Who has State Jurisdiction in Texas For Injection Wells (Primacy)?

- Oil and Gas Related Activities: Railroad Commission of Texas (RRC)
- Other Injection Activities: Texas Commission on Environmental Quality (TCEQ)

Injection Classes

- Class I: industrial and municipal wastes
- **Class II: oil and gas injection, disposal, storage**
- Class III: solution mining (brine mining)
- Class IV: shallow injection (not used anymore)
- Class V: shallow injection, non-hazardous, remediation, pilot projects
- Class VI: CO₂ capture and storage
Injection Well Permitting

There are > 35,000 Active Class II Wells in Texas.

Permit Procedures for Class II Wells:
- Administrative Review
- Technical Review
- Manager Review
- Hearing (protested or UIC denied)

Forms H-1 / H-1A and Form W-14

Form W-14:
- To apply for Disposal into a Non-Productive Formation
- Statewide Rule 9

Form H1 and H1A:
- To apply for Injection/Disposal into a Productive Formation
- Statewide Rule 46
- Multiple Zones: If a mix of Productive and Non-Productive
Filing UIC Permit Applications

Do I file Forms H-1 & H-1A or Form W-14?

• Is the injection formation productive or non-productive?
• Which form is determined by current or past production within 2 miles radius.
• File original application to RRC Technical Permitting – UIC department in Austin.
• Mail a copy of the application forms to the district office.

Permit Application Filing Fees

• Form W-14: $250 per wellbore
• Forms H-1 & H-1A: $500 per wellbore
• Exception Requests: $375 (additional) each request
• These fees include surcharges and are non-refundable
• Check or Credit (Central Records)
• Applications will not begin processing until paid

Injection Form at a Glance - 1

• Who? (P-5 information)
  – Must have active P-5
  – Operator name, number and address
• Where? (P-4 information)
  – Must have active P-4 (or be new drill)
  – Lease name and number
  – Field name and number
**Determine the Field Name**

**H-1/H-1A Field Name:**
- is correlative to injection/disposal formation
- use deepest if more than one formation, or keep current Field Name if the well is on proration schedule in one of the proposed formations.

**W-14 Field Name:**
- may be correlative by formation name more than 2 miles away, or correlative to the formation that is the source of disposal fluids

**Injection Form at a Glance - 3**

- **Where? (Reservoir)**
  - Formation, Lithology, Permeability, etc.
- **Why?**
  - Purpose of Injection
  - Waterflood, Disposal, etc.
- **What?**
  - What will be injected
  - Salt Water, Natural Gas, etc.
• How? (Well Data)
  – Specific location
    • Legal description & coordinates
  – Well construction
    • Casing, tubing, packer description
  – Injection interval
  – Injection volumes & pressures
• Sign
  – Email address for quicker communication
  – Re-date so we can track the newest submission
**Measured Depth / Total Vertical Depth**

Total Vertical Depth (TVD)
- Injection Interval

Measured Depth (MD)
- Packer Depth
- Perforation Depths

- Put both on the form if deviated or horizontal!

---

**Injection Form at a Glance - 7**

---

**Email Address on Form**

Including your email address on the application form:
- Helps quick process of your application
- Quick communication for missing information
- No mail lag-time to receive permit
- Write the email address near the signature box (bottom of the application form)
INJECTION / DISPOSAL PERMITTING
ADMINISTRATIVE REVIEW

Administrative Permitting Staff

<table>
<thead>
<tr>
<th>UIC</th>
<th>General UIC Tel number</th>
<th>(512)463-6792</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jason Lockie - Lead</td>
<td><a href="mailto:Jason.Lockie@rrc.texas.gov">Jason.Lockie@rrc.texas.gov</a></td>
<td>(512)463-4032</td>
</tr>
<tr>
<td>Darlene Cottle</td>
<td><a href="mailto:Darlene.Cottle@rrc.texas.gov">Darlene.Cottle@rrc.texas.gov</a></td>
<td>(512)463-7330</td>
</tr>
<tr>
<td>Meghan Riley</td>
<td><a href="mailto:Meghan.Riley@rrc.texas.gov">Meghan.Riley@rrc.texas.gov</a></td>
<td>(512)463-6816</td>
</tr>
<tr>
<td>Vacant</td>
<td>To be hired</td>
<td>(512)463-3576</td>
</tr>
</tbody>
</table>

Administrative Review - 1

- Fees are paid
- Form is complete
- Application includes all necessary attachments
- Data entry into tracking system
Administrative Review - 2

Check Organization Report (Form P-5):
• Check for current P-5 on file
• Check corporation franchise taxes are paid

Check Certificate of Compliance (Form P-4):
• Verify that applicant is operator of lease
• For a new lease, file Form P-4 with completion report

Check UIC Well Inventory:
• Is this application for a new or amended permit?

---

Dual Authorities

• Only one permit may be valid on an injection/disposal well at any given time
• Amended permit supersedes the original permit
• Plan re-permitting to coincide with workover
• Whenever a dual authority is discovered, the older permit is cancelled

---

Administrative denial

• Applications will be administratively denied if lease is under severance or seal-in.

• This does not apply to permit amendment applications that return well to compliance.
INJECTION / DISPOSAL PERMITTING
ADMIN REVIEW - FORM ATTACHMENTS

Notice
Mail or deliver a copy of front and back of the application forms W-14 or H1/H-1A (letter may be included) to the following parties:

- the surface owner of record (county deed)
- adjacent surface owners of record if application is for a commercial disposal well
- operators of wells within a ½ - mile radius of the proposed injection/disposal well
- county clerk
- city clerk if well is located within corporate city limits

Notice attachments - 1

- Map showing the location of wells within ½-mile of proposed injection/disposal well
  - operators of wells must be notified unless the well is plugged and abandoned
- For a commercial disposal well, provide a plat showing the surface tract boundaries and all adjacent tract boundaries.
Notice attachments - 2

• List the names and addresses of:
  – surface owner(s), operators of wells within ½-mile radius, county clerk, city clerk, and adjoining surface owners if commercial

• Signed statement indicating the date that a copy of the application form(s), front and back, was mailed or delivered to everyone on the list.

Adjacent Surface Owner Plat

Commercial Facilities

• Injection well is commercial if:
  – waste is partially or wholly trucked in and
  – a disposal fee or other compensation is charged and
  – it is your primary business purpose

• Surface facility requirements: spill prevention and containment, restricted access, and additional financial security if you have pits
Publication Guidelines - 1

- Publish notice for one day in a newspaper with general circulation in the county
- Submit newspaper clipping with notarized affidavit of publication
- Publication and affidavit format available on RRC website - Injection Permitting Manual
- 15 day waiting period after notice and publication

Publication Guidelines - 2

- Match the application and the notice for:
  - direction and miles to nearest town
  - injection/disposal interval – for several wells publish the shallowest top and deepest bottom
- Legal authority for permit
- Opportunity/ instructions to protest
- RRC contact information

Publication Guidelines - 3

- State that the application is for a “commercial” disposal well if applicable
- State H2S will be injected if applicable
- Provide affidavit that the newspaper is of general circulation in the county for the proposed well, certified by Notary Public
Permit Amendments

- File Form W-14 or H-1/H-1A with filing fee
- Filing requirements vary with purpose of amendment
- Zone amendments or permits pre-dating April 1982
  - Well log
  - Groundwater letter
  - AOR map and table

Permit Amendment Guidelines

INJECTION / DISPOSAL PERMITTING
TECH REVIEW - FORM ATTACHMENTS
**Electric Log**

- Complete electric log with header
- Include proposed zone and overlying strata
- If log is unavailable, submit a log from a nearby well (include plat showing both locations)
- If multiple wells are one Form H-1, only one well log is required if the log is representative of all wells

---

**GAU Letter**

- RRC Groundwater Advisory Unit (GAU) issues the Groundwater Depth Letter
- H-1/H-1A: Form GW-2 stating the depth to which usable-quality water (UQW) and USDW must be protected
  - GW-1 Purpose of Filing must be H-1
- W-14: Submit GAU letter stating that the proposed injection will/will not endanger UQW and USDW.

---

**Area of Review (AOR)**

- Provide scaled map of wells within ¼-mile
- Table of wells within AOR with:
  - lease name and number
  - API and well numbers
  - total depth and date drilled
  - current status (producing, shut-in, P&A'd, etc)
  - plugged wells, include plug date and W-3
- Confirm that wells are on the proration schedule, have been properly plugged, or do not penetrate the injection zone
Create AOR Map - 3
List wells in the circle. Click radius icon and the circle disappears. Click identify.

Create AOR Map - 4
Click Identify Tool. Then, click on the well of interest. See injection well on schedule.

AOR Map Example
AOR Well Listing Example

Unknown or Improperly Plugged Well

- You may plug the well or enter the well to determine status if unknown
- Applicant may use a Pressure Front Calculation (PFC) to show the actual affected radius is less than ¼-mile
- PFC must be prepared by a Texas-Registered Professional Engineer

Seismic Activity Amendments

- Amendments to Rules 9 & 46 in 2014
  - RRC may modify, suspend or terminate a permit if injection is likely to be contributing to seismic activity
  - Requires seismic information with disposal well applications
- Include a survey of seismic events from the USGS within 9.08 kilometers of the proposed well site
- USGS Earth Archive Search – use following link: (http://earthquake.usgs.gov/earthquakes/search/)
Seismic Event Survey - 1

- Enter the following parameters in USGS Earth Archive Search:
  - DATE & TIME: 1973-01-01 00:00:00
  - MAGNITUDE: Minimum: Enter 1
  - Advanced Options:
    - CIRCLE: Center Latitude and Center Longitude
    - CIRCLE: Outer Radius: Enter 9.08
- Include the map and the page depicting your inputs
- The map should display details about each event, including location, magnitude, and date
Fresh water injection for EOR

- Fresh water questionnaire
  - Search for "questionnaire"
- Form H-7 (unless fresh water is purchased)
  - plat of fresh water rights
  - chemical analysis of the fresh water

INJECTION / DISPOSAL PERMITTING
TECHNICAL REVIEW CONT’D
**Surface Casing**

- Base of usable-quality water (BUQW) determined by GAU
- Commercial and new injection/disposal wells must set and cement surface casing through the BUQW
- Wells converted from production are reviewed on a case-by-case basis. If permitted, additional requirements like:
  - annual mechanical integrity (MIT) testing vs 5 years
  - weekly tubing-casing annulus monitoring (TCAM)

**Production Casing Cement**

- Cement must be adequate to confine fluids to the injection zone
- 600 feet of cement above injection interval if high yield cement is used and Top Of Cement (TOC) is based on volume calculation.
- 250 feet if TOC is based on temperature survey
- 100 feet if TOC is based on cement bond log and
  - At least 80% bond
  - No indication of channeling

**Geological Requirements**

- SWR 9 disposal wells must have a “no harm” letter from GAU
- SWR 46 injection/disposal wells must be isolated from usable-quality water by 250 total feet of low permeability strata and adequately separated from USDW
- Pre-primacy wells without adequate separation, if permitted, will have injection fluids limited to fluids produced from the same lease and formation
**Packer setting depth**

- Rule 9: set within 100 feet of the permitted zone
- Rule 46:
  - 150 feet below base of usable-quality water and 200 feet below TOC
  - Should have cement behind casing and no permeable zones between the packer and the top of the injection interval to protect natural resources

**Injection Pressures**

- Typical maximum is ½ psi per foot of depth
- For coastal wells less than 2,000 feet, injection above Barnett Shale, and injection into Delaware formations pressure may be limited to ¼ psi per foot
- Fracture step-rate tests may justify a higher pressure or be required if formation fracture pressure is known to be low

**Injection Fluids**

- Limited to the injection of produced salt water unless other fluids are specified (see Item 45 on Form H-1)
- Injection of Hydrogen Sulfide requires “well-specific” authority (SWR 36)
  - Must go through a public hearing
  - Admin approval from the District Office H2S Coordinator if already been through public hearing
**Application vs Construction**

- The well must be constructed and operated as proposed and permitted
- Significant changes will require permit amendment, or may result in enforcement or permit cancellation
- Permit-required remedial action must be done before injection begins

**Injection Initiation**

- Perform a Mechanical Integrity Test (MIT, Form H-5) before injection
- File completion report (Form W-2/G-1)
  - Filing online greatly reduces processing time
  - Lease numbers for new leases are assigned after final processing/approval of completion report
- File annual Form H-10 upon due date
  - You will receive a letter indicating when H-10 is due
  - Filing online greatly reduces processing time

**Protested Applications - 1**

- Staff may not administratively issue a permit if it has a valid protest
- Protests should be filed within 15 days of the date of publication or the date the application is filed with UIC department, whichever is later.
- However, protests received later than 15 days and before a permit is issued are typically considered valid
Protested Applications - 2

- Affected persons:
  - Operators of wells within ½ mile
  - Surface owner of record
  - Adjoining surface owners for commercial well
  - Local government (such as city or water district)

- Others if RRC determines it’s in the public interest:
  - Offset surface or mineral owners
  - Other government agencies
  - Members of the general public

Affected Persons

Affected Person: a person who has suffered or will suffer actual injury or economic damage other than as a member of the general public or as a competitor, and includes surface owners of property on which the well is located and commission-designated operators of wells located within one-half mile of the proposed disposal well.

Affected Person Letters

- In coordination with RRC Office of General Counsel, UIC is reviewing application protests to determine if they may not be from an “affected person”
- UIC may ask protestors to reply with an explanation of their affected person status
- UIC may issue a permit administratively if no affected person protests an application
Protested Applications

Options for applicant:

- Withdraw the application
- Obtain a withdrawal letter from the protestant, or
- Request a hearing
  - The application must be administratively complete
  - Pre-hearing and/or hearing will be held
  - Protest is dismissed and remanded to UIC for administrative processing, or the Commission rules on the application

Permit Application Denials

- If application remains incomplete after two additional submittals, it is returned
- Unsatisfactory completion or operating proposal
  - Modify the application to allow for administrative approval, or
  - Request a hearing

Technical Review Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sean Avitt</td>
<td><a href="mailto:Sean.Avitt@rrc.texas.gov">Sean.Avitt@rrc.texas.gov</a></td>
<td>(512) 463-3011</td>
</tr>
<tr>
<td>Robert Alford</td>
<td><a href="mailto:Robert.Alford@rrc.texas.gov">Robert.Alford@rrc.texas.gov</a></td>
<td>New</td>
</tr>
<tr>
<td>Cheryl Burns</td>
<td><a href="mailto:Cheryl.Burns@rrc.texas.gov">Cheryl.Burns@rrc.texas.gov</a></td>
<td>(512) 463-6439</td>
</tr>
<tr>
<td>Will Labbe</td>
<td><a href="mailto:William.Labbe@rrc.texas.gov">William.Labbe@rrc.texas.gov</a></td>
<td>New</td>
</tr>
<tr>
<td>Nagi Mabruk</td>
<td><a href="mailto:Nagi.Mabruk@rrc.texas.gov">Nagi.Mabruk@rrc.texas.gov</a></td>
<td>(512) 475-4655</td>
</tr>
<tr>
<td>Jim Moore</td>
<td><a href="mailto:Jim.Moore@rrc.texas.gov">Jim.Moore@rrc.texas.gov</a></td>
<td>(512) 463-6443</td>
</tr>
<tr>
<td>Nicole Moore</td>
<td><a href="mailto:Nicole.Moore@rrc.texas.gov">Nicole.Moore@rrc.texas.gov</a></td>
<td>New</td>
</tr>
<tr>
<td>Tony Rios</td>
<td><a href="mailto:Anthony.Rios@rrc.texas.gov">Anthony.Rios@rrc.texas.gov</a></td>
<td>(512) 463-2259</td>
</tr>
<tr>
<td>Scott Rosenquist</td>
<td><a href="mailto:Scott.Rosenquist@rrc.texas.gov">Scott.Rosenquist@rrc.texas.gov</a></td>
<td>(512) 475-2307</td>
</tr>
</tbody>
</table>