



# Oil & Gas Waste Stream Management, Part 2

July 2020

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## Topics for Discussion



- COVID-19 Agency Information
- Application Requirements
  - General
  - Commercial
- Commercial Application Requirements
- Permitted Pits
  - General
  - Commercial
- Reclamation Plants
- Waste Separation
- Commercial Recycling



# COVID-19 Agency Information

## COVID-19 Permit Extensions



### **Notice to Oil and Gas Operators**

- “All current permits, licenses, registrations, and rule exceptions (except Form P-5, see subsection 2.i. for the applicable extension for Form P-5) issued by the Commission’s Oil & Gas Division with termination or expiration dates between March 1, 2020, and September 30, 2020, are hereby extended so that the new termination or expiration date will for all purposes be September 30, 2020.”

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[https://www.rrc.texas.gov/media/57088/notice-to-operators\\_nov-resolution\\_4-3-2020.pdf](https://www.rrc.texas.gov/media/57088/notice-to-operators_nov-resolution_4-3-2020.pdf)

## COVID-19 Waivers



### **Environmental Permits and Support is currently:**

- Issuing Waivers
- Issuing Extensions
- Accepting Digital Reports
  - Hardcopy must be mailed in when availability allows
- Accepting Digital Applications
  - Hardcopy must be mailed in when availability allows
  - Applications must be signed and stamped, as necessary
  - Accepting Digital Applications until December 31, 2020



# Application Requirements

## General Application Requirements



- **General Application Requirements**
  - Environmental Factors
  - Hydro-Geo Review
  - Public Health & Safety Factors
- **Commercial Application Requirements**
  - Closure Cost Estimate (SWR 78)
  - Commercial Notice Requirements



# Hydro-Geo Assessment



## Environmental Factors



### **Important Environmental Factors:**

- Flood Prone Areas
- Wetland Environments
- Shallow Groundwater
- Permeable Soils and/or Bedrock
- Major and Minor Aquifers
- Karsting

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This is not an exhaustive list of Environmental Risk Factors. Other factors may exist on a case-by-case basis.

## Hydro-Geo Review: Floodplain (1 of 2)



In general, facilities are prohibited in the FEMA 100-year floodplain

But...

- Not all areas of the state are mapped
- Three “500-year floods” since 2014
- Valuable coastal resources may be in flood prone areas



For areas where the floodplain is not mapped by FEMA, the RRC may require production of a base flood elevation map. Depending on the frequency of extreme regional rainfall, the operator may be required to satisfy more stringent floodplain requirements.

## Hydro-Geo Review: Floodplain (2 of 2)



Statewide Rule 8 and Chapter 4 prohibit **authorized pits** and **recycling** within the 100-year floodplain

All authority for other permitted facilities comes from the “*No Pollution Clause*”

- Facility boundary should be at least 150 feet from the 100-year floodplain
- “*No Pollution Clause*” gives considerable latitude for regulation

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The term “100-year flood plain” is somewhat misleading and does not mean that the area will flood every 100 years. The term means that there is a 1% chance the area will flood each year. The “500-year flood plain” is the area with a 0.2% chance of flood every year.

A facility located just outside the 100-year flood plain may still have a 0.99% chance of experiencing a flood.

## Hydro-Geo Review: Wetlands



Wetland conservation is mandated at the Federal and State level

Jurisdiction is decided by the US Army Corps of Engineers. If jurisdiction is claimed:

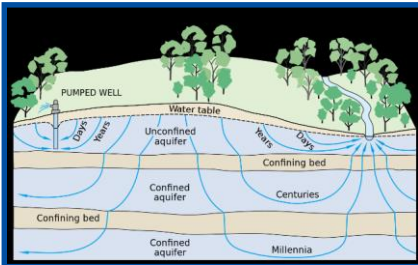
- Facility boundaries must be at least 150 feet from a designated wetland
- Possible to restore a wetland habitat to offset wetland destruction
- May involve other Federal and State agencies



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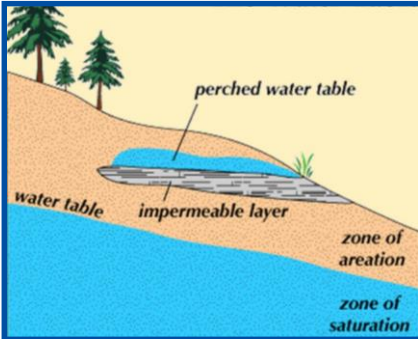
A jurisdictional determination letter from the US Corp **will be** required for application approval.

# Hydro-Geo Review: Groundwater



Local groundwater elevation is impacted by:

- Soil types and geology
- Precipitation and evaporation
- Local and regional groundwater use



Groundwater within 100 feet of the surface considers “shallow”:

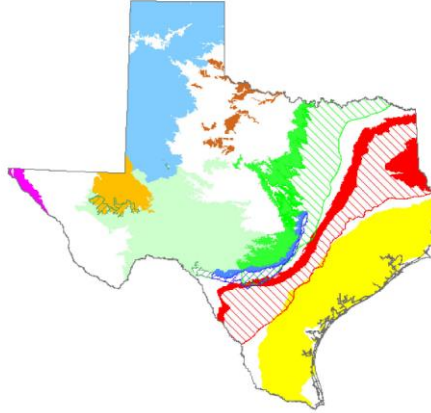
- Determined by groundwater investigation and borings
- Groundwater monitoring wells may be required
- Unconfined shallow groundwater may be cause for application denial

# Hydro-Geo Review: Aquifers



## MAJOR AQUIFERS OF TEXAS

- LEGEND
- PECOS VALLEY
  - SEYMOUR
  - GULF COAST
  - CARRIZO - WILCOX (OUTCROP)
  - MURECO - MESILLA BOLSONS
  - OGALLALA
  - EDWARDS - TRINITY PLATEAU (OUTCROP)
  - EDWARDS - TRINITY PLATEAU (SUBCROP)
  - EDWARDS #1Z (OUTCROP)
  - EDWARDS #1Z (SUBCROP)
  - TRINITY (OUTCROP)
  - TRINITY (SUBCROP)



SOURCE: TEXAS WATER DEVELOPMENT BOARD

## Hydro-Geo Review: Soils and Geology



Underlying soils and geology are important factors in determining risk

**Ideal** soil and geologic conditions:

- Stable soils
- Moderately to slowly permeable soils
- Continuous fat clay layer(s) confining groundwater
- If soils are thin, the bedrock should be low permeability and stable
- No local or regional karsting



## Hydro-Geo Review: Karsting (1 of 2)



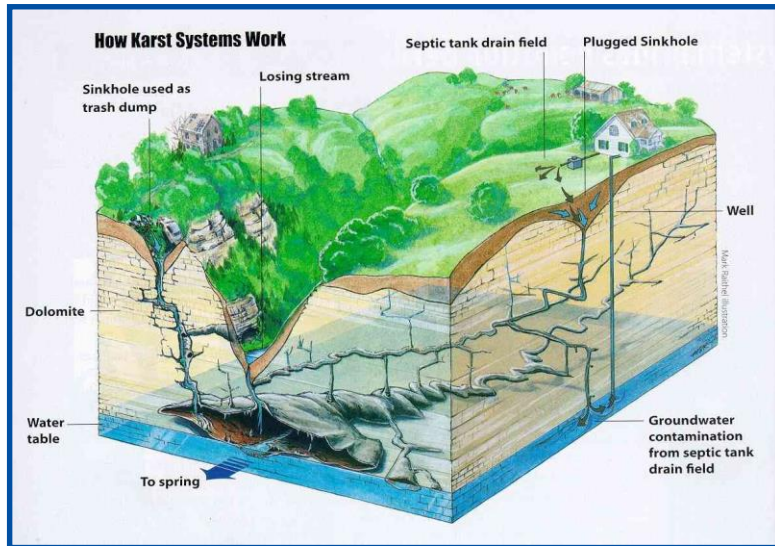
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The Google Map image shows regions where surface karsting is present in Texas. This does not include regions where karsting exists in the subsurface.

Note that karst environments are prevalent in areas of economic value, such as the Permian Basin.



## Hydro-Geo Review: Karsting (2 of 2)



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The diagram shows an idealized karst system.

Karst systems often form conduits that allow quick surface water communication with groundwater. For this reason, a local groundwater table within a karst system can be deeper than 100 feet from the surface, but the pollution risk may still be high. Groundwater tends to flow quickly through karst systems, so groundwater monitoring wells may also be rendered ineffective.

## Public Health & Safety Factors



Sensitive Receptors are areas of risk where the occupants are more susceptible exposure to pollutants

- Hospitals
- Schools
- Water Wells
- Residential Areas
- More

All facility boundaries must be at least 500 feet from all sensitive receptors

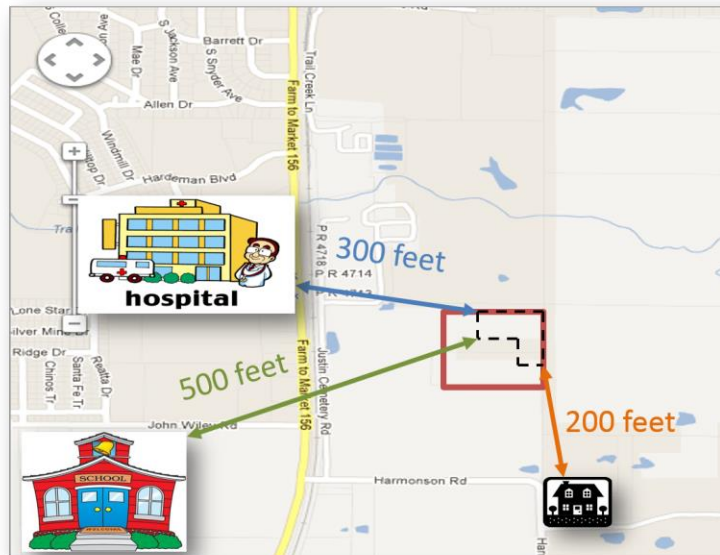
# Sensitive Receptors (1 of 2)



## Sensitive Receptors



## Sensitive Receptors (2 of 2)



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Applications for commercial facilities must identify the distance from the facility's outermost perimeter boundary to water wells, residences, schools, churches, or hospitals that are within 500 feet of the boundary.



# **Commercial Application Requirements**

## Commercial Application Requirements



- General Application Requirements
  - Environmental Factors
  - Hydro-Geo Review
  - Public Health & Safety Factors
- **Commercial Application Requirements**
  - Closure Cost Estimate (SWR 78)
  - Commercial Notice Requirements



# Closure Cost Estimates

## Closure Cost Estimates



- What is a Closure Cost Estimate (CCE)?
- When is a CCE Required?
- Major CCE Components
- Assumptions
- Filing Financial Security





### What is a Closure Cost Estimate (CCE)?

- A CCE is a “*written estimate approved by the Commission or its delegate as being equal to or greater than the maximum amount necessary to close the commercial facility*” (see Statewide Rule 78 (I)(4)(A))\*
- Requirements are found in Statewide Rule 78
- Financial Security (FS) required for commercial facilities is separate from FS filed for wells\*\*
- Provides available funds for the RRC to clean-up a facility, if necessary

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\*Technical Permitting reserves the right to revise this amount, as necessary

\*\*Separate from FS that covers producing/injecting wells.

Statewide Rule 78 defines Commercial Facility as:

A facility whose owner or operator receives compensation from others for the storage, reclamation, treatment, or disposal of oil field fluids or oil and gas wastes that are wholly or partially trucked or hauled to the facility and whose primary business purpose is to provide these services for compensation if:

- the facility is permitted under §3.8 of this title (related to Water Protection);
- the facility is permitted under §3.57 of this title (related to Reclaiming Tank Bottoms, Other Hydrocarbon Wastes, and Other Waste Materials);
- the facility is permitted under §3.9 of this title (related to Disposal Wells) and a collecting pit permitted under §3.8 is located at the facility; or
- the facility is permitted under §3.46 of this title (related to Fluid Injection into Productive Reservoirs) and a collecting pit permitted under §3.8 is located at the facility.



### When is a CCE Required?

- Required for Commercial Facilities
- The amount of financial security to be maintained throughout the duration of the permit is determined by the CCE
- New Applications
- Renewal Applications\*
- Transfer Application\*\*
- Major Amendments\*\*\*

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\*All renewal applications for commercial facilities will require a CCE be provided in the renewal application. If a renewal application has been pending for longer than five (5) years, a new CCE may be required prior to a renewed permit being issued.

\*\*If a new CCE has not been provided in over five (5) years for a facility where the permit is being transferred, a new CCE must be provided.

\*\*\*The requirement to provide a new CCE for amendment applications will be determined on a case by case basis. It is recommended that you contact Technical Permitting prior to submitting an amendment application to determine if a new CCE will be required. If the amendment will increase the CCE amount by greater than 10% a new CCE will be required. Prior to any modification of this facility that would require increased financial security, an updated closure cost estimate must be submitted to Technical Permitting in Austin, and any additional financial security must be filed with and approved by the RRC prior to making that modification.

## CCE: Components



### Major CCE Components:

- Offsite Waste Disposal Costs\*
- Waste Loading & Transportation Costs
- Tank Cleaning/Removal/Disposal\*
- Concrete Cleaning/Removal/Disposal
- Contaminated Soil Removal/Disposal
- Site Restoration
- Soil Sampling /Tilling (if applicable)
- Monitor Well Plugging
- Closure Soil Sampling
- 10 % Oversight & Contingencies

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\*If a facility is found to have NORM contaminated tanks, pits, or equipment, the CCE must provide for decontamination of all affected components, as well as the transportation and authorized disposal of all associated wastes including but not limited to contaminated tank bottoms and wash water.

Closure Cost Estimate Guidance (<http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/commercial-surface-waste-facilities/cce-guidance/>)

## CCE: Assumptions



### Assumptions

- Show all assumptions for estimated costs. Do not provide lump sums
  - Remove all waste from entire facility
  - Transport, disposal, removal, backfill
  - Crew, dozers, welders, cleaning, etc.
- Based on worst case scenario (i.e., all pits/tanks are full)\*
- Restrictive Covenants\*\*
  - Property owner agrees material will be available for closure
  - Must be approved by the RRC

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\*CCEs **cannot** assume that tanks, equipment, or concrete can stay at the facility after closure. The RRC is not a party to any lease agreement; therefore, the CCE must reflect offsite disposal of all wastes and concrete should the RRC be required to close the facility. The CCE must provide for offsite disposal of all wastes, and **cannot** assume that an onsite disposal pit or well is available at the time of closure.

\*\*If the CCE assumes that a restrictive covenant will be provided, no waste may be received at the referenced facility until a restrictive covenant is signed by a representative of the permittee, the landowner, and a representative of the RRC; and the signed document is filed in the Real Property Records Section of the appropriate County, and proof of the filing with the appropriate County is submitted to and approved by the RRC.



### Filing Financial Security

- Technical Permitting will issue a “*CCE Approval*” letter when the application is complete
- P-5 Department processes all financial security documents\*
  - Bond – Form CF-1
  - Letter of Credit – Form CF-2
- A facility may not receive, store, handle, treat or dispose of oil and gas wastes or fluids at the facility until financial security is provided and approved by the RRC\*\*

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\*All questions directly related to filing FS documents should be directed to the P-5 Department (512-463-6772).

\*\*This statement applies to new facilities and transferring permits



### **Filing Financial Security**

- The RRC cannot administratively approve the transfer of a commercial permit until financial security is provided and approved by the RRC
  - The new operator may not operate the facility until a permit has been issued to the new operator
- Financial Security must be maintained until the facility has been closed in accordance with the permit



# **Commercial Notice Requirements**

## Notice Requirements



- Requirements by Rule
- Who Receives Notice
- When to Notice
- Types of Notice
- Notice by Application Type
- Proof of Notice
- General Comments



## Notice Requirements: Rules



### Where are the Notice Requirements in the Rules?

- Statewide Rule 8\*
- Statewide Rule 57\*
- Texas Natural Resources Code Chapter 91
  - Commercial Disposal Facilities
- Chapter 4 Subchapter B\*\*
  - Recycling Facilities

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\* SWR 8 and SWR 57 on or before the date the application is mailed or filed with the Commission

\*\* Chp 4 on or after the application is submitted but must be within 30 days after it is received by the Commission

## Notice Requirements: Where to Send

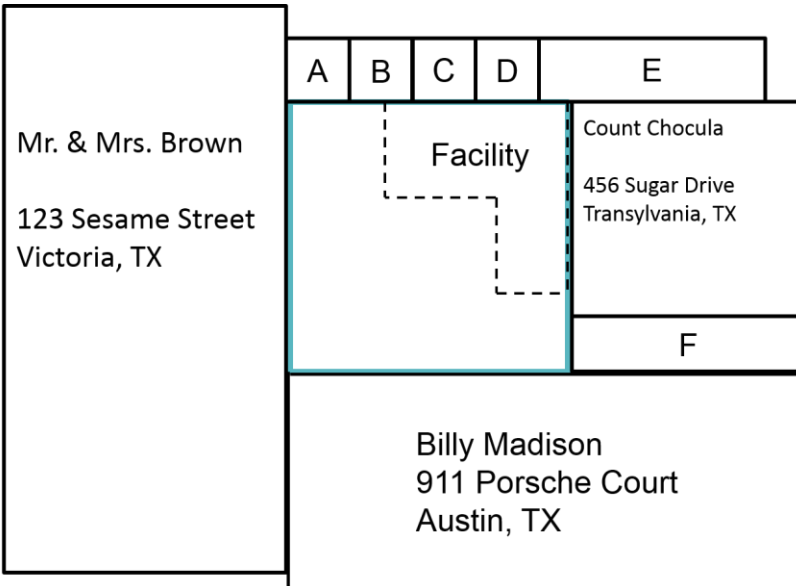
### **Who receives notice depends on the type of application**

- Surface Owner
- Adjacent Landowner
- City Clerk
- County Clerk

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Refer to the Rules for each application type. If a reclamation plant is incorporated with a waste separation facility, then the more robust notice requirement apply.

# Notice Requirements: Adjacent Property



## Notice Requirements: When to Notice



- **When is Notice Required?**

- New Applications
- Renewal Applications
- Major Amendments\*
- Most rules require that notice be provided at the same time or before the application is filed with the Commission
- If the applicant is required to publish notice, the notice must be published at least once each week for two consecutive weeks with the first publication occurring not earlier than the date the application is filed and not later than the 30th day after the date the application is filed with the Commission

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\*The requirement to provide notice for amendments applications will be determined on a case by case basis. It is recommended that you contact Technical Permitting prior to submitting an amendment application to determine what notice (if any) will be required.

Applications that are eligible for renewal of the permit require that proper notice requirements will be the same requirements of a new application.

Transfers of permits do not require notification unless the transfer application includes a significant amendment.

## Notice Requirements: SWR 8



### Rule 8 (Pits, Landspreading, Discharges)

Notice requirements found in 16 TAC §3.8(d)(6)(c)

Surface Owners	Adjacent Surface Owners	Published Notice	City / County Official	Additional Notice
Yes	At Directors discretion  Commercial facilities notice within ¼ mile of facility boundary	At Directors discretion  Commercial facilities publish according to HB480	City Clerk, if in corporate limits	At Directors discretion

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**\*Summary of 16 TAC §3.8(d)(6)(c)**

The applicant shall give notice of the permit application to the following:

1. The surface owners of the tract upon which the pit or activity will be located
2. The City Clerk or appropriate official if within the corporate limits of an incorporated city, town, or village
3. For discharges into a watercourse other than the GOM or a bay, the surface owners of each waterfront tract between the discharge point and ½ mile downstream of the discharge point (except for tracts within corporate limits of an incorporated city, town, or village)

Notice shall consist of a copy of the application together with a statement that any protest to the application should be filed with the commission within 15 days of the date the application is filed.

The applicant shall mail or deliver the required notice to the surface owners and the city clerk or other appropriate official on or before the date the application is mailed or delivered to the commission in Austin

If, in connection with a particular application, the director determines that another class of persons, such as offset operators, adjacent surface owners, or an appropriate river authority, should receive notice of the application, the director may require the applicant to mail or deliver notice to members of that class.

If the director determines that, after diligent efforts, the applicant has been unable to ascertain the name and address of one or more persons required by this subparagraph to be notified, then the director may authorize the applicant to notify such persons by publishing notice of the application. The director shall determine the form of the notice to be published. The notice shall be published once each week for two consecutive weeks by the applicant in a newspaper of general circulation in the county where the pit will be located or the disposal will take place.

#### Summary of HB480 91.116

Published notice must include the following:

1. The date the application was filed
2. A description of the location of the site for which the application was made, including the county in which the site is located, the name of the original survey and abstract number, and the direction and distance from the nearest municipality
3. The name of the owner of the site
4. The name of the applicant
5. The type of fluid or waste to be disposed of at the facility
6. The disposal method proposed
7. The procedure for protesting the application

The notice must be published at least once each week for two consecutive weeks with the first publication occurring not earlier than the date the application is filed and not later than the 30th day after the date on which the application is filed; and in a newspaper of general circulation in the county in which the proposed disposal would occur.

## Notice Requirements: HB 480



### **Commercial Disposal Published Notice (HB 480) must include the following:**

- The date the application was filed
- Description of the site
- The name of the owner of the site
- The name of the applicant
- The type of fluid or waste to be disposed of at the facility
- The disposal method proposed
- The procedure for protesting the application

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### Summary of HB480 91.116

Published notice must include the following:

1. The date the application was filed
2. A description of the location of the site for which the application was made, including the county in which the site is located, the name of the original survey and abstract number, and the direction and distance from the nearest municipality
3. The name of the owner of the site
4. The name of the applicant
5. The type of fluid or waste to be disposed of at the facility
6. The disposal method proposed
7. The procedure for protesting the application

The notice must be published at least once each week for two consecutive weeks with the first publication occurring not earlier than the date the application is filed and not later than the 30th day after the date on which the application is filed; and in a newspaper of general circulation in the county in which the proposed disposal would occur.

## Notice Requirements: Chapter 4B



### Chapter 4 Subchapter B (Recycling)

Notice requirements found in 16 TAC §4.238 §4.254, §4.270, and §4.286

Surface Owners	Adjacent Surface Owners	Published Notice	City / County Official	Additional Notice
Yes	Yes, within ¼ mile of facility boundary	Yes, two consecutive weeks	City Clerk, if in corporate limits	At Directors discretion

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(1) The applicant shall mail or deliver notice to the following persons on or after the date the application is filed with the Commission's headquarters office in Austin:

- (A) the surface owner or owners
- (B) the city clerk or other appropriate official, if within the corporate limits of an incorporated city, town, or village;
- (C) the surface owners of
- (D) any affected person or class of persons that the director determines should receive notice of a particular application.

(2) Personal notice of the permit application shall consist of:

- (A) a copy of the application;
- (B) a statement of the date the applicant filed;
- (C) a statement that a protest to the application should be filed with the Commission within 15 days of the last date of published notice, a statement identifying the publication in which published notice will appear;
- (D) a description of the location of the site
- (E) the name of the owner or owners of the property on which the facility is to be located;
- (F) the name of the applicant;
- (G) the type of fluid or waste to be handled at the facility; and



(H) the recycling method proposed and the proposed end-use of the recycled material.

(3) The applicant shall submit to the Commission proof that personal notice has been given as required.

(4) If the director finds that a person to whom the applicant was required to give notice of an application.

## Notice Requirements: SWR 57



### Reclamation (R9):

Notice requirements found in 16 TAC §3.57(c)

Surface Owners	Adjacent Surface Owners	Published Notice	City / County Official County Clerk	Additional Notice
Yes	No	Yes, one week	Also, City Clerk if in corporate limits	At Directors discretion

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### Summary of 16 TAC §3.57(c)

1. The applicant shall give notice by mailing or delivering a copy of the application to the county clerk of the county where the reclamation plant is to be located, and to the city clerk or other appropriate city official of any city where the reclamation plant is located within the corporate limits of the city, **on or before the date the application is mailed to or filed with the commission.**
2. Notice of the application shall be published once by the applicant in a newspaper of general circulation for the county where the reclamation plant is to be located, in a form approved by the commission. Publication shall occur **on or before the date the application is mailed to or filed with the commission.**

\*If the facility includes the use of a commercial collecting and/or washout pit, then the applicant must also satisfy the requirements for commercial pits including (but not limited to):

- Notice requirements found in 16 TAC §3.8 (d)(6)(C)
- Landowner Notice is required
- Offset Landowner Notice is required to surface owners of tracts adjoining the tract on which the proposed facility will be located
- If the pit/facility will be located within the corporate limits of an incorporated city, town, or village, the applicant must also give notice to the city clerk or other appropriate official

## Notice Requirements: Proof of Notice



### Providing Proof of Notice:

- Must include a copy of the notification letter(s) provided to surface owner/offset landowner(s)
- Certified mail is recommended\*
- If published notice is required:
  - Tear sheets of the notice are required. Scans of print, clippings from the newspaper and drafts of the notice are not acceptable
  - Publisher's affidavit is required

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\*Certified mail can be used as a form of providing proof of notice to the RRC for offset landowner notice. If the certified mail receipt shows that the mail has not or cannot be delivered to an affected party, the applicant may be responsible for providing additional notice to such affected parties.

Proof of publication of the notice shall consist tear sheets of the published notice. Acceptable "tear sheets" include the full page from the newspaper in which the notice appeared (photocopies or clippings are not acceptable) or "digital tear sheets" provided by the newspaper which show the full page layout.

## Notice Requirements: General (1 of 2)



### General Comments:

- Adjacent landowners must be notified for any **commercial** environmental permit application, excluding On-Lease Commercial Solid Oil and Gas Waste Recycling (Division 2) and Reclamation permits\*
- If you are providing a telephone number, be sure to provide the CORRECT phone number (512-463-3840). The fax number is not acceptable
- Landowner Notice is not required if the facility will be located on land owned by the applicant

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\*Only applicable to Reclamation Facilities without associated pits

## Notice Requirements: General (2 of 2)



### General Comments:

- Failure to publish notice for a commercial facility application in accordance with the applicable rules will result in the application being returned
- Ensuring that proper notice is provided is within the applicant's best interest. Failure to provide proper notice may result in an application being returned or cancelation of a permit after issuance if it is found that proper notice was not provided (refer to the specific rules)

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Refer to the table for requirements and feel free to contact Technical Permitting in Austin if you have questions.

## Questions?



Tariq Ali  
[tariq.ali@rrc.texas.gov](mailto:tariq.ali@rrc.texas.gov)  
512-463-6833

Environmental Permits & Support  
512-463-3840

## Topics for Discussion



- Commercial Pits
  - Definitions
  - Types
  - Form H-11
- Reclamation Plants
  - Waste Types
  - Methods
  - Applications, Renewals and Transfers
- Waste Separation Facilities
- Questions

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Authorized pits must notify the district office.

Non-commercial fluid recycling pits (NCFR) must be registered with the District Office, 8(d)(4)(G) Additional requirements for NCFR pits.

Not authorized pits that are not authorized by SWR 8 require a Form H-11 and a permit issued before use:

Pits must be:

- Sufficiently large and have adequate freeboard (minimum of two feet at all times) for precipitation;
- Designed to prevent stormwater from entering the pit; constructed with dikes that are structurally sound and do not seep;
- Lined with a liner that has a hydraulic conductivity  $1.0 \times 10^{-7}$  cm/s or less.

Monitoring Procedures:

Pits must be:

- Emptied and inspected at least annually, or
- Have a double liner and leak detection system that is monitored at least monthly.
- Records of monitoring must be kept to demonstrate compliance.

Operator must provide written notification prior to construction or prior to use of an existing pit for non-commercial fluid recycling, including:

- Location of the pit with lease name and number or drilling permit number, and latitude and longitude;
- Dimensions of the pit and maximum capacity of the pit; or
- A signed statement that the operator has permission from the surface owner for construction and use of the pit.





## Permitted Pits

## General Definition of a Pit



A pit is a structure used for storage, processing, or disposal of O&G waste with the following:

- An open top
- A volume greater than 500 gal
- An underside that cannot be visually inspected

Technical Permitting may also classify a large or partially/fully buried AST as a pit

## Pit Application: Form H-11 (1 of 3)



- Operator Information (Boxes 1, 2, and 5)
  - Operator Name, Operator Number, and Address
  - Must have an active Organization Report (Form P-5)
- Location Information (Boxes 2, 4, 6-9, and 11)
  - RRC District and County of pit location
  - Lease Name and Number (if applicable)
  - Section, Block, Survey, and Abstract of pit location
  - Distance and direction from nearest town
  - Name and address of Surface Owner

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The Form H-11 must be filled out completely and include all required attachments.

If a pit permit was issued previously and not all required diagrams have been submitted the operator will be required to provide “as built” diagrams to complete the application

## Pit Application: Form H-11 (2 of 3)



- Pit Information (Boxes 10 and 12-20)
  - Above / Below grade and liner information
  - Pits that hold waste above grade require diagrams stamped by a P.E.
  - Commercial / Non-Commercial
  - Pit Type (Washout, Collecting, etc.)
  - Pit Use, Wastes to be held, Chloride concentration of waste
  - Surrounding land use
  - Berm / Dike information
  - Operational capacity and dimensions (maximum length, width, depth below grade)
  - Waste transportation method to pit

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The Form H-11 must be filled out completely and include all required attachments.

If a pit permit was issued previously and not all required diagrams have been submitted the operator will be required to provide “as built” diagrams to complete the application

## Pit Application: Form H-11 (3 of 3)



- Environmental Information (Boxes 21 and 22)
  - Distance and depth of nearest water well
  - Depth to shallowest fresh water and information source
- All attachments from second page of Form H-11 must be submitted

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The Form H-11 must be filled out completely and include all required attachments.

If a pit permit was issued previously and not all required diagrams have been submitted the operator will be required to provide “as built” diagrams to complete the application

## General Pit Requirements (1 of 3)



### Liner System Requirements

- All pits should have a durable synthetic liner\*
- Commercial Disposal Pits, Brine Pits and other large-scale liquid waste storage pits must have a dual synthetic liner with a leak detection system (LDS)
  - Must submit Action Leakage Rate (ALR) calculations with the application
  - If waste will be contained above-grade, a slope-stability analysis also must be submitted
  - All diagrams for the design of the pits must be sealed and stamped a PE licensed in the State of Texas.

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\*All pits should have a durable synthetic liner with a hydraulic conductivity no greater than  $1.0 \times 10^{-7}$  cm/s.

\*Concrete is considered a synthetic liner and should be steel reinforced and at least 6 inches thick

Commercial Disposal Pits, Brine Pits and other large-scale liquid waste storage pits must have a dual synthetic liner with a leak detection system and must submit Action Leakage Rate (ALR) calculations with their application.

## General Pit Requirements (2 of 3)



### Berm Requirements

- Each berm must consist of a slope no steeper than a three-to-one (horizontal to vertical) ratio on both sides, unless constructed of concrete or equivalent material. Berms must meet compaction requirements\*
- Must be designed to divert non-contact storm water and contain contact stormwater

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\*Berms or containment structures must be constructed around all pits and must be constructed of material and compacted to meet or exceed 95% standard proctor (ASTM D698) or 90-92% modified proctor (ASTM D1557) density or have a hydraulic conductivity no greater than  $1.0 \times 10^{-7}$  cm/s. Each berm must consist of a slope no steeper than a three-to-one (horizontal to vertical) ratio on both sides unless constructed of concrete or equivalent material. These structures must be designed to divert non-contact storm water around the pit and contain and isolate waste and storm water within the waste management units.

## General Pit Requirements (3 of 3)



- At least two (2) feet of freeboard must be maintained between the fluid level of the pit and the top of the pit berms
- If the pit does not have a dual liner and LDS then an annual inspection is required\*
- If the pit does have a dual liner and LDS then the system must be monitored regularly \*\*
- Closure of the pit. Requirements depend on pit type

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\*A record of each inspection and photographs of the interior of the pit must be maintained for the life of the pit by the permittee and made available upon request of the RRC. The appropriate RRC District Office must be notified by phone or email at least 48 hours before emptying the pit for inspection.

\*\*The leak detection system and the groundwater collection underdrain system must be monitored at least weekly, and the highest volume removed from the leak detection system during the seven-day period must be reported. The permittee must maintain a record of when the liner and the leak detection system are inspected and the results of each inspection. This record must include:

- Date of fluid level measuring
- Fluid level or volume
- Volume of fluid removed
- Electrical conductivity
- Chloride concentration of the fluids removed



## Noncommercial Pits: Types



### **Pits not authorized by SWR 8 that require a permit but are not considered commercial**

- Emergency Saltwater Storage Pits
  - Temporary Storage of Fluids
- Brine Pits
  - Associated with cavern operations
- Skimming Pits
  - Associated with Discharge permits
- Gas Plant Evaporation/Retention Pits
  - Located at Gas Plants

## Commercial Pits: Types



**Pits not authorized by SWR 8 that require a permit and are typically considered commercial:**

- Disposal Pits
  - Permanent burial of wastes
- Collecting Pits
  - Receiving, Staging, Storing of waste
- Washout Pits
  - Includes trenches and sumps
- Off-Lease Fluid Recycling Pits
  - Treated or untreated fluids

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These pits are typically associated with waste separation facilities and reclamation plants but may also be located at commercial SWD's. If the SWD is commercial, then the pit is commercial.

Commercial pits must comply with all notice requirements discussed in previous slides.

## Requirements for Commercial Pits



### **Additional application items:**

- The Closure Cost Estimate should include all tanks and equipment use for processing waste at the facility, including SWD and Washout Facilities
- The facility diagram must show the locations of all pits, tanks, and equipment
- See Slide 37 for additional notice requirements

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If the pit is located at an STF make sure the notice is in accordance with the Rules for the STF.

## Mystery Pits?



Q: What if I have acquired a property with a pit and do not know the status of its permit?



A: Contact Environmental Permitting in Austin at 512-463-3840 or the local District Office to request assistance in identifying permitted or authorized pits.

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### **District**

### **Phone Number**

01 & 02 – San Antonio

(210) 227-1313

03 – Houston

(713) 869-5001

04 – Corpus Christi

(361) 242-3113

05 & 06 – Kilgore

(903) 984-3026

7B – Abilene

(325) 677-3545

7C – San Angelo

(325) 657-7450

08 & 8A – Midland

(432) 684-5591

09 – Wichita Falls

(940) 723-2153

10 – Pampa

(806) 665-1653



# Reclamation Plants

## Reclamation Plants: Waste Types



Reclamation of oil and gas waste:

- Usually tank bottoms
- Other wastes with reclaimable hydrocarbons
- Methods of separation
  - Mechanical
  - Chemical
  - Thermal

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Primary function is to reclaim hydrocarbons from “heavy” wastes and wastes that require active separation.

An example of “other waste” is contaminated soil.

According to 3.57 (6) Applicants must demonstrate they are familiar with commission rules and have the proper facilities to comply with the rules. Proper processing and equipment must be part of the initial application.

## Reclamation Plants: Methods



### **Reclamation Plants must actively reclaim hydrocarbons:**

- Hydrocarbon recovery is the main business model
- Thermal, chemical, or physical separation
- Gravity separation alone is not reclamation
- Liquids are recycled or disposed of at an injection well
- Solids recycled or disposed of at a landfill

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The purpose of reclamation plants is to actively reclaim hydrocarbons for sale. The primary goal should not be waste separation.

## Reclamation Plants: Applications



### **Reclamation Plant application process:**

- Submit a Form R-9
- Attach answers to Instructions to Form R-9 (next slide)
- Notice of the application prior to or at the same time as the filing with the Commission
- Financial security is required
- Reclamation plant permits will be canceled if operations are inactive for more than 12 months.

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The purpose of reclamation plants is to actively reclaim hydrocarbons for sale. The primary goal should not be waste separation.



## Reclamation Plants: Attachments



### Instructions to Form R-9:

- Schematic Diagram showing layout of the proposed or existing facility
  - Location of all treating equipment, pits, etc.
  - Types of tanks and capacity noted
  - Locations of all O&G facilities within 100 yards
  - Proof of public notice (full tear sheet)
- If the reclamation plant includes pits, the diagrams may require a P.E. seal.
- Closure Cost Estimate

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The purpose of reclamation plants is to actively reclaim hydrocarbons for sale. The primary goal should not be waste separation.

## Reclamation Plants: Transfer/Renewal



Reclamation Plants do **NOT** Renew or Transfer:

Change in operator requires submittal of a complete application, including all additional requirements (Diagrams, Notice, Financial Security, etc.)



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RULE §3.57 Reclaiming Tank Bottoms, Other Hydrocarbon Wastes, and Other Waste Materials:

3.57(9) A permit to operate a reclamation plant is not transferable. A new permit must be obtained by the new operator.

\*In discussion with Mgmt. regarding removal of Transfer section.



# Waste Separation

## Waste Separation (1 of 2)



### **Waste is separated into solid and liquid components prior to disposal**

- Mainly physical separation (gravity, centrifuge, etc.)
- Tanks, pits, and/or Reclamation Plants may be used
- Liquids are recycled or disposed of at an injection well
- Solids are recycled or disposed of at a landfill
- Incidental hydrocarbons may be recovered

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Primary function is to separate solids and liquids for disposal and/or re-use.



**Applications for waste separation facilities are permitted as a STF and require:**

- Site and process information
- Facility design
- Monitoring plan and duration of operation
- Site closure plan
- Notification
- Closure Cost Estimate

## Questions?



Will Jones  
[will.jones@rrc.texas.gov](mailto:will.jones@rrc.texas.gov)  
512-463-6832

Environmental Permits & Support  
512-463-3840



# **Commercial Solid and Fluid Recycling**

## Discussion Topics



- Introduction
- Applicable Rules and Recycling Divisions
- Solid Recycling
  - Products and Uses
  - Permit Elements
  - Testing Criteria
- Fluid Recycling
  - Products and Uses
  - Testing Criteria
- Questions

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Environmental Permit Types and Information - Recycling



## Introduction



### **The Railroad Commission of Texas (RRC) encourages responsible recycling of oil and gas waste.**

- Common Waste Types for Recycling:
  - Separated Solids from E&P Activities
  - Produced Formation Water
  - Fracture Flow-Back Water
  - Completion/Workover Fluids  
(Used Drilling Fluids / Used Drilling Muds)

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- Environmental Permit Types and Information – Applicable Rules - Notice to Operators Under the Jurisdiction of the Railroad Commission of Texas (Dec. 2014)
- Environmental Permit Types and Information – Applicable Rules - Memorandum of Understanding between the Railroad Commission of Texas (RRC) and the Texas Commission on Environmental Quality (TCEQ)

## Introduction: STF Permit



### Stationary Treatment Facility (STF)

- All Commercial Solid and Fluid recycling is permitted as a STF except mobile solid recycling (Div 2)
- Generally require a combination of Pits, Tanks, and Equipment



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STF - Umbrella term. The permit is issued when two or more permit types are issued for a single facility/operation.

## Applicable Rules (1 of 2)



- **Chapter 4B** outlines all recycling rules and application items
- Commercial Recycling will require a financial security instrument (**SWR 78**)
- Published Notice should be in accordance with **HB480**
- Other rules may apply if tanks, pits, and other equipment are used for recycling (**SWR 8, SWR 57**)

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Rules specific to recycling:

TAC Title 16, Part 1, Chapter 4, Subchapter B (**Chapter 4B**)

Chapter 4B also details the items to be submitted in the commercial recycling application for each division. Additional items or clarification may be required by Technical Permitting to complete the review.

Rules for tanks, pits, and equipment including landowner notice requirements:

TAC Title 16, Part 1, Chapter 3, Rule §3.8 (**SWR 8**)

Rules for reclamation:

TAC Title 16, Part 1, Chapter 3, Rule §3.8 (**SWR 57**)

Rules for financial security:

TAC Title 16, Part 1, Chapter 3, Rule §3.78 (**SWR 78**)

Published notice requirements:

Texas Natural Resources Code §§ 91.116 and 91.117 (**HB 480**)

Please note that SWR 8 also outlines requirements for published notice that are not applicable to commercial recycling. For commercial recycling facilities, HB480 should always be used for published notice.



### **Rules are separated into divisions based on:**

- Type of oil and gas waste being treated
- Location of the treatment facility
- Duration of the treatment operations

Solid Recycling: Divisions 2, 3 and 4

Fluid Recycling: Divisions 5 and 6



### Chapter 4, Subchapter B Divisions:

- Solid Recycling
  - Div 2: On-Lease (Mobile Recycling: **2-year permit**)
  - Div 3: Off-Lease or Centralized (**2-year permit**)
  - Div 4: Stationary (**5-year permit**)
- Fluid Recycling
  - Div 5: Off-Lease (**2-year permit**)
  - Div 6: Stationary (**5-year permit**)



# Solid Recycling

## Solid Recycling



Solid Recycling physically and chemically stabilizes E&P solids so that they may be reused as **Roadbase** or **Reusable Product**





### **Roadbase**

May be used on:

- Lease roads and well pads
- Private and county roads with proper authorization

### **Reusable Product (Treated Aggregate)**

May be used as:

- Non-load bearing construction fill
- Cement bulking agents
- Landfill capping material
- Berm material at commercial or industrial sites

## Solid Recycling: Permit Elements



### **Solid Recycling Permit Elements:**

- Trial Run
  - 1000 cy to be sampled, analyzed, and approved
  - Demonstrates proof of concept
- Process Control (after Trial Run is approved)
  - Each 800 cy lot must be sampled and analyzed
  - Lots that that fail must be reprocessed or disposed
  - Process changes require another Trial Run
- Final Disposition
  - Roadbase lots that pass may be used or sold
  - Reusable Product requires LOA for each use
  - Products may not be accumulated speculatively



### Roadbase Analytes:

- Wetting and Drying
- Minimum Compressive Strength
- Total Chlorides
- Total Petroleum Hydrocarbons
- pH
- RCRA Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, zinc)
- Benzene

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### PARAMETERS AND LIMITATIONS FOR ROADBASE

Minimum Compressive Strength                      35 psi  
(by ASTM D698, ASTM D1557, TxDOT approved method, or equivalent)

Louisiana Department of Natural Resources (LDNR) Leachate Test Method, 1:4 Solid  
Total Chlorides     $\leq 700.00$  mg/L  
Total Petroleum Hydrocarbons (TPH) 1               $\leq 100.00$  mg/L  
pH    6 – 12.49 standard units (s.u.)  
(EPA Method 9045 or equivalent)

Synthetic Precipitation Leaching Procedure (SPLP) Metals  
(EPA Method 1312/ 6010/ 6020/ 7471A)

Arsenic	$\leq 5.00$ mg/L
Barium	$\leq 100.00$ mg/L
Cadmium	$\leq 1.00$ mg/L
Chromium	$\leq 5.00$ mg/L
Lead	$\leq 5.00$ mg/L
Mercury	$\leq 0.20$ mg/L
Selenium	$\leq 1.00$ mg/L
Silver	$\leq 5.00$ mg/L
Zinc	$\leq 5.00$ mg/L

Benzene  $\leq 0.50$  mg/L  
(SPLP, EPA Method 1312/ 8021/ 8260B)

## Solid Recycling: Reusable Prod. Analytes



### Reusable Product Analytes:

- Moisture Content
- pH
- Electrical Conductivity
- Sodium Adsorption Ratio
- Exchangeable Sodium Percentage
- Total Barium
- Total Petroleum Hydrocarbons
- Chlorides
- RCRA Metals
- Benzene

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### PARAMETERS AND LIMITATIONS FOR REUSABLE PRODUCT

Moisture Content (ASTM D 2216 or equivalent) < 50% (by weight) or zero free moisture

Ph 6.5 – 9 s.u.

(EPA Method 9045 or equivalent)

Electrical Conductivity (EC) 1 < 8.0 mmhos/cm

Sodium Adsorption Ratio (SAR) 2 < 12

Exchangeable Sodium Percentage (ESP) 2 < 15

Total Barium 2 < 100,000 ppm

(Reuse at Commercial Facility)

LDNR Leachate Test Method, 1:4 Solid 2

TPH 2 < 10.0 mg/L

Chlorides 2 < 500 mg/L

Leachable Metals 2

EPA Method SW-846/6010/6020/7000/7470/7471

Arsenic < 0.5 mg/L

Barium < 10.0 mg/L

Cadmium < 0.1 mg/L

Chromium < 0.5 mg/L  
Copper < 0.5 mg/L  
Lead < 0.5 mg/L  
Mercury < 0.02 mg/L  
Molybdenum < 0.5 mg/L  
Nickel < 0.5 mg/L  
Selenium < 0.1 mg/L  
Silver < 0.5 mg/L  
Zinc < 5.0 mg/L

TCLP Benzene

EPA Method SW-846/1311/8021/8260B < 0.50 mg/L



## **Base Oil or Diesel**

Covered under Notice to Operators  
(Dec 2014)

- Solids may be recycled or disposed in an authorized manner
- Resulting refined product (base oil / diesel) is not under RRC jurisdiction

# Solid Recycling Equipment



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# Fluid Recycling



## **Recycled Water**

May be used for downhole purposes only:

- Drilling Fluid
- Frac fluid
- Concrete makeup water
- Other downhole uses

## Fluid Recycling: Analytes

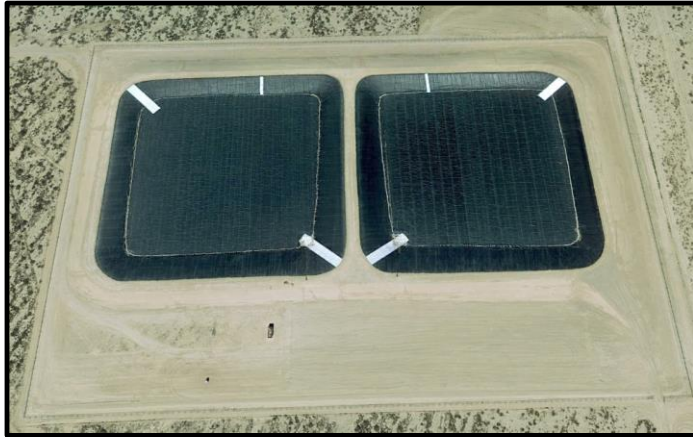


Incoming waste must be tested according to RRC permit conditions (NORM, TOX, etc.)

The recycled fluid does not have any testing criteria that must be met prior to re-use.

The fluids cannot be discharged to the surface or surface water without a separate permit from the Commission

# Fluid Recycling Facility



## Questions?



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