## Waste Characterization

Waste characterization requirements (§4.190) mandate that generators clearly define their waste streams before transport.

They must collect essential data regarding the waste's origin, physical and chemical characteristics, quantity, and the basis for characterization, utilizing the standardized Waste Profile Form (or an equivalent form). Each profile must be linked to a Waste Manifest.

According to §4.102 and the characterization rules outlined in §4.190, generators are responsible for determining whether their waste is hazardous or non-hazardous by using process knowledge or laboratory testing.

### Oil and Gas Waste Types Listed on the Waste Profile

**Type 01: Salt Water** – Brine or formation water co-produced with oil/gas; may contain dissolved solids, salts, and trace hydrocarbons.

**Type 02: Oil Base Mud** – Drilling muds using oil as the continuous phase; considered RCRA-exempt.

**Type 03: Water-Base Mud** – Drilling fluids with water as the base; includes additives like bentonite and polymers.

**Type 04: Completion Fluids** – Used during well completion; may include acids, brine and surfactants.

**Type 05: Production Pit Sludge** – Solids accumulating in lined/unlined pits; can contain hydrocarbons, heavy metals, and residual fluids.

**Type 06: Storage Tank Sludges** – Bottom sludge from production or storage tanks; generally high in hydrocarbons.

**Type 07: Produced Sand/Solids** – Sand and particulates brought to the surface during production; often mixed with residual hydrocarbons

**Type 08: Fresh Water** – Uncontaminated water typically used for drilling or completion, but if reused, it may require profiling.

**Type 09: Rainwater** – Precipitation collected in lined pits or secondary containment; requires testing if suspected of contamination.

**Type 10: Washout Water** – Water used to rinse tanks, equipment, or lines; it may contain oil residues or chemical additives.

**Type 11: Washout Pit Water** – Water collected in pits specifically used for washing trucks, tanks, or equipment.

**Type 12: Gas Plant Waste Solids** – Solids from gas processing plants, potentially including sulfur compounds, catalysts, or glycol residues.

**Type 13: Pipeline Water/Waste** – Fluids removed during pipeline pigging or hydro testing may contain scale, hydrocarbons, or rust.

**Type 14: Commercial Facility Waste** – Waste generated at or delivered to a permitted commercial disposal or treatment facility.

**Type 15: Oil Spill Waste** – Soil, water, and absorbents contaminated by hydrocarbon spills; regulated cleanup is required.

**Type 16: Salvageable Hydrocarbons** – Material recoverable for reuse, such as tank bottoms with marketable oil fractions.

**Type 17: Other (Description Required)** – This is a catch-all category for unique or site-specific waste streams not listed; detailed profiling is required.

## Physical Characteristics

Use field observations or lab reports to support the classification. Consider flowability and phase separation for mixed wastes.

## Classification

Use process knowledge or conduct analytical testing to determine if the waste has hazardous characteristics such as ignitability, corrosivity, reactivity, or toxicity. If the waste is non-hazardous, confirm that it meets the criteria for RCRA-exempt oilfield waste (refer to RCRA exemption guidance). Be sure to document the reasoning for this classification in the Basis of Characterization.

## Chemical Characteristics

Include values for Hydrocarbon content (TPH), pH, Salinity (TDS or Chlorides), VOCs (e.g., BTEX), TOX (total organic halides), H2S (if applicable), NORM (radioactivity, if relevant). Use lab data when available.

## Constituents

Focus on dominant substances (e.g., hydrocarbons, salts, metals). It can be based on site-specific knowledge or testing.

## Basis of Characterization

Choose one or more supporting documents.
Process knowledge (e.g., from operator, well logs, treatment history). This refers to using documented, site-specific information to characterize a waste stream without conducting new laboratory testing. If scientifically justifiable, it is recognized by the RRC and the EPA (under RCRA guidelines) as a valid method.

You may use process knowledge when:

- Routine, consistent operations generate waste.
- You know the materials, additives, and chemicals used.
- You have prior lab data or waste profiles from the same unit or system.
- You understand the operating history of the facility or equipment.
- The waste stream is RCRA-exempt oil and gas waste, and no hazardous indicators are present.
- Analytical results (attach lab report)
- MSDS of known additives
- Historical profiles for similar waste

File attachments should reference the form section or waste stream.

This information is consistent with the RRC Form EP-9 instructions and 16 TAC §4.190- §4.194 and reflects best practices for compliance with the Railroad Commission's waste tracking program.

## References

Title 16 Texas Administrative Code Chapter 4 Overview
https://www.rrc.texas.gov/media/0dsh4wev/chptr-4-overview_webinar_presentation-slides_4-2-2025.pdf
Adopted Rules Title 16 – the Texas Secretary of State

## Resources

Chapter 4 Q&A – The Railroad Commission of Texas
List of E&P Wastes: Exempt and Nonexempt: https://rrc.texas.gov/media/5mxd42x5/appx_c.pdf