



Operation & Maintenance of Dams and Spillways

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Dam Owner per §299.2

- Holds legal possession or ownership;
- Is the fee simple owner;
- Is a sponsoring local organization for an NRCS Watershed dam; or
- Has a lease or easement.

Dam Owner Responsibilities

- Owner shall be responsible for operating and maintaining the dam and spillways in a safe manner regardless if the TCEQ Dam Safety Program makes an inspection.
- Owner shall be responsible for addressing all maintenance and safety concerns identified during any inspection.
- Owner shall ensure that necessary maintenance, repairs, alterations are initiated and completed in a timely manner following any inspection.
- “Owners, not the state, are responsible for the safety of the dam including making any additional dam safety evaluations and repairs.” Spencer Dam Failure Investigation Report

Inspections

- Owner shall inspect the dam and spillways on a regular basis, following significant rainfall events, and during emergency events.
- Owner shall notify TCEQ Dam Safety in writing within 5 working days after becoming aware of any problems or damage that pose a significant threat to the dam.
- Owner shall submit a copy of all engineering inspection reports prepared by the owner's professional engineer to TCEQ Dam Safety for review

Inspection Frequency

- Owner should conduct a walking inspection of the dam at least once per year.
- TCEQ aims to conduct engineering inspections of dams once every 5 years.
- Owner can have engineering inspections done more frequently.

Pre-Storm Inspections

If weather forecasts predict significant rainfall, a pre-storm inspection may be warranted:

- Inspect spillway inlet at outlet, make sure there are no obstructions, debris, beaver dens, etc that would interfere with spillway operation.
- Ensure there are no structural issues (cracks, slides) that would suggest lowering the reservoir before rainfall begins.

Post-Storm Inspection

- Assure that spillways remain unobstructed, remove debris that may have accumulated
- New slides, seepage, sandboils, or changes to existing issues that may have developed because of high water levels at the dam
- New areas of erosion, or advancement of any existing headcutting erosion.

Operation & Maintenance Plans

The owners of **all** dams shall develop and implement a written operation and maintenance plan, even if TCEQ Dam Safety has not recently performed an inspection. The plan should include

- The proposed schedule for engineering inspections;
- Any restrictions imposed by the engineer's design;
- A list of maintenance items and the proposed schedule for each.

Operation & Maintenance Plans

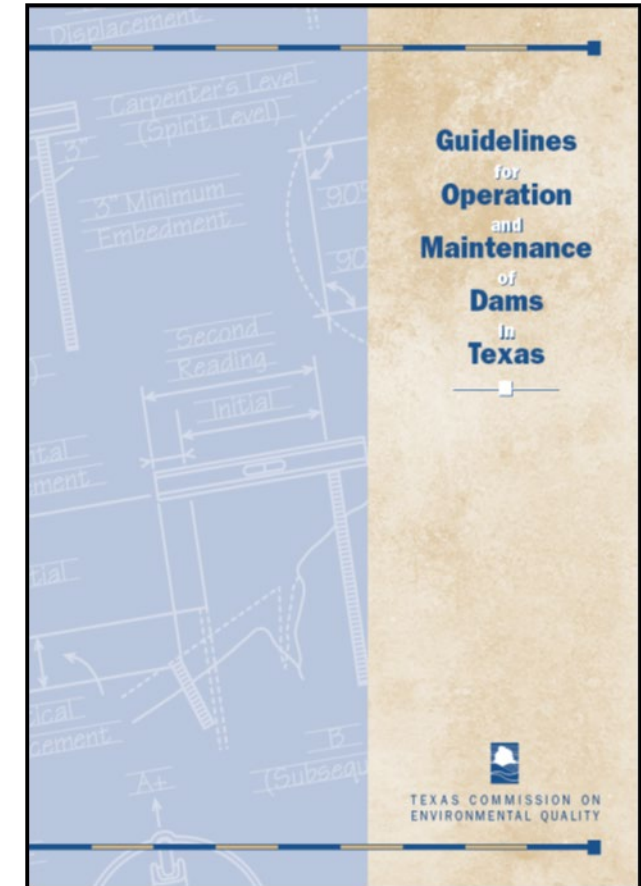
A good Maintenance Plan will:

- Protect dam against deterioration and will prolong the dam's life;
- Protect the owner from liability, and protect downstream life and property;
- Will have a smaller cost than repairs, damage to property, or loss of life.

Operation & Maintenance Plans

- TCEQ Guidance Document
Can be downloaded from the TCEQ
Dam Safety Webpage.

<https://www.tceq.texas.gov/compliance/investigation/damsafetyprog.html>



Operation & Maintenance Plans

Recordkeeping – Owners should have:

- Inspection reports and correspondence;
- Record of all flooding events, including dates, max. water level, whether auxiliary spillway engaged and depth;
- Complete as-built plans including any modifications;
- All geotechnical or hydrologic/hydraulic studies;
- Any instrumentation readings.

Records should be transferred to new owner if dam is sold.

Aging of Dams

- In Texas, over 91% of the Inventory size dams are 25 years old or older.
- Almost half are 50 years old or older

Aging of Dams

Aging can contribute to incidents or failures through:

- Piping/seepage
- Concrete deterioration
- Settlement
- Gate deterioration
- Geotextile deterioration

Dam Failures

Dam Failures from 1975 – 2001:

- Nearly 70% due to overtopping
- 15% from seepage or piping

Dam Failures Resulting in Fatalities

- 86% of the fatalities resulted from dams between 20 and 49 feet in height.
- 47% of the fatalities resulted from dams with drainage area less than 2 sq. mi.
- 75% of the fatalities resulted from dams with drainage area less than 10 sq. mi. (this would include 90% of Texas watershed dams and 80% of all dams)
- 7 dams had less than 300 ac-ft of water released during the failure.

Liability

Who is responsible for safety and liability?

- Owners of dams
- Those entities responsible for O&M at the dams

Basic Legal Premise:

- Lawsuits will claim extensive liability on the part of everyone involved in the dam failure incident.
- We live in a litigious society – there will likely be an attempt to sue any/all of the following:
 - Owners
 - Operators
 - Engineers
 - Designers
 - Contractors
 - Inspectors
 - Employees
 - Regulators

Basic Legal Premise

- Overriding purpose of modern tort law is to compensate innocent victims for injuries caused by wrongdoers.
- Perception can mean more than facts.

TCEQ Dam Safety Enforcement

- TCEQ will not require the dam owner to breach the dam or drain the lake simply because they do not meet all of the requirements.
- TCEQ will execute our enforcement powers if the dam presents an **unacceptable threat to public safety** and dam owner is making no attempt to alleviate the threat - Failure to Act.

Avoiding TCEQ Enforcement

- Best way to avoid enforcement is being proactive & not reactive
- Proactive means **routine O&M** so owners don't find themselves 'too far gone' & unable to afford 'rescuing' their dam due to years of neglect

Examples...













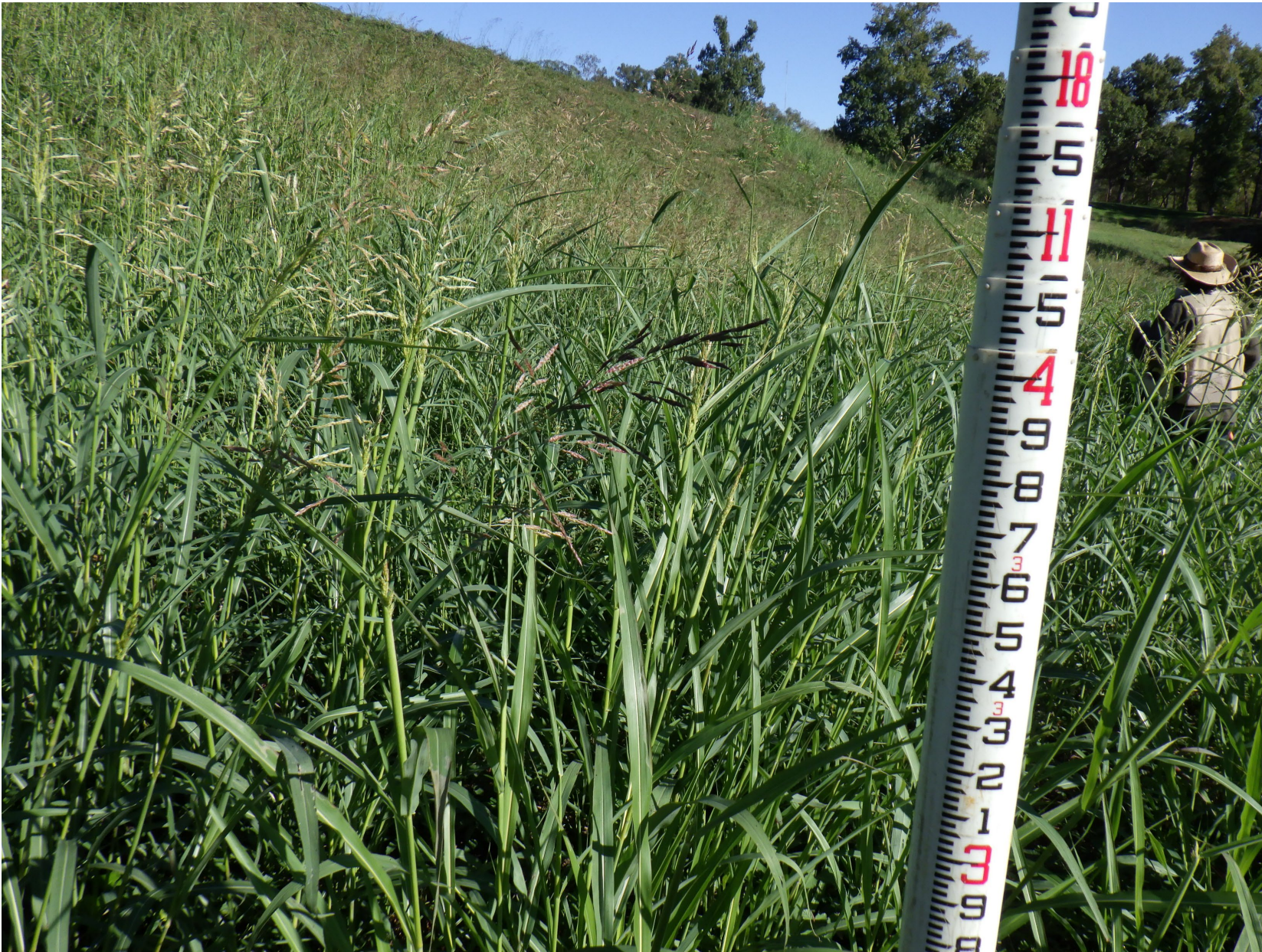






































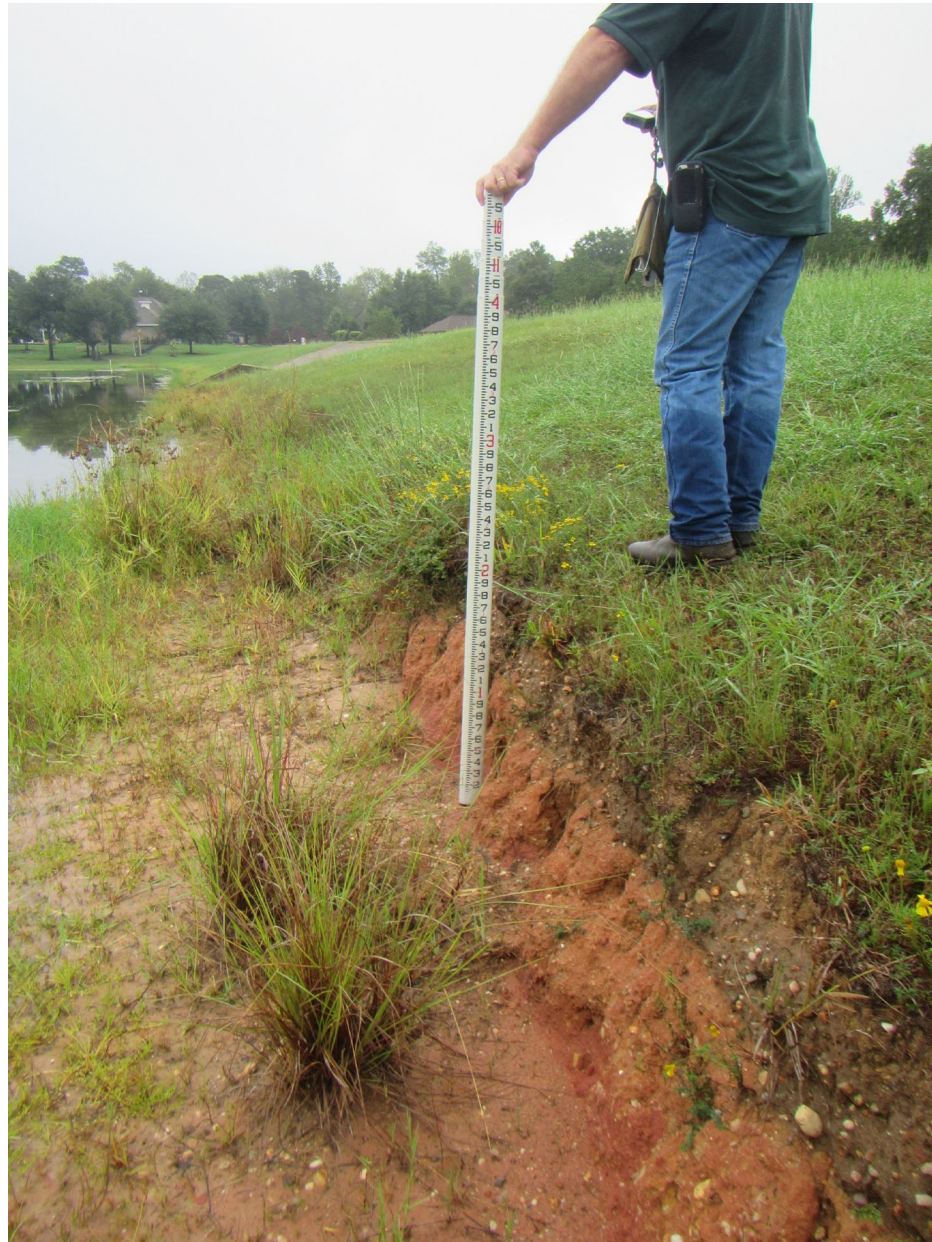












































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DAM SAFETY PROGRAM

Texas Commission on Environmental Quality

Questions?

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