Texas Commission on Environmental Quality

Updating the Design Criteria for Domestic Wastewater Treatment System

(30 TAC Chapter 217)

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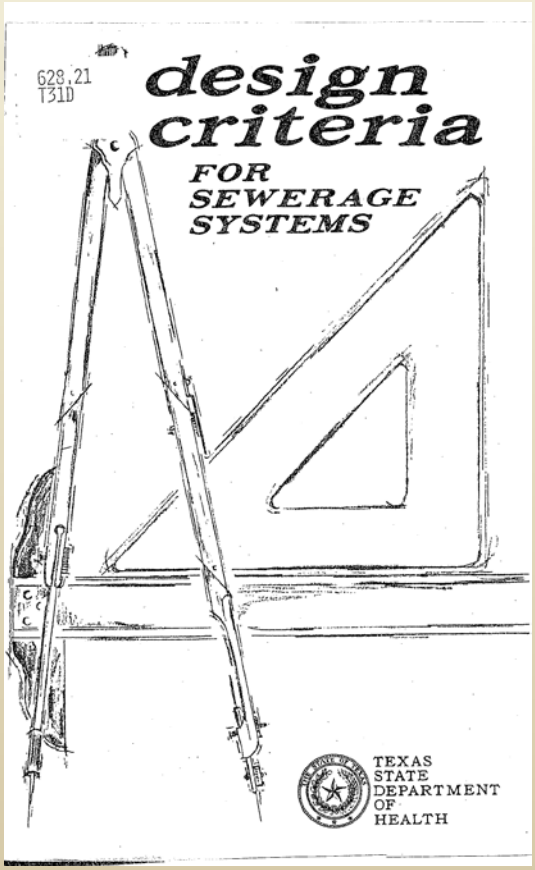
History of the Wastewater Treatment Design Criteria in Texas



History of the Wastewater Treatment Design Criteria in Texas

- The first consolidated design criteria was adopted by Texas State Department of Health on 9/18/1950.
- This document was revised on 9/11/1961, 9/18/1968, 9/13/1970, 9/1/1974, 6/1/1981, 4/20/1990, 8/28/2008

SUBCHAPTER A ADMINISTRATIVE REQUIREMENTS

Previous Design Criteria

- Section to 217.1 (Applicability)
- Adding a section to clarify the grandfathering clause. Stating that the existing wastewater treatment system is subject to design requirements at the time of approval.

Definitions

- Maintenance
- Rehab
- Surcharge
- Auxiliary pump
- Gravity relief sewer
- Equalization basin
- Design Flow
- Grinder pump

SUBCHAPTER B
TREATMENT FACILITY DESIGN REQUIREMENTS

Table B.1. - Design Organic Loadings and Flows for a New Facility

Source	Remarks	Daily Wastewater Flow (gallons/person)	Wastewater Strength (mg/l BOD_5)
Municipality	Residential	75-100	200-350
Subdivision	Residential	75-100	200-350
Trailer Park (Transient)	2½ Persons per Trailer	50-60	250-300
Mobile Home Park	3 Persons per Trailer	50-75	300
School	Cafeteria & Showers Cafeteria/No Showers	20 15	300 300
Recreational Parks	Overnight User Day User	30 5	200 100
Office Building or Factory	A facility must be designed for the largest shift	20	300
Hotel/Motel	Per Bed	50-75	300
Restaurant	Per Meal	7-10	1000*
Restaurant with bar or cocktail lounge	Per Meal	9-12	1000*
Hospital	Per Bed	200	300
Nursing Home	Per Bed	75-100	300
Alternative Collection Systems (Subchapter D)	Per Capita	75	N/A
*Based on a restaurant with a grease trap			

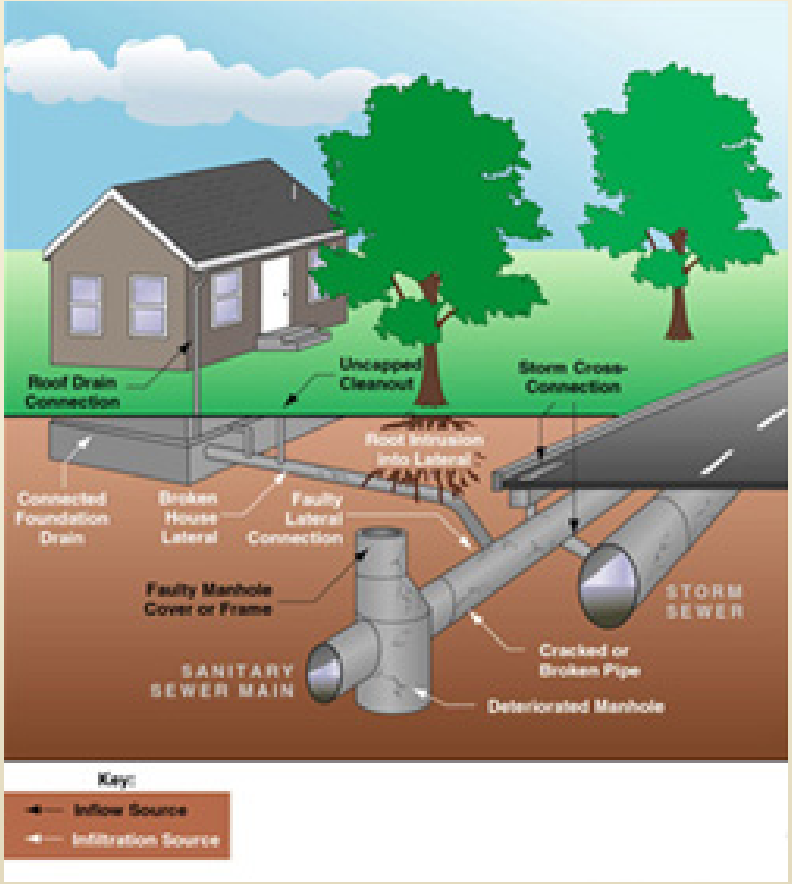
Changes to Table B.1.

Add a column to the Table for NH_3-N

Look at revising the BOD_5 strength upward.

Clarifications

- Clarify the differences between the permitted flow from max 30 day average and annual average.
- Clarify the minimum information needed to rerate a wastewater treatment plant.
- Emergency power requirements in 217.36 and 217.63 are consistent.
- Flow measurement weirs for small plants.



SUBCHAPTER C CONVENTIONAL COLLECTION SYSTEMS

Pipe Design

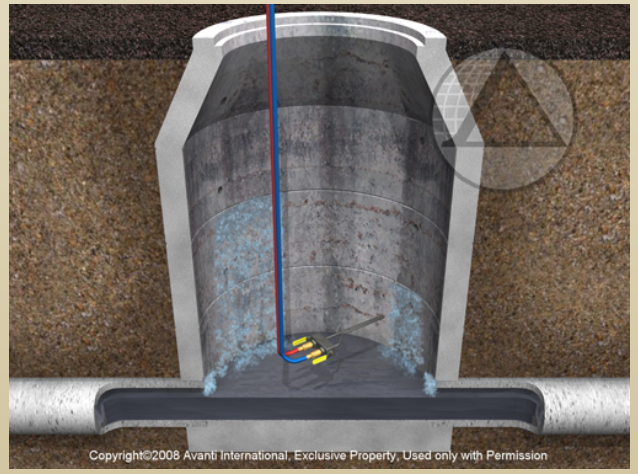
- Clarify intent related to gaskets on pressure rated pipe when 9 foot separation from water lines cannot be provided or add a requirement that gaskets operate properly at atmospheric pressure
- Correct 217.53(k)(4) to refer to the structural calculations in 217.53(k)(2)
  - Currently refers to 217.53(k)(3), which provides the pipe stiffness equation required in 217.53(k)(2)

Testing Requirements for Gravity Pipes

- Consider reducing the maximum allowable leakage in the infiltration/exfiltration test
  - Currently 50 gallons per inch diameter per mile of pipe per day

Manholes

- Clarify where bolted and gasketed manholes are required
- Add a requirement for engineer to specify an appropriate national reference standard for sealing manhole covers



Testing Requirements for Manholes

- Allow ASTM testing requirements for manholes
- Correct units in 217.58(b)(2)(d), related to tightening external clamps on the vacuum testing cover

Lift Stations

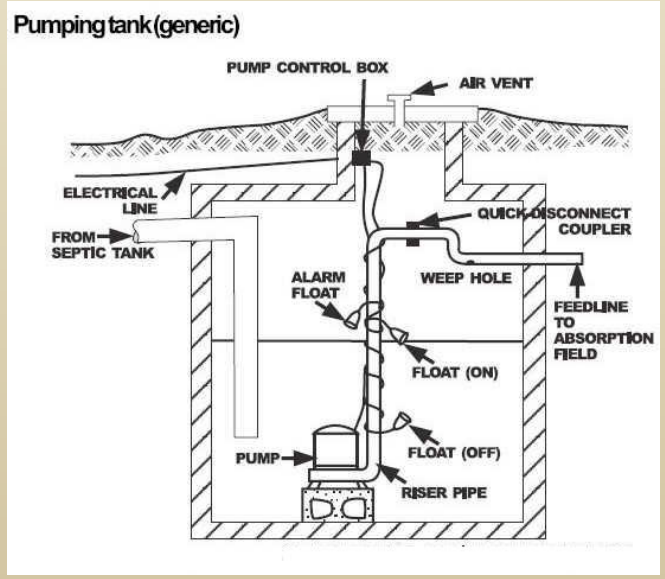
- Clarify allowable fence types and set 8 feet as the minimum fence height
- Clarify intent for above ground valves
  - Concrete pad adjacent to wet well O.K. (fenced)
  - Locked/chained in the fence
  - Tamper-resistant structure allowable
- Consider swing-type valves that do not have external levers

Lift Stations

- Add backup high water float requirement for wet well level detection
- Other clarifications
  - Control pad must be large enough for personnel to do electrical work safely
  - Ladders and access hatches must also meet OSHA
  - Non-corrosive vents for all lift stations
  - Explosion-proof equipment for all lift stations
  - Dry well pumps must discharge to wet well

Lift Stations

- Other clarifications (cont.)
  - Hoisting equipment and access
  - Separate pipes for sump pumps
  - Expected peak flow for firm pumping capacity



Emergency Provisions for Lift Stations

- Clarify that generators or auxiliary pumps can may be used
- Add minimum fuel tank size requirements based on hours of fuel
- Add a section for gravity relief sewers
- Clarify quick connection design and generator electric loading design

Force Mains

- Add fatigue life calculation requirements
- Consider basing minimum velocities on the smallest pump operating at full speed
  - Consider additional flushing requirement for variable speed pumps that normally operate below minimum velocities
- Clarify that air release valves must be noncorrosive

Reclaimed Water

- Remove requirement that electrical equipment be operable during a 100 year flood event
  - Consider requirement that equipment be operable after a 100 year flood event
- Consider swing-type valves that do not have external levers

SUBCHAPTER E
PRELIMINARY TREATMENT UNITS

Clarifications

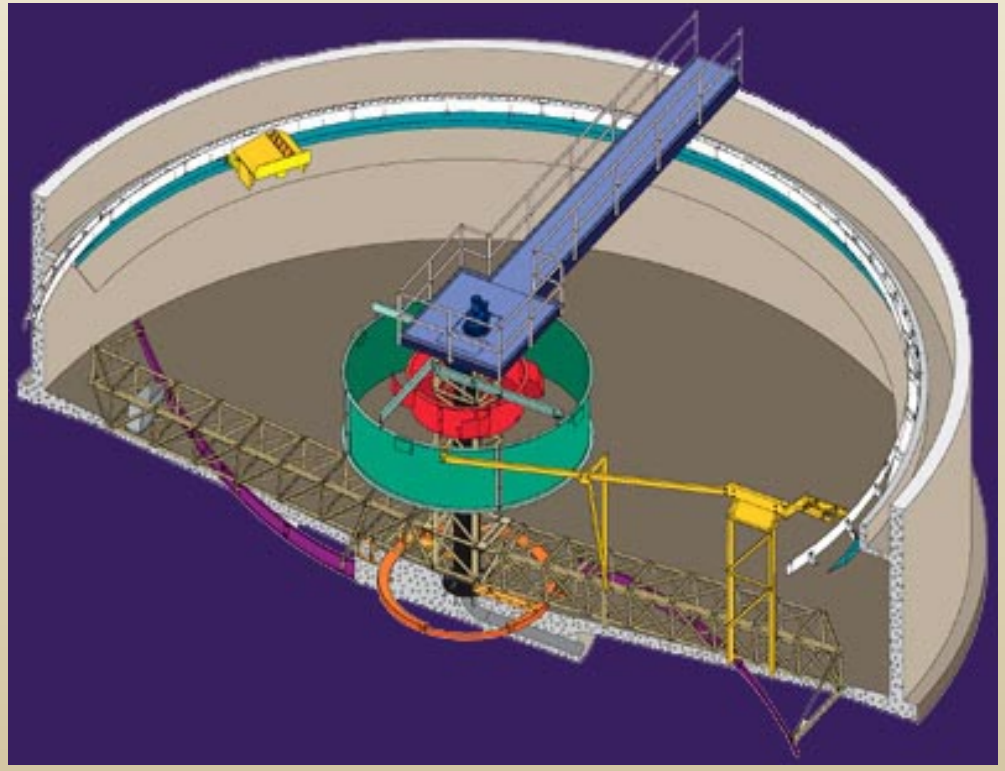
- Clarify the requirements the on EQ basin
- Correct the spelling on Coarse Screen.

Aerial view of a typical wastewater treatment plant

SUBCHAPTER F
ACTIVATED SLUDGE SYSTEMS

Clarifier

- Clarify and update the flow velocity in the sludge pipe.



Membrane Bioreactor Systems

- Clarify and update the nutrient removal requirements.

Aeration Sizing Equipment

- Clarify the oxygen requirement for high NH_3-N plant.
- Corrected the units in equation F2
- Add a table showing the max allowed % transfer efficiency a varying depth for fine and coarse bubble
- Other Clarifications

Solids Management

- Add a new section for Airlift Pump (217.159)

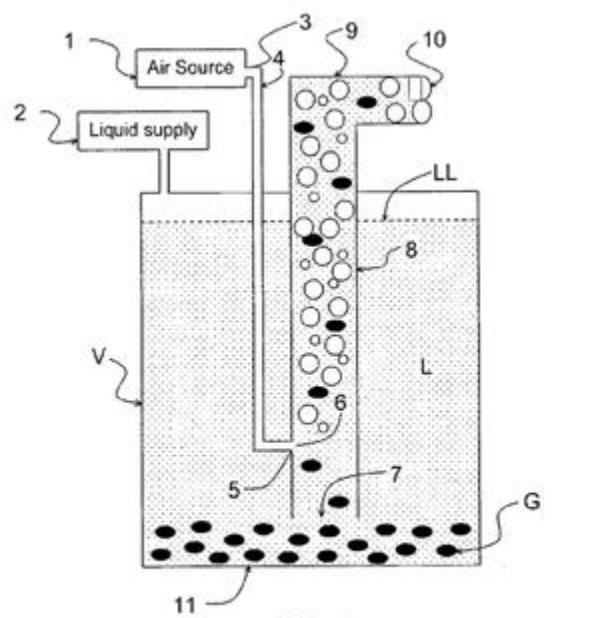


FIG. 1
US 2007/0166171 A1

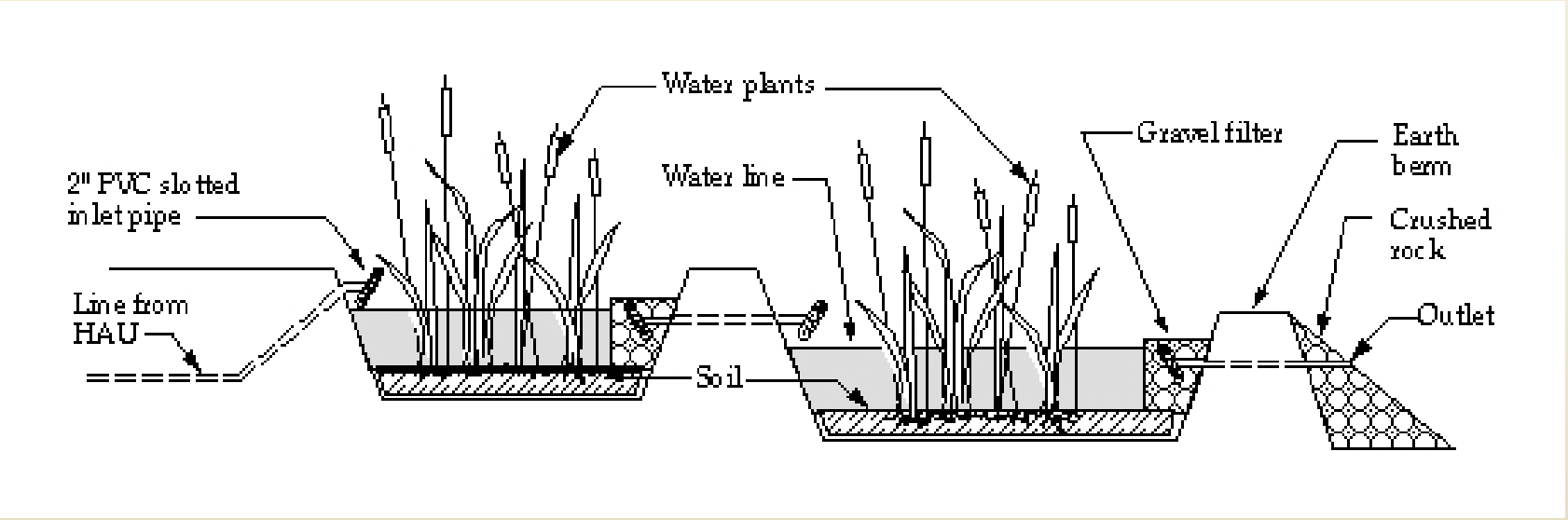
Advanced Nutrient Removal

- Rewrite this section requiring the engineering to submit all calculation on nutrient removal.

SUBCHAPTER G
FIXED FILM AND FILTRATION UNITS

Cloth Filters

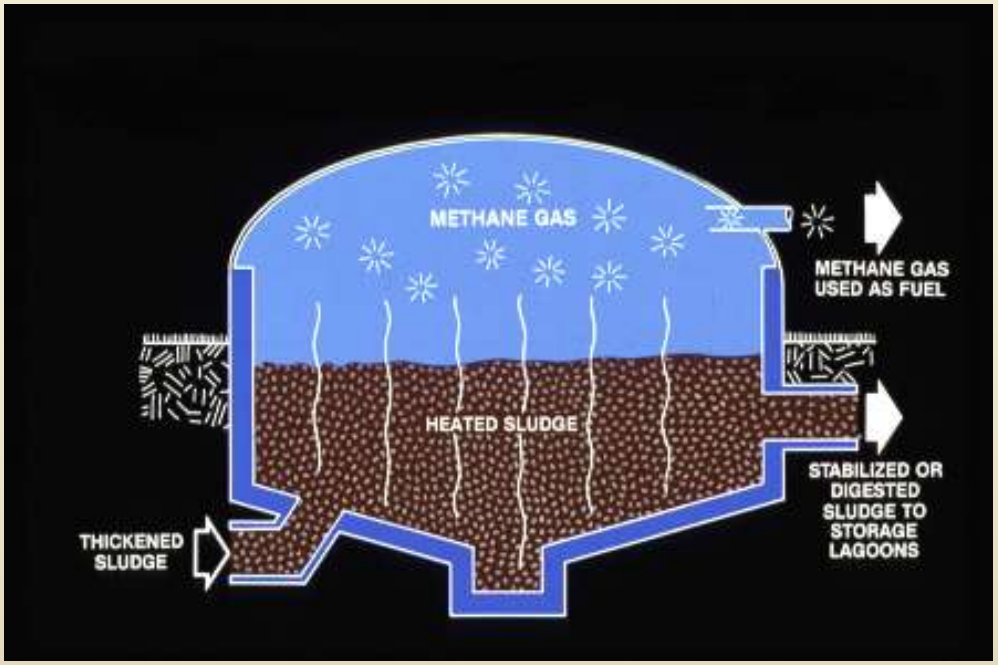
- Add requirements for cloth filters and other similar filters



SUBCHAPTER H NATURAL TREATMENT FACILITIES

Natural Systems

- Correct pond liner permeability requirements
- Correct aerated pond treatment efficiency equation



SUBCHAPTER J
SLUDGE TREATMENT UNITS

SUBCHAPTER K
CHEMICAL DISINFECTION

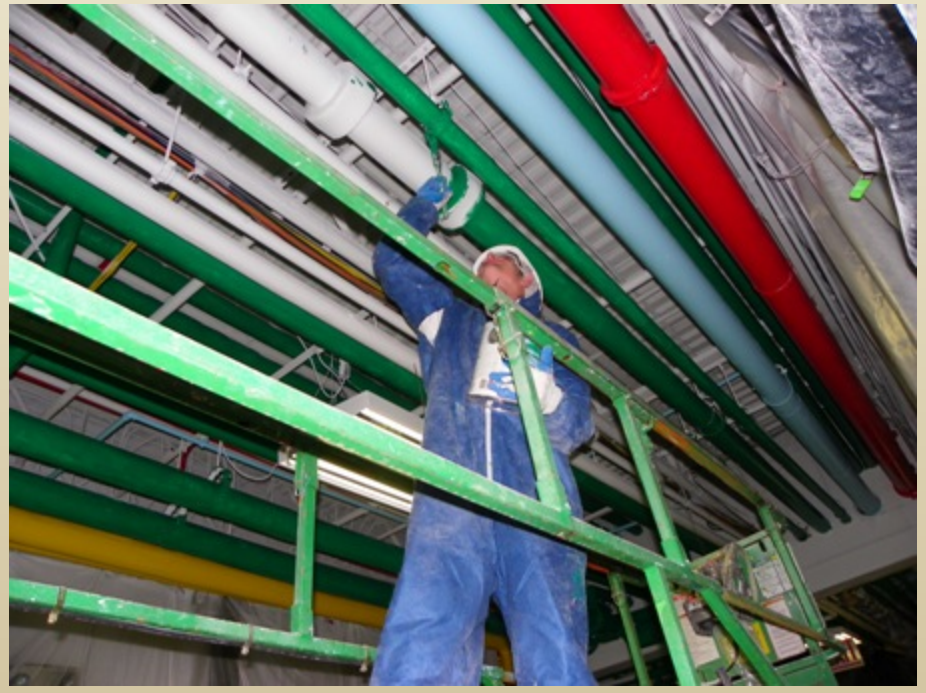
Chlorination/Dechlorination Systems

- Clarify intent related to tank placement for spill containment
- Allow a minimum length to width ratio as an alternate to modeling for chlorine mixing

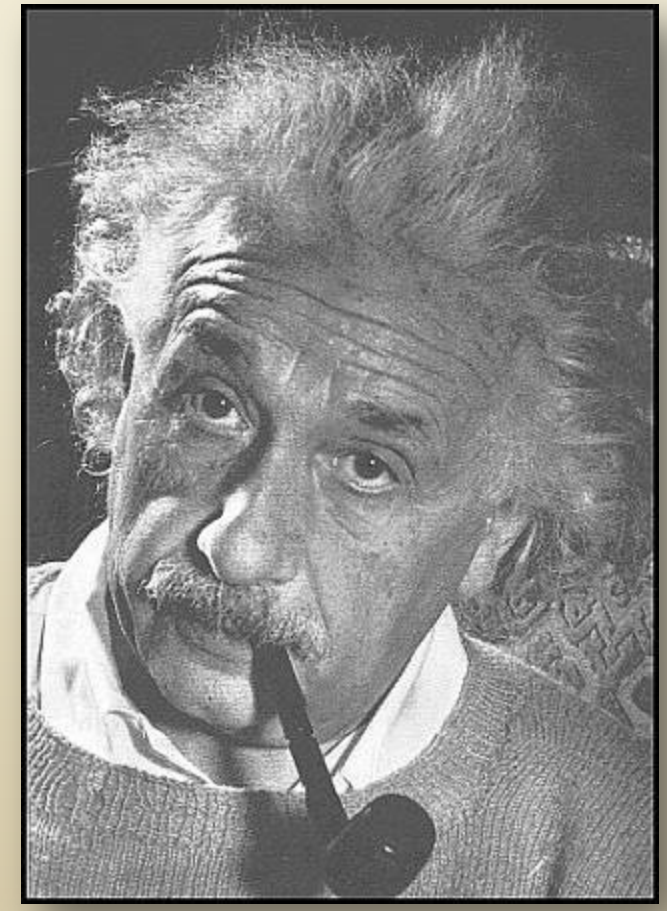
SUBCHAPTER M
SAFETY

Pipe Color Coding

- Updating the pipe color coding to be consistent with the MOP 8 and National Plumbing Codes.



Questions or Comments?



In life…

questions are guaranteed

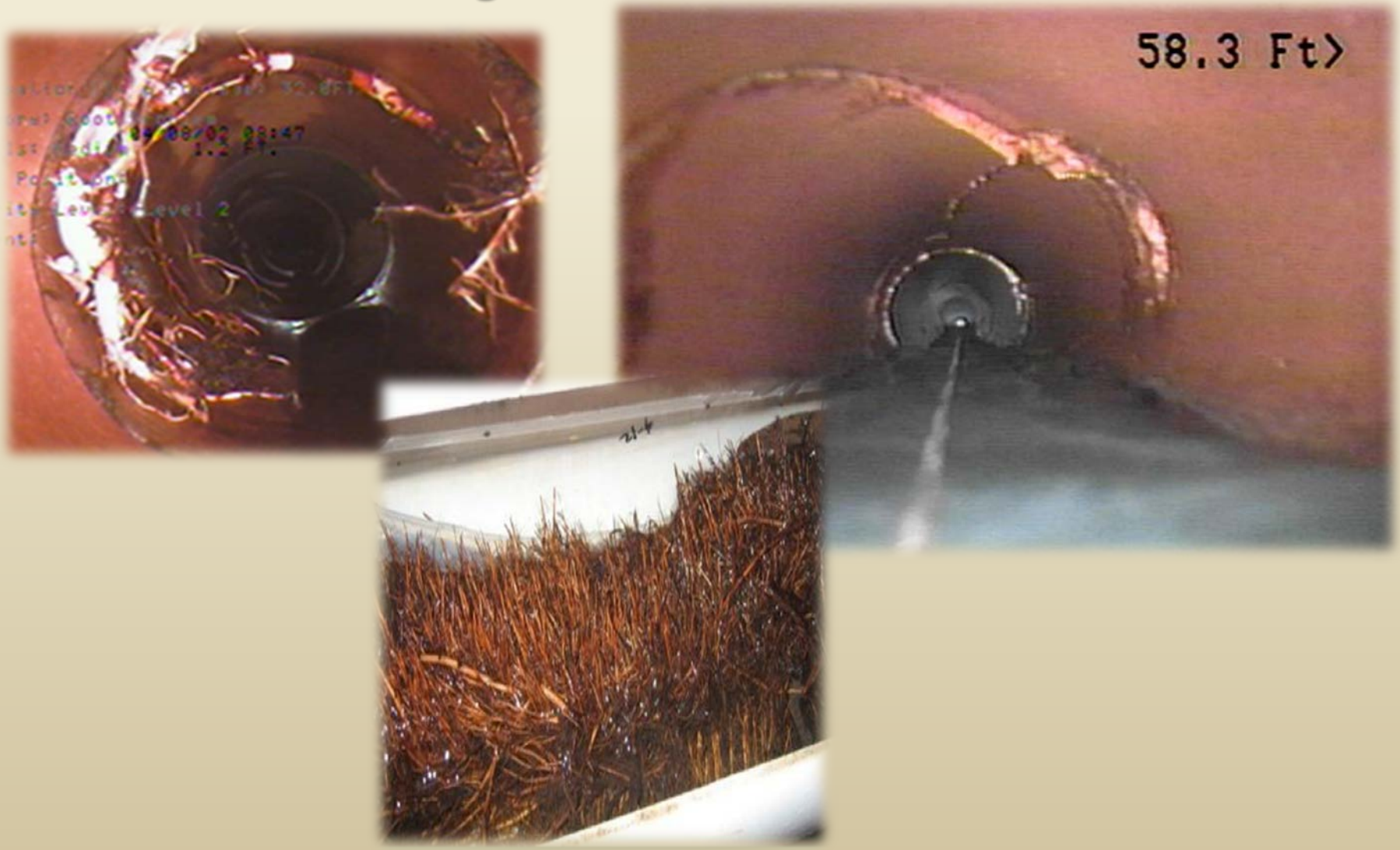
answers are not

What Can Happen If You Have Leaking Pipes?

Smoke Testing

What is wrong with this picture?

How does your collection system look?



Look Mom, an Artesian Well!

Thank you

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