Storage Tanks

- Screens
- Security
- Access openings
- Condition of tank

- Vent
- Drains / overflows
- Operation / Maintenance
Storage Tanks

- Area surrounding underground tanks graded to prevent water standing within 50 feet
- Water tight roof or cover
- Cover sloped to drain
Area Sloped so Water Will Drain Away

Cover Sloped to drain

Water Tight Roof & Cover
Cover Sloped to Drain?
Cover Sloped to Drain?
Cover Sloped to Drain?
Storage Tanks

- Access ladders / safety railings
Access Ladders

Which one is Safe to climb?
At Least 3’ extension
Above cap

Distance away from bottom of tank
Storage Tanks

- Internal coatings
- Peeling or cracks
- Sidewalls
Internal Coatings
Peeling & Cracks
Electrolysis
Bottom of Tank
Internal Coatings
Storage Tanks

- Integrity of side walls and roof
  - Deterioration or Spalding
  - Evidence of leakage
  - Actual leakage
  - Water intrusion into tank
- No unsealed roof penetrations
Sidewall Integrity
Sidewall Integrity
Deterioration/Spaulding
Evidence /Actual Leakage
Structural Stability of Tank
Roof Penetrations
Unsealed Roof Penetrations
Unsealed Roof Penetrations
Access Boxes

- Shoebox type access lid
- 2” overlap
- 4” above the top of the tank / 18” above surrounding ground
- Gasketed
- Locked
- Integrity of access box (50 pt)
Shoe Box lid – 2” lip
4” above cement
18” above the earth
Gasketed & Locked
Integrity of Access Box
Access Hatches

Flange for pour in place hatch/extra seams
Improper Access Opening
Improper Access Opening
Unsealed Bolt Hole
No Gasket
Integrity of Access Box
Integrity of Access Box
Air Vents

- Air vents - Storage
  - Down turned or covered
  - Screened #14 mesh with larger protective screen
  - Terminate at least 24” above ground
  - Covered from wind, rain, & dust
24- 36” above tank
Good Protector Screen
#14 on Outside
What is wrong here?
Exposed to wind/rain
Exposed to wind/Rain
What is Wrong Here?
Overflow Piping

- Storage Tanks
  - #4 screen
  - Adequately sized
  - Minimum 12” free fall
  - Not connected to sewer
Drain lines

• Storage Tanks (if)
  • #4 screen
• 2 times the pipe diameter
  • If connected with overflow 12” minimum free fall
• Not connected to sewer
2 x Pipe Diameter
#4 screen
Not Connected to sewer
Combination Overflow/Drain
12” free fall
Well Pumps to Tank

Tank Drain Line in box connects to Sewer
Tank Drain Line Connects to sewer
Distribution System

- System pressures – minimum 20 psi
- Piping materials (ANSI / AWWA Standards)
- 10 foot separation from sanitary or storm sewer lines
- AWWA disinfection procedures
#14 Mesh
#14 required on air vents
Evidence of Flooding?
What Else in Manhole?
Distribution System

• Pressure
• Cross-connections
• Pump stations
• Air relief valves
• Fire hydrants and blow offs
• Breaks
• Repairs, etc.
Blow Offs
Terminates in Buried Pit
Connects to Storm Drain Line
Pressure Relieve Blow Off
Terminates in Gutter No Screen