

AGING WATER STORAGE TANKS – WHAT DO WE DO?

2013 PNWS – AWWA Conference

May 10, 2013

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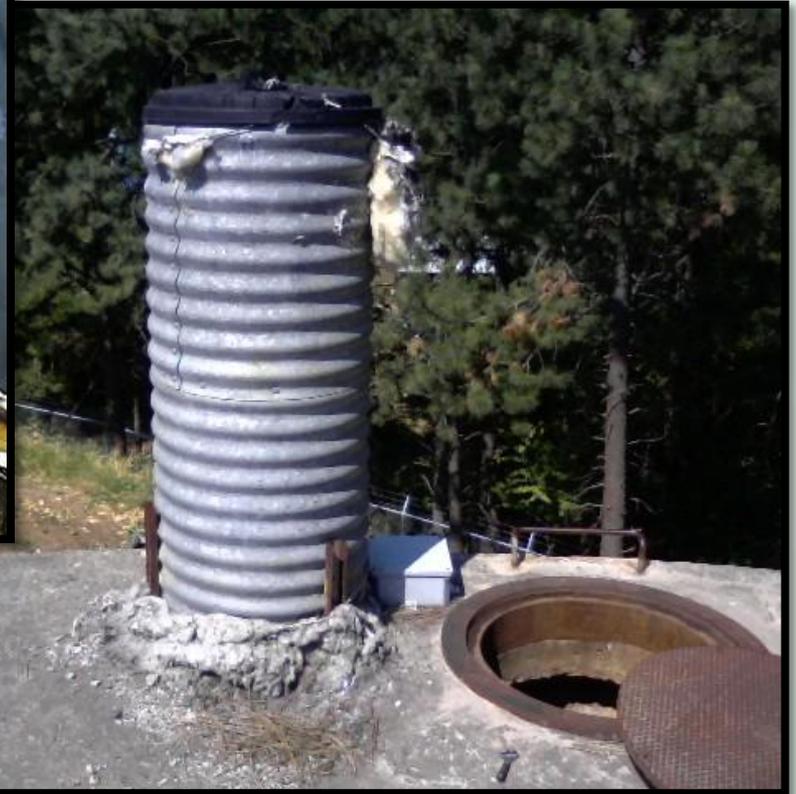


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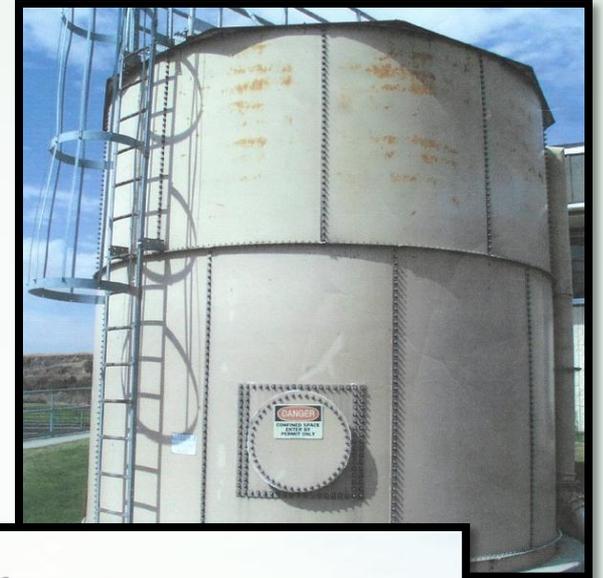
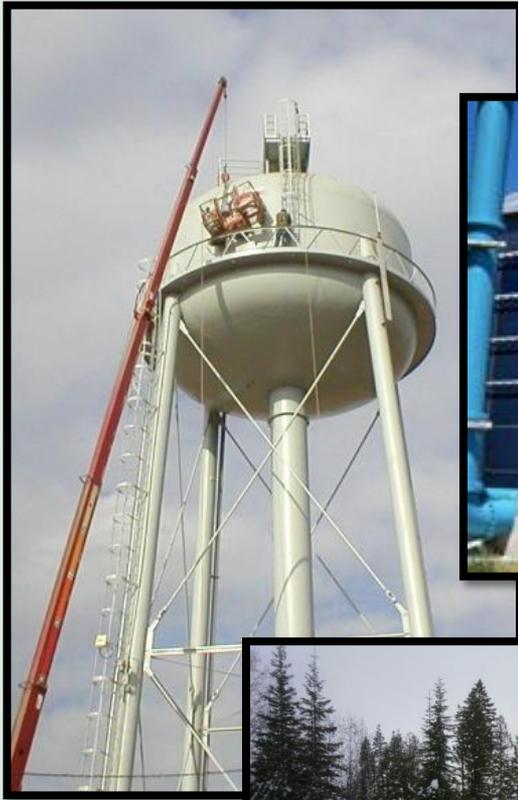
What's Wrong With This Picture?



Risks of Aging Storage Tanks



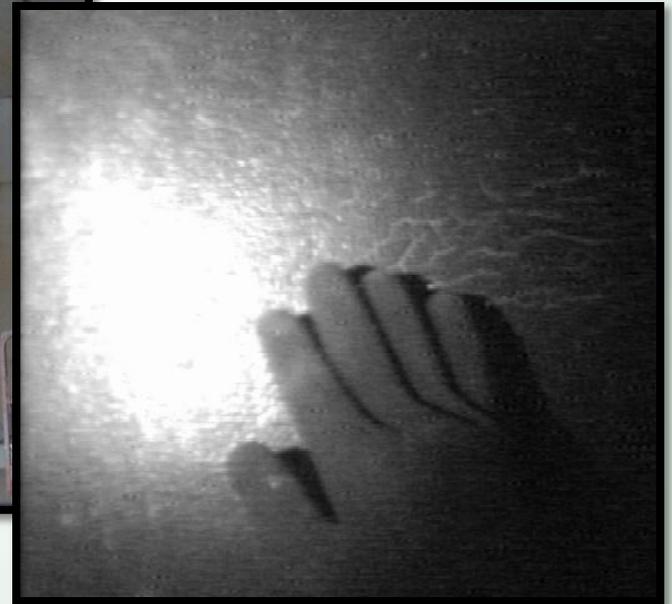
Water Storage Tanks



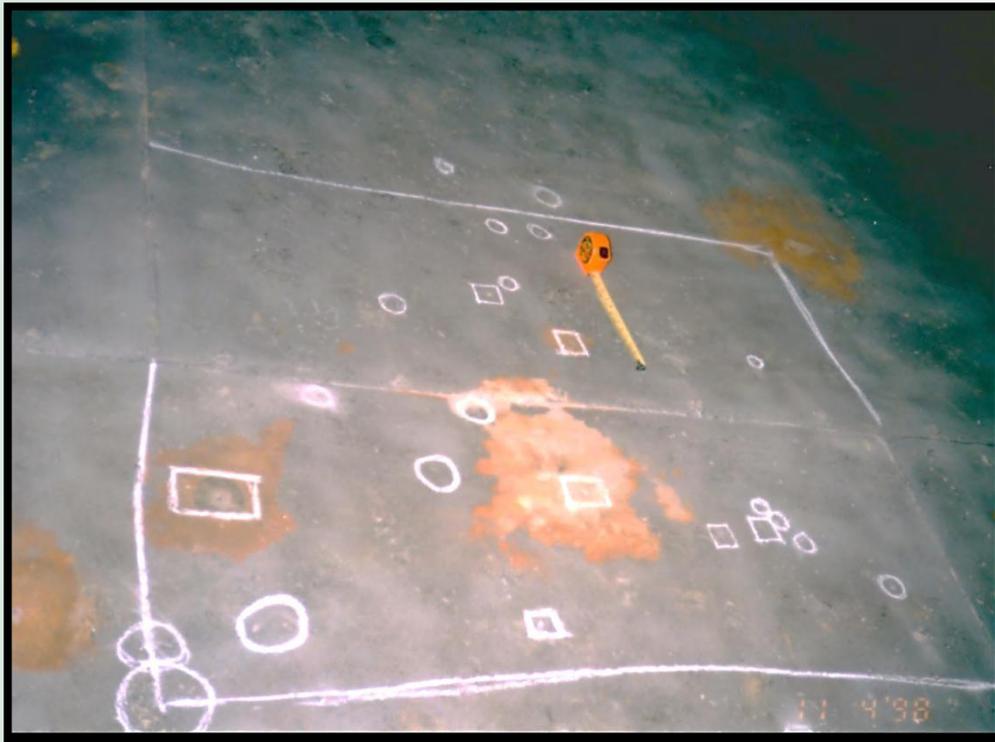
Ignoring the Warning Signs



Evaluating Tank Conditions



Internal Corrosion/Coating Condition



External Corrosion/Coating Condition



Structural/Foundation



Inlet/Outlet/Overflow Piping



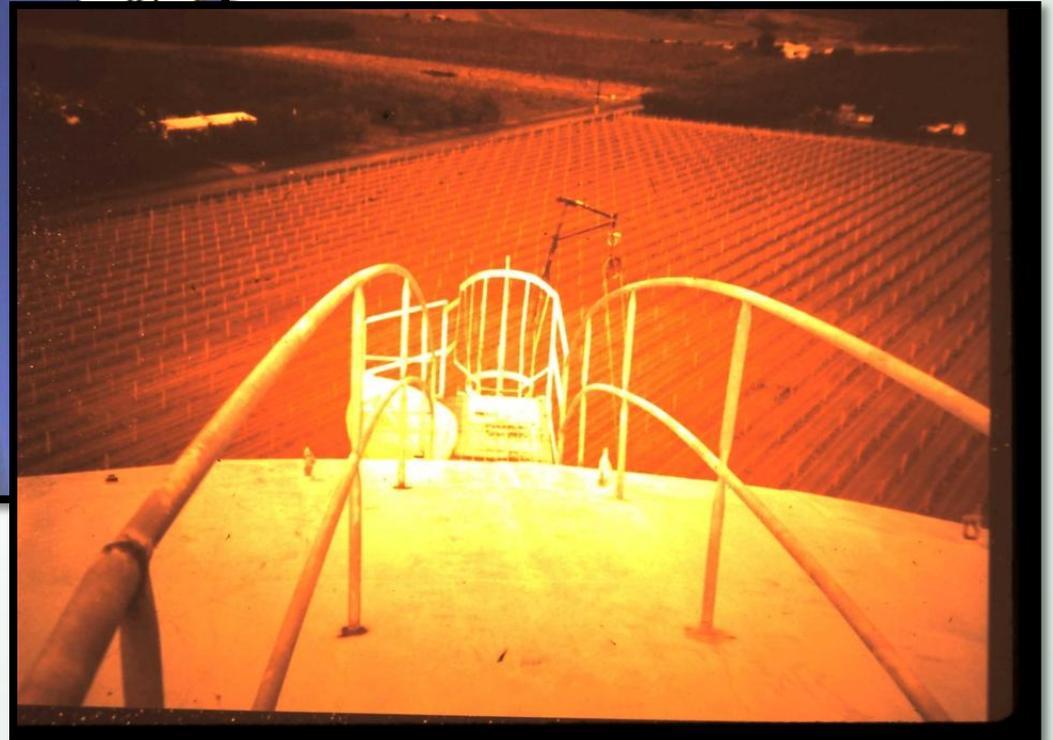
Vents and Screens



Hatch and Seals



Ladders and Lighting



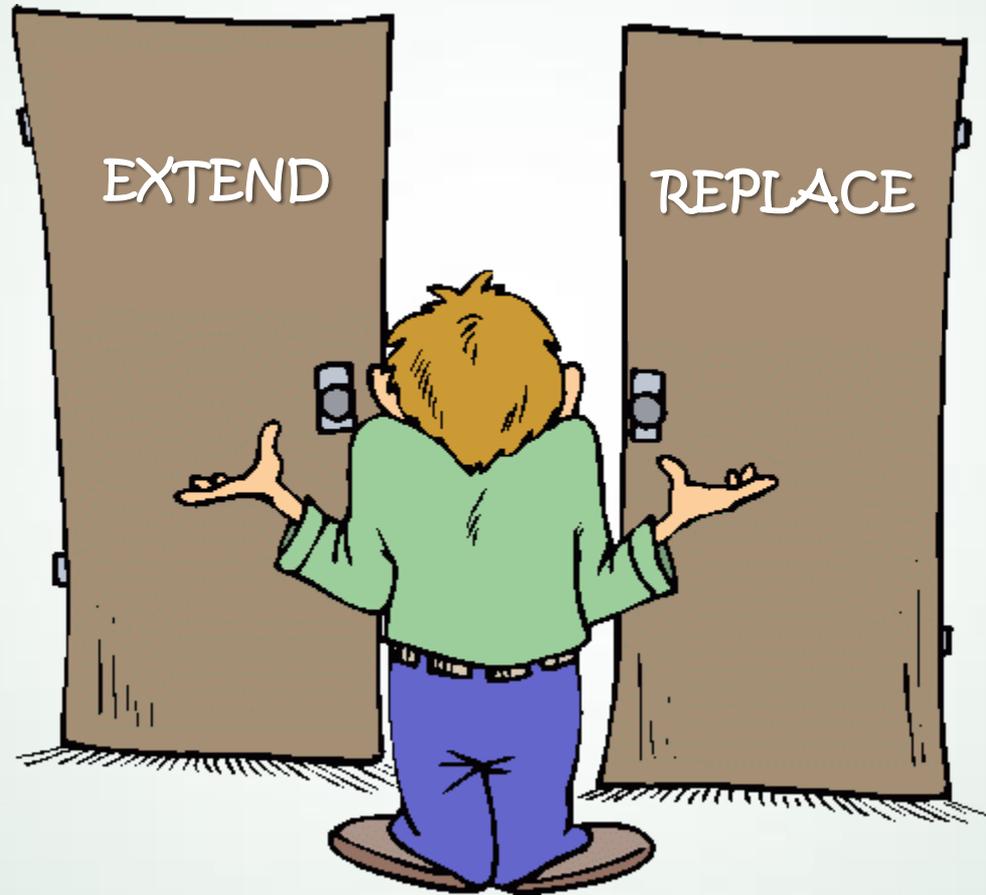
Security and Vandalism



Restoration Options



Extending Useful Life vs. Replacement



Protecting Your Investment



Lutes Tank Restoration Project



Lutes Tanks Before



Lutes Tank Before



Lutes Tank Construction



Lutes Tank Construction



Lutes Tank Construction



Lutes Tank After



Lutes Tank After



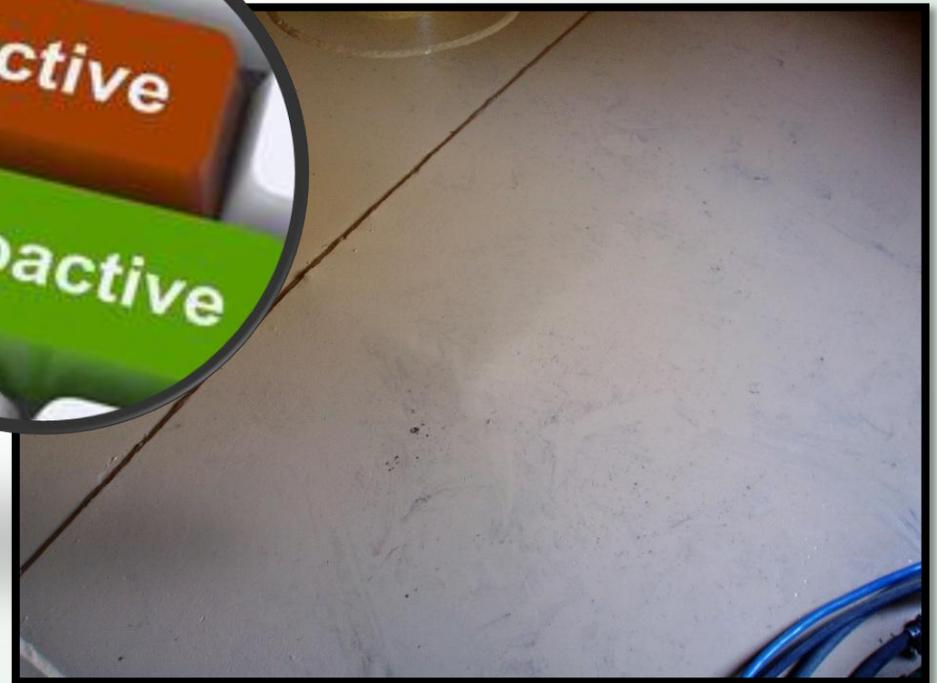
Lutes Tank 1-Year Inspection



Corrosion – How Much Is Too Much?



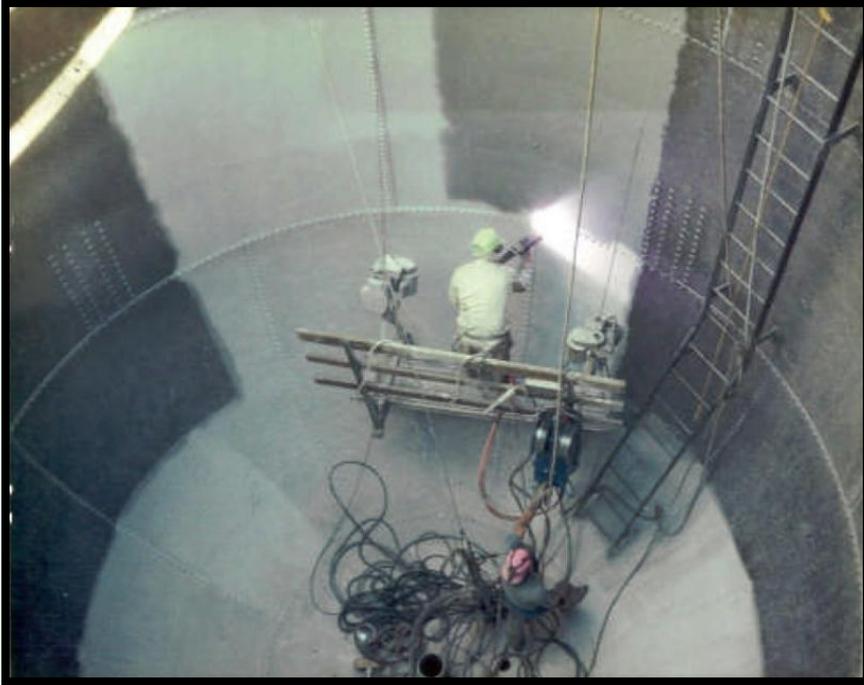
Storage Tank Best Management Practices



Developing a Proactive Inspection Schedule

| Inspection Item & Maintenance Action | | Year | | | | | | | | | | | | | | |
|--------------------------------------|---|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 | #10 | #11 | #12 | #13 | #14 | #15 |
| | | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
| A. Drain and Inspect | | <u>1 Year Warranty & Then Once Every 10 Years</u> | | | | | | | | | | | | | | |
| A.1 Internal Corrosion & Coating | Spot repair as needed, and pressure wash | | | | | | | | | | | | | | | |
| A.2 Internal Structural | Document structural issues, and repair immediate problems | | | | | | | | | | | | | | | |
| A.3 Inlet & Outlet Piping | Repair and clean as needed | | | | | | | | | | | | | | | |
| B. Dive / Video Inspection | | <u>Every 3 to 5 years</u> | | | | | | | | | | | | | | |
| B.1 Internal Corrosion & Coating | Underwater repair and clean as needed | | | | | | | | | | | | | | | |
| B.2 Inlet Piping & Outlet Piping | Underwater repair and clean as needed | | | | | | | | | | | | | | | |
| C. External Inspection | | <u>Annually</u> | | | | | | | | | | | | | | |
| C.1 External Corrosion & Coating | Clean and pressure wash as needed | | | | | | | | | | | | | | | |
| C.2 Foundation | Caulk and pressure wash as needed | | | | | | | | | | | | | | | |
| C.3 Structural | Document structural issues, and repair immediate problems | | | | | | | | | | | | | | | |
| C.4 Ladders and Lighting | Note safety issues, and repair immediate problems | | | | | | | | | | | | | | | |
| C.5 Overflow Pipe | Clean, and ensure working order | | | | | | | | | | | | | | | |
| C.6 Hatches & Seals | Clean, and ensure tight seal | | | | | | | | | | | | | | | |
| C.7 Vents & Screens | Clean, and repair as needed | | | | | | | | | | | | | | | |
| C.8 Telemetry and Controls | Clean, calibrate, and repair as needed | | | | | | | | | | | | | | | |
| C.9 Security & Vandalism | Note issues, and verify security | | | | | | | | | | | | | | | |
| C.10 Vegetation & Site Conditions | Remove vegetation, and note non-typical site issues | | | | | | | | | | | | | | | |

Case Histories



- City of Davenport, WA
1995-2002
- Sourdough Point
Owners Association ,
ID 1994-2011
- City of Spirit Lake, ID
2006-2011

Questions and Open Discussion



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