



Department of  
**Environment &  
Conservation**

# 2018 UST Rule Changes- Contractor Series

## Secondary Containment and Interstitial Monitoring

August 26, 2021

# Presenters

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  - Johnson City, TN
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  - Chair of National Work Group on Leak Detection Evaluations (NWGLDE)
  - Johnson City, TN

# What is a Sump?

- **Containment Sump-** means a liquid-tight container that protects the environment by containing leaks and spills of petroleum from piping, dispensers, pumps, and related components in the containment area.
- Secondly contained and interstitial monitored UST systems the sump is considered part of the release detection system.



# Three Year Sump Integrity Testing

**Rule 0400-18-01-.04(4)(c)(1)(ii)**-The containment sumps used for interstitial monitoring of piping which are single walled or double walled with a dry interstice and periodically monitored are tested at least once every three years to ensure the equipment is liquid tight by using vacuum, pressure, or liquid testing in accordance with one of the following criteria:

- A. Requirements developed by the manufacturer (Note: Owners and/or operators may use this option only if the manufacturer has developed requirements);
- B. Code of practice developed by a nationally recognized association or independent testing laboratory;
- C. Guidance provided by the Division; or
- D. Requirements determined by the Division to be no less protective of human health and the environment than the options listed in sections A and B of this subitem

# Three Year Sump Integrity Testing

- Facilities using interstitial monitoring for piping release detection must have a three year sump integrity test performed on all secondarily contained sumps.
  - Integrity test should be performed prior to 10/13/2021
  - Tests must be performed by an acceptable method
  - Facilities not using I.M. for piping release detection do not have to perform sump integrity test.
- All electronic release detection components must have an annual operability test and the results of the last three years of test must be retained.
  - Sensor function tests
  - 2022-previous year, 2023-previous two years, 2024- previous three years

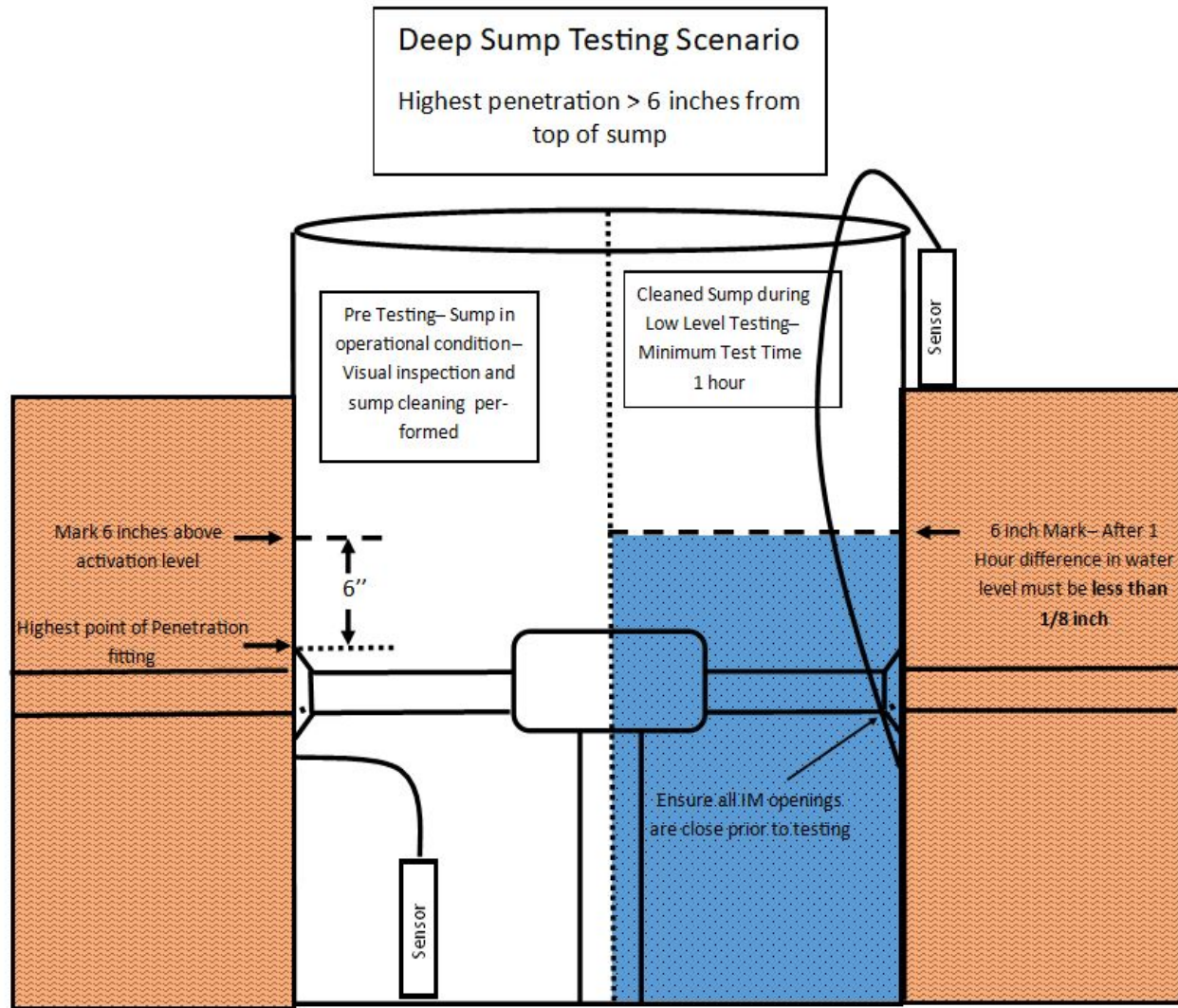
# Testing Resources and Methods

PEI RP 1200- Recommended Practices for Testing and Verification of Spill, Overflow, Leak Detection and Secondary Containment Equipment at UST Facilities.

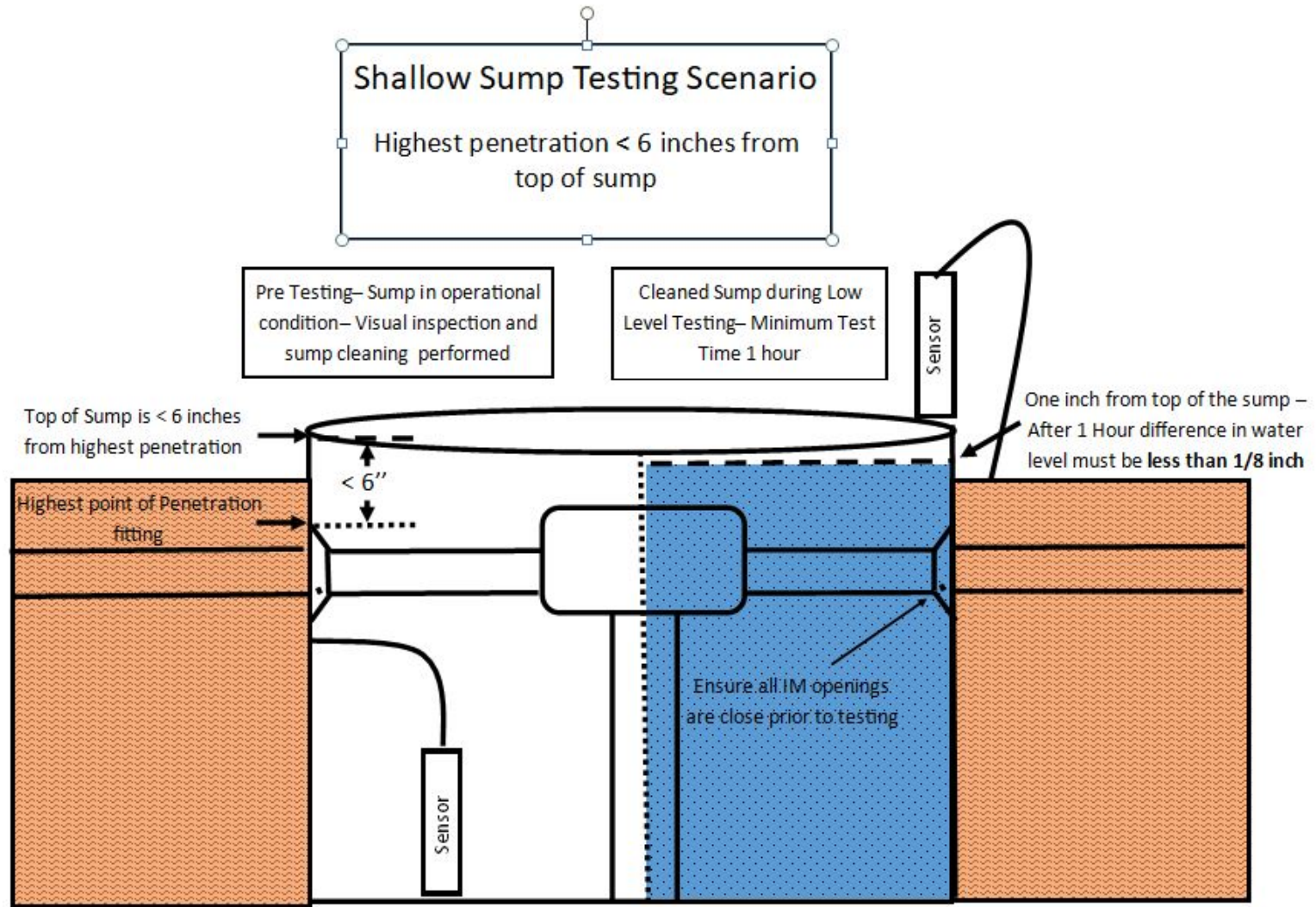
- Hydrostatic Containment Sump Testing-
  - Clean sump and visually inspect sump for damage or liquid present. If liquid present investigate source.
  - Add water to the sump to a minimum of **4 inches above the highest joint or penetration fitting**, whichever is higher.
  - If the highest joint or penetration **is less than 4 inches** from the **top of the sump**, add water to within **one inch** of the top of the sump.
  - To compensate for sump deflection wait **15 minutes before beginning test**.
  - Place and properly secure measuring stick to the lowest point of the sump and measure water level to the nearest 1/16<sup>th</sup> of an inch
  - One hour later record the water level to the nearest 1/16<sup>th</sup> of an inch
  - A loss of **1/8<sup>th</sup> inch or more** indicates a **FAIL**.



# Three Year Sump Integrity Testing



# Three Year Sump Integrity Testing





# Three Year Sump Integrity Testing-Form

## CONTAINMENT SUMP INTEGRITY HYDROSTATIC TEST REPORT

- Use this form in conjunction with **Technical Chapter 3.4 SECONDARY CONTAINMENT AND INTERSTITIAL MONITORING, APPENDIX 4** "Containment Sump Integrity Hydrostatic Testing Procedures".
- If a defective secondary containment sump is discovered at any time, then the device shall be repaired or replaced. Repairs to secondary containment sumps used for interstitial monitoring of piping must be tested for tightness according to the manufacturer's instructions or in accordance with this form within 30 days following the date of completion of the repair.
- A failing test result may require reporting of a suspected release. Consult **Appendix 4** of Technical Chapter 3.4 for further guidance. You may need to notify the Division within 72 hours to allow Division personnel to be present to determine if an environmental impact has occurred, and if additional action will be required.
- All test water shall be disposed of in accordance with local, state and federal requirements.

### I. FACILITY

UST Facility ID #:		Name/Company:	
Facility Name:		Address:	
Address:		City, State, Zip:	
City:	County:	Phone:	

### II. OWNER

### III. TESTER

Tester Name:		Company Name:	
Tester Phone Number:		Company Address:	
Email Address:		City, State, Zip:	

### IV. TEST RESULTS

<b>Sump Location</b> (Ex: RUL STP, Disp 1/2)							
1.Liquid and debris removed; sump wiped clean prior to test? (Yes/No)							
2.Visual Inspection Results (Pass/Fail)							
<b>Visual inspection includes inspection of all seals, gaskets, side walls, test boots and penetrations. If cracks, loose parts or separation of the containment sump is found, the sump fails the visual inspection. Do not introduce water if the sump fails the visual inspection.</b>							
3.Water Level is a minimum of 4" above the highest penetration fitting? (Yes/No)							
4.Sensor is positioned in the lowest portion of the sump? (Yes/No)							

## IV. TEST RESULTS (cont'd)

<b>Sump Location</b> (Ex: RUL STP, Disp 1/2)							
5.Sensor generates an audible/visual alarm? (Yes/No)							
6.Sensor triggers appropriate positive shutdown as required by Division? (Yes/No)							
7.Starting Water Level (inches)							
8.Test Start Time (AM/PM)							
9.Ending Water Level (inches)							
10.Test End Time (AM/PM)							
11.Test Period (Minimum Test Time 1 hour)							
12.Test Results? (PASS/FAIL)							

**For a passing test result, each sump must pass a visual inspection and have a water level change of less than 1/8 inch in 1 hour.**

### V. AFTER TEST STEPS

13.Measuring device removed from sump? (Yes/No)							
14.Removed all test water from the sump? (Yes/No)							
15.Sensor is positioned in lowest point of the sump? (Yes/No)							
16.Secure all sump lids, manhole covers or dispenser doors? (Yes/No)							
17.Secondary piping test boots or valve cores returned to open position? (Yes/No)							
18.Does the test liquid contain any visible product or sheen? (Yes/No)							
19.Has the test liquid been properly characterized? (Yes/No)							
20.Method of Test Water Management / Disposal?	<input type="checkbox"/> Private Recycler or Treatment Facility	<input type="checkbox"/> Public Owned Treatment Works	<input type="checkbox"/> Waste Hauler	<input type="checkbox"/> Other Describe			

Tester's Signature: \_\_\_\_\_ Test Date: \_\_\_\_\_

# Testing Resources and Methods- Hydrostatic

- INCON TS-STS Test System- NWGLDE Certified
  - Hydrostatic test method based upon PEI RP1200.
  - Uses a magnetostrictive probe to measure rise or drop of liquid level in sump
  - Test time is 15 minutes and will test up to 4 sumps at a time.
- Hydro-Tite™ Leak Detection System- NWGLDE Certified
  - Hydrostatic test method based upon PEI RP1200.
  - Uses a magnetostrictive probe to measure rise or drop of liquid level in sump
  - Test time is 12 minutes and 4 probes may be use at a time.

# Testing Resources and Methods-Vacuum

- Differential Pressure Leak Test – DPleak™-NWGLDE Certified
  - Vacuum/ Visual test method.
  - While the sump is under vacuum a camera and a surfactant indicator is used to detect locations of leaks.
  - Documents exact locations of leaks for accurate repairs.



# Testing Resources and Methods-Vacuum

- Dri-Sump Test Method-NWGLDE Certified
  - Uses a heavy vapor aerosol instead of water to test sumps and spill buckets.
  - Vapor ports are permanently installed in backfill around sumps
  - Vapor is introduced into the sump/spill bucket. A vacuum is applied to the ports pulling the soil gas into a viewing chamber.
  - If the laser in the viewing chamber is refracted by aerosol particles in the viewing chamber then the test indicates a fail.
  - Once vapor ports are installed a test can be completed in minutes



# Testing Resources and Methods

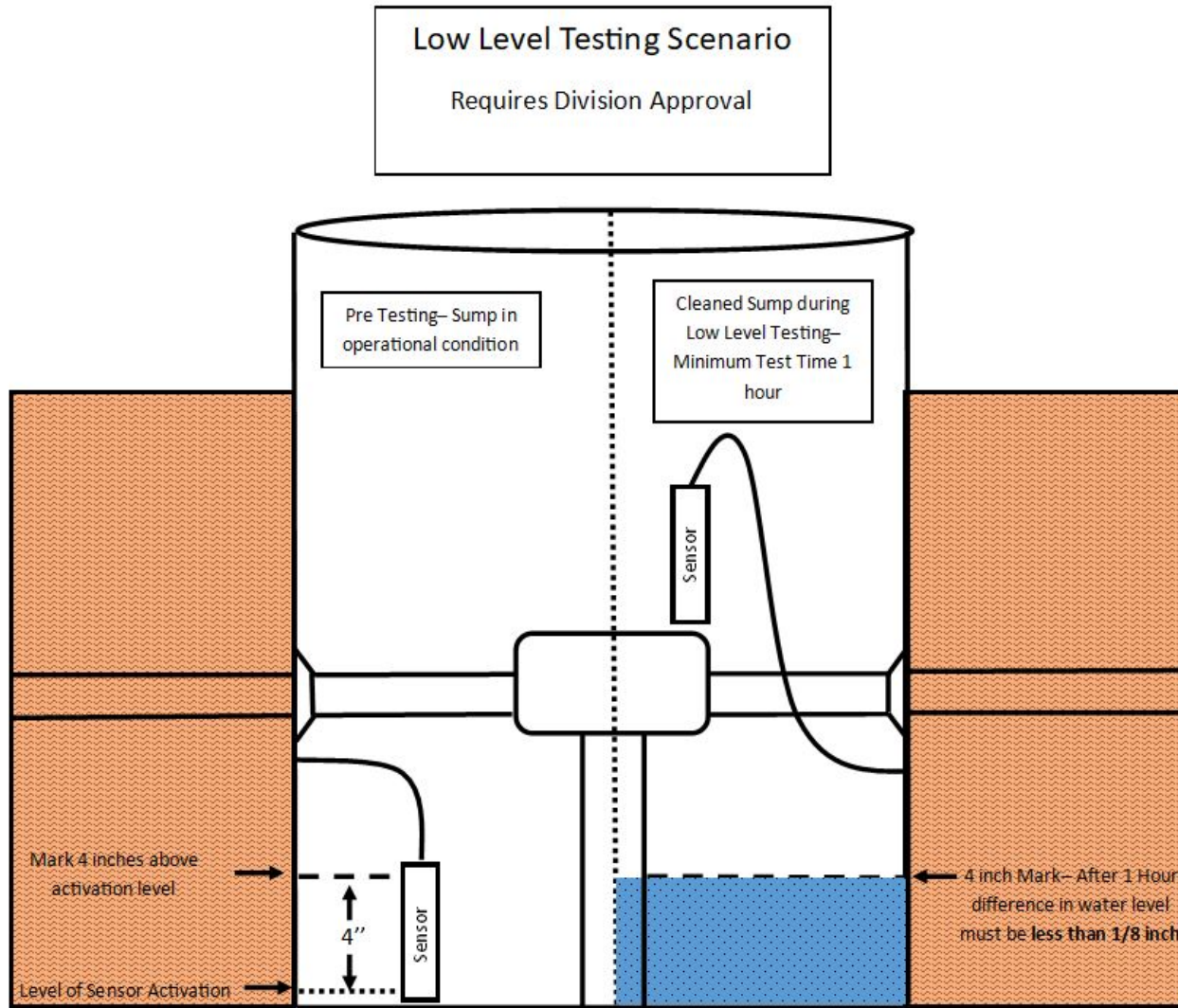
- Low Level Sump Testing Requirements
  - **Sites must receive advanced site specific approval by the Division prior to utilizing low level testing method.**
  - Sensors must be programmed to both alarm and provide shutdown.
  - Piping connected to multiple MPD's must shutdown must disable the STP for every UST associated with that MPD.
  - Dispenser shutdown only allowed for single product dispensers at manned facilities when pumps are operational.
  - The Sensor function test performed at the time of low level test may be used for annual sensor test.



# Testing Resources and Methods

- Low Level Sump Testing Procedure
  - Clean sump and visually inspect sump for damage or liquid present. If liquid present investigate source.
  - Mark the sump wall four inches above the sensor activation level (when sensor placed at lowest point in the sump)
  - Fill sump with water to the marking, wait 15 minutes before beginning test. Add additional water if needed for sump deflection to reach four inch mark.
  - Place and properly secure measuring stick to the lowest point of the sump and measure water level to the nearest  $1/16^{\text{th}}$  of an inch
  - One hour later record the water level to the  $1/16^{\text{th}}$  of an inch
  - A loss of **1/8th inch or more** indicates a **FAIL**.

# Three Year Sump Integrity Testing



# Three Year Sump Integrity Testing-Form

## LOW LEVEL CONTAINMENT SUMP INTEGRITY HYDROSTATIC TEST REPORT

- Use this form in conjunction with **Technical Chapter 3.4 SECONDARY CONTAINMENT AND INTERSTITIAL MONITORING, APPENDIX 5** "Low Level Sump Integrity Testing Procedure".
- **\*\*Written pre-approval for use of this procedure is required at each facility\*\***. Testing must be conducted in accordance with the requirements of the Division's pre-approval. Failure to comply with the Division's written pre-approval may result in this test method and/or results being rescinded or rejected.
- If a defective secondary containment sump is discovered at any time, then the sump shall be repaired or replaced in accordance with manufacturer's instructions. Repairs to secondary containment sumps used for interstitial monitoring of piping must be tested for tightness according to the manufacturer's instructions or in accordance with this form within 30 days following the date of completion of the repair.
- A failing test result may require reporting of a suspected release. Consult Appendix 5 of Technical Chapter 3.4 for further guidance. You may need to notify the Division within 72 hours to allow Division personnel to be present to determine if an environmental impact has occurred, and if additional action will be required.
- All test water shall be disposed of in accordance with local, state and federal requirements.

### I. FACILITY

UST Facility ID #:		Name/Company:	
Facility Name:		Address:	
Address:		City, State, Zip:	
City:	County:	Phone:	

### II. OWNER

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Tester Name:		Company Name:	
Tester Phone Number:		Company Address:	
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### IV. TEST RESULTS

<b>Sump Location</b> (Ex: RUL STP, Disp 1/2)									
1.Liquid and debris removed; sump wiped clean prior to test? (Yes/No)									
2.Visual Inspection Results (Pass/Fail)									
<b>Visual inspection includes inspection of all seals, gaskets, side walls, test boots and penetrations.</b> <b>If cracks, loose parts or separation of the containment sump is found, the sump fails the visual inspection.</b> <b>Do not introduce water if the sump fails the visual inspection.</b>									
3.Water Level is a minimum of 4" above the sensor activation level? (Yes/No)									
4.Sensor is positioned in the lowest portion of the sump? (Yes/No)									

## IV. TEST RESULTS (cont'd)

<b>Sump Location</b> (Ex: RUL STP, Disp 1/2)							
5.Sensor generates an audible/visual alarm? (Yes/No)							
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18.Does the test liquid contain any visible product or sheen? (Yes/No)							
19.Has the test liquid been properly characterized? (Yes/No)							
20.Method of Test Water Management / Disposal?	<input type="checkbox"/> Private <input type="checkbox"/> Recycler or Treatment Facility	<input type="checkbox"/> Public Owned Treatment Works	<input type="checkbox"/> Waste Hauler	<input type="checkbox"/> Other Describe			

Tester's Signature:	Test Date:
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# Hydrostatic Testing – Water Disposal

- The Division does not regulate the disposal of petroleum contaminated test water. **WHO DOES??????**
- Division of Solid/Hazardous Waste Management-
  - hazardous substance requires characterization
  - reclamation of hazardous material
- Division of Water Resources
  - NPDES permit required for onsite disposal to surface water
  - Stormwater disposal through local municipality
  - Wastewater treatment plants may receive locally generated water
- EPA OUST Technical Compendium discusses options for disposal
- Test water may be taken to some waste oil reclaimer

# Sump Repairs

- All repairs shall be conducted in accordance with manufacturer's recommendations, a nationally recognized practice or guidance provided by the Division
- Division recognizes aftermarket repair components from 3<sup>rd</sup> party manufacturers that meet UL standards for petroleum compatibility and construction.
- Non-manufacturer approved sump repair using UL listed components require Division approval, proof of compatibility and integrity testing upon completion
- Sump repairs must be tightness tested according to manufacturer's recommendations within 30 days of repair and repair documents kept for the life of the system.



# Sump Repairs- NLPA/KWA Standard 823

- NLPA/KWA Standard 823- Standard for Preventative Maintenance, Repair and In-situ Construction of Petroleum Sumps
  - The only standardized approach to sump preventative maintenance and repair, and to provide minimum requirements for the in-situ manufacturing of petroleum sumps at retail petroleum facilities.
  - Three parts to this standard:
    1. Sealing/caulking of sump seams and penetrations;- **Excludes application of sealant/caulk to polyethylene sumps**
    2. Providing a water-tight lid assembly to existing sumps;
    3. Construction in place of a new single or double wall sump without need for removal of the existing sump. **Allows an existing damaged polyethylene sump to be used as fabrication mold.**

# Sump Repairs- UL-2447

- UL Standard for Safety Outline of Investigation for Containment Sumps, Fittings and Accessories for Fuels-Covers requirements for:
  - Containment Sumps - Tank, Dispenser, Transition and Fill/Vent types.
  - Sump Fittings - Penetration, Termination, Internal and Test/Monitor types.
  - Sump Accessories - Covers, Lids, Frames, Brackets and Chase Pipe.

# Sump Repair- Compatibility

- UL Compatibility Tool- <https://www.ul.com/resources/apps/ul-fuel-compatibility-tool>
- ASTSWMO Compatibility Tool- <http://astswmo.org/ust-compatibility-tool/>
- List UL listed 3<sup>rd</sup> party repair companies:
  - Icon Containment Solutions- <https://icontainment.com/>
  - AllSeal Sump Systems- <https://www.ustsumprepair.com/>
  - Bravo Systems Inc.- <https://www.sbravo.com/products/retrofit-fittings/>

# Reporting of Repairs

- If a visually damaged or failed sump is encountered:
  - Defective equipment shall be immediately repaired/replaced, and
  - Any liquid in the interstice space, for secondarily contained systems, shall be immediately removed and investigated otherwise;
  - Report the unusual operating condition within 72 hours to the Division.
- All sump repair documents including proof of compatibility must kept for the life of the UST system.

# Resources

- NLPA/KWA Standard 823
- UL-2447 Standard
- PEI- RP1200
- EPA OUST Technical Compendium
- NWGLDE Website
- UL Fuel Compatibility Tool
- TN Division of UST SIM Technical Chapter 3.4



# Announcements

- Local Field Office Contacts-  
[https://www.tn.gov/content/dam/tn/environment/underground-storage-tanks/documents/info/ust\\_efo-map.pdf](https://www.tn.gov/content/dam/tn/environment/underground-storage-tanks/documents/info/ust_efo-map.pdf)
- Upcoming Contractor Series Webinars -10 a.m. ET/ 9 a.m. CT
  - Thursday, September 2, 2021 Release Detection •
  - Thursday, September 9, 2021 Walkthroughs
  - Thursday, September 15, 2021 Generators / Dual Use UST Systems
- Owner / Operator Series Webinars- 10 a.m. ET/ 9 a.m. CT
  - Thursday, September 23, 2021 General New Rule Overview
  - Thursday, September 30, 2021 General New Rule Overview
  - Thursday, October 14, 2021 General New Rule Overview
- Drafts of updated TN-UST Technical Chapters-  
<https://www.tn.gov/environment/program-areas/ust-underground-storage-tanks/ust/new-rules.html>
- UST Compliance Toolbox- <https://www.tn.gov/environment/program-areas/ust-underground-storage-tanks/ust/operator-training/educational-tools.html>

# Any Questions or Comments on the IM or Secondary Containment?

