



# West Virginia Division of Highways Policy: **Leak Detection for Underground Storage Tank (UST) System**

*Issued by the Commissioner of Highways*

**Policy No: DOH 4.7**

**Issue Date: 08/15/1992**

**Revised: 10/17/2022**

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## **1.0 INTRODUCTION**

The U.S. Environmental Protection Agency's (EPA) regulations and the West Virginia Department of Environmental Protection's (WVDEP) underground storage tank (UST) rules require that all UST systems operated by the West Virginia Division of Highways (WVDOH) have leak detection. All tanks and piping are required to have leak detection upon installation. The WVDOH is bound by WVDEP's Legislative Rule 33 CSR 30, Underground Storage Tanks, which adopts and incorporates by reference 40 CFR Part 280, with the exceptions noted in 33 CSR 30.2.1. [https://apps.sos.wv.gov/adlaw/csr/ruleview.aspx?document=16470&Keyword=.](https://apps.sos.wv.gov/adlaw/csr/ruleview.aspx?document=16470&Keyword=)

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## **2.0 SCOPE**

This policy affects all USTs that are operated by the WVDOH.

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## **3.0 DEFINITIONS**

**3.1 CFR:** Code of Federal Regulations

**3.2. CSR:** Code of State Rules

**3.3 District Manager:** the administrative head of the District regardless of whether the person is an engineer or another classification.

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## **4.0 EPA APPROVED LEAK DETECTION METHODS**

Both the EPA and the WVDEP have identified several leak detection methods that the WVDOH may use to meet the UST rules and regulations. These methods include ground-water monitoring, Statistical Inventory Reconciliation (SIR), secondary containment with interstitial monitoring, automatic tank gauging and other approved methods. For more information go to [www.epa.gov/ust/](http://www.epa.gov/ust/). All of these are monthly monitoring methods; WVDOH will use at least one of these at every UST site.

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## **5.0 WVDOH INVENTORY CONTROL**

The DOH Pump Station Report (Form GL-2) is used to record all gas and lube transactions during each shift. The Form GL-2 reflects the use of Forms DOT-5, "Receipt of Materials", the DOT-6, "Inventory Usage or Transfer" and the DOT-7, "Gas & Lube Credit Card Issue". Reports and notices required by WVDEP will be provided using the system and forms prescribed by WVDEP.

The monthly WVDOH Inventory Control System is used to primarily reconcile physical inventory quantities with the inventory record (REMIS) quantities. As REMIS is phased out and the new data system becomes operational it will be utilized.

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### **6.0 UNDERGROUND STORAGE TANK LEAK MONITORING LOG (DOH FORM GL-1)**

The DOH Form GL-1, "Underground Storage Tank Leak Monitoring Log" was developed to provide an Inventory Control Record.

The "Underground Storage Tank Leak Monitoring Log," Form GL-1, provides a record of information for each UST, for each day of operation for one (1) entire month. The Form GL-1 will be completed in an original and two (2) copies. The original, upon completion, will be filed at the owning organization with copies being forwarded to the District or Division Headquarters and to the WVDOH Equipment Division. These Leak Monitoring Logs will be maintained on file for a period as prescribed by the appropriate federal and state authorities.

#### **6.1 DAILY FORM GL-1 COMPLETION ENTRIES**

The Month and Year of the Leak Monitoring Log appears at the top of the form along with other pertinent information needed for efficient record keeping. It is important to note that if more than one (1) individual is making entries on the Log, that they be identified where indicated on the form.

The data required to complete the Leak Monitoring Log is taken directly from the "Pump Station Report," Form DOH GL-2 and entered on the Log on a daily basis. The appropriate Pump Station Report data line, for entries on the Leak Monitoring Log, is indicated at the top of each column category on the Form GL-1, "Underground Storage tank Leak Monitoring Log".

#### **6.2 MONTHLY FORM GL-1 COMPLETION ENTRIES**

On the last operation day of the month, a total of Column (5), "DAY'S STICK USAGE", Column (8) "DAY'S METER USAGE" and the Column (9) "DAILY OVER (+) or SHORT (-)" must be accomplished and entered for each column in the "TOTAL MONTHLY ACCUMULATED" Columns.

The "TOTAL MONTHLY ACCUMULATED" figure for Column (8) "DAY'S METER USAGE" (Total Monthly Pumped By Meter) is entered into the LEAK CHECK formula on the Form GL-1. The result of this calculation establishes the amount of variance, in gallons, that is permitted by both the EPA and the WVDEP UST regulations. If the "TOTAL MONTHLY ACCUMULATED" for the Column (9) "DAILY (+) or SHORT (-)" is GREATER THAN the LEAK CHECK RESULT, then notify the proper authority immediately.

The Monthly Testing results for Ground-Water Monitoring SIR, or Other Approved Methods will be entered on the Form GL-1 by the trained individual designated by the District or Division Headquarters.

If the daily amount is greater than the lead check result, then notify WVDEP spill hotline (1-800-642-3074), the District UST Coordinator, and the District Manager.

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The Monthly Testing results for Ground-Water Monitoring SIR, or Other Approved Methods will be entered on Form GL-1 by the trained individual designated by the District or Division Headquarters.

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## **7.0 ACCEPTABLE FORMS OF UST LEAK DETECTION**

### **7.1 Interstitial Method**

For USTs installed or replaced after April 11, 2016, owners and operators must use secondary containment with interstitial monitoring.

- A. [Secondary containment and interstitial monitoring](#)
- B. [Secondary Containment and Under-Dispenser Containment – 2015 Requirements](#)

### **7.2 Internal Methods**

- A. [Automatic tank gauging \(ATG\) systems](#)
- B. [Manual tank gauging](#)
- C. [Statistical inventory reconciliation \(SIR\)](#)
- D. [Continuous in-tank leak detection \(CITLD\)](#)

The additional method below can be used temporarily at petroleum UST sites:

- A. [Tank tightness testing and inventory control](#)

### **7.3 External Methods**

- A. [Groundwater monitoring](#)

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## **8.0 DETECTION METHODS FOR PIPING**

Pressurized piping installed on or before April 11, 2016, must meet the following requirements:

The piping must have devices that automatically shut off or restrict flow or triggers an alarm that indicates a leak.

You must either conduct an annual tightness test of the piping or use one of the following monthly methods:

- A. Interstitial monitoring
- B. Groundwater monitoring

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C. Continuous in-tank leak detection

D. SIR

### 8.1 Regulatory Requirements for suction piping

A. No leak detection is required if the suction piping has the following characteristics:

1. the piping has enough slope so that the product in the pipe can drain back into the tank when suction is released;
2. the piping has only one (1) check valve, which is as close as possible beneath the pump in the dispensing unit; and
3. if a suction line is to be considered exempt based on these design elements, there must be some way to check that the line was actually installed according to these plans, and that those elements of 1 and 2 above must be easily discernable.

B. If a suction line does not meet all of the design criteria noted above, one of the following leak detection methods must be used:

1. a line tightness test at least every three (3) years; or
2. monthly interstitial monitoring; or
3. monthly groundwater monitoring; or
4. monthly SIR.

The line tightness test must be able to detect a leak at least as small as 0.1 gallon per hour with certain probabilities of detection and of false alarm.

Interstitial monitoring, groundwater monitoring, and SIR have the same regulatory requirements for piping as they do for tanks.

### Release Detection Requirements

UST System Component	Release Detection Method
Tanks 2 Choices for tanks installed on or before April 11, 2016	<ol style="list-style-type: none"><li>1. <a href="#">Monthly Monitoring</a>*; or</li><li>2. <a href="#">Monthly Inventory Control and Tank Tightness Testing</a> Every 5 Years. Few tanks can use this option. Tanks installed on or before October 13, 2015 may be able to use this option for 10 years after installing a new UST or upgraded UST with corrosion protection. After this 10 year period, monthly monitoring is required.</li></ol>
Tanks installed or	Secondary Containment with Interstitial Monitoring

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Release Detection Requirements			
UST System Component	Release Detection Method		
replaced after April 11, 2016			
<a href="#">Pressurized Piping</a> Choice of one from each set A & set B for piping installed on or before April 11, 2016:	Set A. Use an automatic line leak detector that: <ol style="list-style-type: none"> <li>1. Shuts Off Product Flow -or-</li> <li>2. Restricts Flow -or-</li> <li>3. Triggers Audible Or Visual Alarm</li> </ol>	- and -	Set B. <ol style="list-style-type: none"> <li>1. Annual <a href="#">Line Testing</a> -or-</li> <li>2. <a href="#">Monthly Monitoring</a>* (except <a href="#">automatic tank gauging systems</a>)</li> </ol>
<a href="#">Pressurized Piping</a> installed or replaced after April 11, 2016:	Use an automatic line leak detector that: <ol style="list-style-type: none"> <li>1. Shuts Off Product Flow -or-</li> <li>2. Restricts Flow -or-</li> <li>3. Triggers Audible Or Visual Alarm</li> </ol> -AND- Secondary Containment with Interstitial Monitoring		
<a href="#">Suction Piping</a> 3 Choices for piping installed on or before April 11, 2016	<ol style="list-style-type: none"> <li>1. <a href="#">Monthly Monitoring</a>* (except <a href="#">automatic tank gauging</a>); or</li> <li>2. <a href="#">Line Testing</a> Every 3 Years; or</li> <li>3. No Requirements <i>if</i> the following characteristics are readily determinable:               <ul style="list-style-type: none"> <li>• Below-grade piping is sloped so that its contents will drain back into the storage tank if the suction is released.</li> <li>• Each suction line has only one check valve which is located directly below the suction pump.</li> <li>• System must operate at less than atmospheric pressure.</li> </ul> </li> </ol>		
<a href="#">Suction Piping</a> installed or replaced after April 11, 2016	<ol style="list-style-type: none"> <li>1. <a href="#">Secondary containment with interstitial monitoring</a>; or</li> <li>2. No Requirements <i>IF</i> the following characteristics are readily determinable:               <ul style="list-style-type: none"> <li>• Below-grade piping is sloped so that its contents will drain back into the storage tank if the suction is released.</li> <li>• Each suction line has only one (1) check valve which is located directly below the suction pump.</li> <li>• System must operate at less than atmospheric pressure</li> </ul> </li> </ol>		

\*Monthly monitoring choices in the table above include:

- Interstitial method – secondary containment with interstitial monitoring; secondary containment and under-dispenser containment

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- Internal methods – automatic tank gauging (ATG) systems; statistical inventory reconciliation (SIR); continuous in-tank leak detection
- External method – monitoring for vapors in the soil; monitoring for liquids on the groundwater
- Other methods approved by the implementing agency

Special note for tanks 2,000 gallons or less in capacity: Tanks 2,000 gallons and smaller may be able to use [manual tank gauging](#) to meet leak detection requirements (be sure you meet all the requirements of this method).

### 8.2 Regulatory Requirements for Pressurized Piping

Each pressurized piping run must have one (1) leak detection method from each set (A and B) below:

A. An Automatic Line Leak Detector:

Automatic flow restricter; or

Automatic flow shutoff; or

Continuous alarm system.

B. And One Other Method:

Monthly interstitial monitoring; or

Monthly groundwater monitoring; or

Monthly SIR; or

Annual tightness test.

The automatic line leak detector (LLD) must be designed to detect a leak at least as small as 3 gallons per hour at a line pressure of 10 pounds per square inch within 1 hour by shutting off the product flow, restricting the product flow, or triggering an audible or visual alarm.

The line tightness test must be able to detect a leak at least as small as 0.1 gallon per hour when the line pressure is 1.5 times its normal operating pressure. The test must be conducted each year. If the test is performed at pressures lower than 1.5 times operating pressure, the leak rate to be detected must be correspondingly lower.

Automatic LLDs and line tightness tests must also be able to meet the federal regulatory requirements regarding probabilities of detection and false alarm.

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Interstitial monitoring, groundwater monitoring, and SIR have the same regulatory requirements for piping as they do for tanks.

Tanks installed or replaced after April 11, 2016, require Secondary Containment with Interstitial Monitoring.

**For more information go to:**

<https://www.epa.gov/ust/release-detection-underground-storage-tanks-and-piping-straight-talk-tanks>

<https://www.epa.gov/ust/release-detection-underground-storage-tanks-usts-introduction>

<https://www.epa.gov/ust>

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## 9.0 RELEVANT MATERIALS/DOCUMENTS

- 9.1 [Form GL-1](#); Underground Storage Tank Monitoring Log
- 9.2 [Form GL-2](#); Pump Station Report
- 9.3 [Form DOT-5](#); Receipt of Materials/Services Record
- 9.4 [Form DOT-6](#); Inventory Usage or Transfer
- 9.5 Form DOT-7; Gas & Lube Credit Card Issue
- 9.6 Operating and Maintaining Underground Storage Tank Systems [Microsoft Word - om\\_final\\_3-31-16 \(1\) \(wv.gov\)](#)
- 9.7 West Virginia Department of Environmental Protection UST Rule, 33 CSR 30, [205-16470-50219-2018-03-09-16-20-03-279 \(wv.gov\)](#)
- 9.8 US Department of Environmental Protection UTS Regulation 40 CFR Part 280, [40cfr280.pdf \(wv.gov\)](#)

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## 9.0 CHANGE LOG

October 17, 2022

- Reformatted, and all environmental requirements updated.
- Added Section 7.0 Acceptable forms of UST Leak Detection.
- Added EPA's Release Detection Requirements chart.
- Added Section 8.0 Detection Methods for Piping.
- Added links to forms, DEP rule and EPA regulations.



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Approved by:



Jimmy D. Wriston, P.E.  
Secretary of  
Transportation  
Commissioner of  
Highways



Date

\*The Secretary of the West Virginia Department of Transportation or the Commissioner of Highways may, pursuant to the authority vested with the Secretary and Commissioner in W. Va. Code §5F-2-2, §17-2A-1 *et seq.*, and §17-2-1 *et seq.*, waive the requirements of this policy if the circumstances, in the Secretary or Commissioner's sole discretion, warrant such action.