



Alabama Department of Environmental Management

January 2002
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Operating and Maintaining Underground Storage Tank Systems

Practical Help and Checklists

The Purpose of This Booklet

The Alabama Department of Environmental Management (ADEM) wrote this booklet for owners and operators of underground storage tanks (USTs) located within the state of Alabama.

This booklet describes the Alabama UST regulations and the 2017 amendments, and includes checklists and links to the forms that are needed to comply with the ADEM regulatory requirements.

If your UST systems are located in Indian country within the state of Alabama, some of your requirements may be different from those identified in this booklet. Check with the U.S. Environmental Protection Agency (USEPA) for your UST regulatory requirements. You can find USEPA UST regulatory information on their website at www.epa.gov/ust.

Free Downloads About UST Requirements

Download or read *Operating and Maintaining Underground Storage Tank Systems* on the ADEM UST Compliance Information portion of the website at www.adem.alabama.gov/programs/water/ustcompliance.cnt. Other free ADEM guidance information concerning UST requirements is also available for downloading or reading at this same website address.

Image Credits

MVI Field Services (inspector on cover and page 42)

Highland Tank & Manufacturing Company (steel underground storage tanks on cover and in headers)

OPW (spill bucket on page 26, automatic shutoff device on page 29, ball float valve on page 33)

Federated Environmental Associates, Inc. (delivery and under-dispenser containment on cover)



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Disclaimer

This document provides information on operating and maintaining underground storage tank (UST) systems. This document is not a substitute for Alabama Department of Environmental Management (ADEM) regulations nor is it a regulation itself and does not impose legally binding requirements.

For Alabama UST regulatory requirements, refer to ADEM Administrative Code Rule 335-6-15. The link to these regulations can be found in Section 8 of this booklet.

How To Use This Booklet



Who Should Read This Booklet?

This booklet is for owners and operators of underground storage tank (UST) systems located within the state of Alabama and regulated under ADEM Administrative Code Rule 335-6-15.

As an owner or operator of a UST system, you are responsible for making sure your USTs do not leak. This booklet can help you meet your UST responsibilities.

How Can This Booklet Help You?

This booklet can help you:

- Understand the 2017 amendments to the Alabama UST regulations and their impact on regular operation and maintenance (O&M) procedures.
- Identify and understand the O&M procedures you should follow routinely to make sure your USTs do not leak and possibly damage the environment or endanger human health.
- Avoid cleanup costs and liability concerns.
- Stay in compliance with ADEM's UST O&M requirements.
- Identify O&M records you must keep on file.

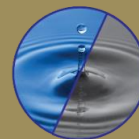
What Should You Do with Each Section of This Booklet?

Read through each section carefully and use the checklists to help you establish clear O&M procedures.

By identifying and understanding the O&M tasks you should perform routinely, you will help ensure timely repair or replacement of components when problems are identified.

Throughout this document orange "updated" boxes indicate new requirements in the Alabama UST regulations amended in 2017.

Releases from USTs can threaten human health and the environment, contaminating both soil and groundwater supplies. As of 2015, more than 525,000 UST releases have been confirmed across the United States.



About half
of the United States
population uses
groundwater as a source
of drinking water.

How Can You Use the Checklists Effectively?

You may select the specific mix of checklists that matches your UST facility. Once you identify your site-specific group of checklists, use them to perform operation and maintenance activities at your UST facility. Make several copies and complete them periodically.

By using these checklists, you can track your O&M activities and know you have done what was necessary to properly operate and maintain your UST system. Proper O&M activities help reduce releases of regulated substances to the environment.

Check With ADEM

Alabama has state UST program approval from the U.S. Environmental Protection Agency (USEPA). If you own a UST that is located in Alabama, ADEM will normally be your implementing agency.

If your UST is located in Indian country within the state of Alabama, some of your requirements may be different from those identified in this booklet. If this is the case, your implementing agency is USEPA. Check with USEPA for your UST regulatory requirements. You can find USEPA UST regulatory information on their website at www.epa.gov/ust.

Key Terms

A UST is an underground storage tank and underground piping connected to the underground tank that has at least 10 percent of its combined volume underground. The Alabama regulations apply only to USTs storing petroleum, including biofuel blends, and certain hazardous substances.

O&M means operation and maintenance procedures that owners and operators must follow to keep UST systems from leaking, which can result in costly cleanups.

Within the state of Alabama, your implementing agency is ADEM unless the USTs are in Indian country. USEPA is the implementing agency for Indian country.

Use the following information to contact the ADEM Groundwater Branch.

*ADEM
Attn: Groundwater Branch
Post Office Box 301463
Montgomery, Alabama
36130-1463
(334) 270-5655
(334) 270-5631 Fax*

Section 1: Identifying the Equipment at Your UST Facility



UST Equipment Checklist

Use the checklist on page 4 to identify UST equipment at your facility. Each part of the checklist refers you to the appropriate section of this O&M booklet for relevant information. After you identify your equipment, proceed to the appropriate sections and identify the O&M actions necessary for your specific UST system.

Problems Completing This Checklist?

If you have trouble completing this checklist or others in this booklet, you may contact:

- Your UST contractor, the vendor of your UST equipment, and/or the manufacturer of your UST equipment for help. Look through your records for contact information. You may also use the contacts or reference information provided in Section 8 of this booklet.
- The ADEM Groundwater Branch may be able to help you identify equipment or sources of information about your UST equipment. See Section 8 of this booklet for ADEM Groundwater Branch contact information.

Remember Compatibility

If you are currently storing regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel, or any other regulated substance identified by ADEM, you must notify the ADEM Groundwater Branch of the presence of the fuel. If you choose to store an alternative fuel in the future, you must notify ADEM 30 days prior to switching to the fuel. You must also demonstrate that your system is compatible with the fuel. You may document this on the ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

Keep these records for as long as the UST system stores the regulated substance.

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General Facility Information					
Facility Name		Facility ID # - -			
Check at least one for each underground storage tank:		UST 1	UST 2	UST 3	UST 4
Indicate with a checkmark if any tank is storing an alternative fuel ¹					
1. Any UST storing greater than 10% ethanol or 20% biodiesel must meet the compatibility demonstration requirement – see pg 7.					
Release/Leak Detection (Section 2)					
A. Monthly Release/Leak Detection For USTs ¹					
	Automatic tank gauging (ATG) system – see pg 10				
	Interstitial monitoring (with secondary containment) ¹ – see pg 11				
	Statistical inventory reconciliation (SIR) – see pgs 12 & 13				
	Continuous in-tank leak detection (CITLD) – see pg 14				
	Vapor monitoring – see pg 15				
	Groundwater monitoring – see pg 16				
	Manual tank gauging ² – see pg 17				
	Other release detection method (please specify)				
1. If you install an UST after August 6, 2007, it must have secondary containment and interstitial monitoring. 2. Allowed only for USTs of 1,000 gallon capacity or less, with specified diameters.					
B. Release/Leak Detection For Pressurized Underground Piping ¹					
A (Automatic Line Leak Detectors)	Automatic flow restrictor – see pg 18				
	Automatic shutoff device – see pg 18				
	Audible or visual alarm and restrict or shut off flow – see pg 19				
B	Annual line tightness test – see pg 19				
	Monthly monitoring ² – see pgs 11-16				
1. Check at least one from A & B for each UST's pressurized underground piping. If you install pressurized underground piping after August 6, 2007, it must have secondary containment with interstitial monitoring and have an automatic line leak detector. 2. Monthly monitoring for pressurized underground piping includes interstitial monitoring, SIR, CITLD, vapor monitoring, and groundwater monitoring.					
C. Release/Leak Detection For Suction Underground Piping ¹					
	Line tightness testing every three years – see pg 19				
	Monthly monitoring ² – see pgs 11-16				
	No release detection (safe suction) ³ – see pg 5				
1. If you install suction underground piping after April 25, 2008, it must have secondary containment and interstitial monitoring (except for safe suction underground piping). 2. Monthly monitoring for suction underground piping includes interstitial monitoring, SIR, CITLD, vapor monitoring, and groundwater monitoring. 3. No release detection is required only if it can be verified that you have a safe suction underground piping system with the following characteristics: only one check valve per underground line located directly below the dispenser; underground piping sloping back to the UST; and system must operate below atmospheric pressure.					
Spill And Overfill Protection (Section 4)					
	Spill catchment basin or spill bucket – see pg 27				
	Automatic shutoff device – see pg 30				
	Overfill alarm – see pg 32				
	Ball float valve ¹ – see pg 34				
1. Ball float valves may not be used to meet this requirement when overfill prevention is installed on or after December 8, 2017.					
Corrosion Protection (Section 5)					
A. Corrosion Protection For USTs					
	Coated and cathodically protected steel (STI-P3) – see pg 39				
	Nonmetallic material (such as fiberglass reinforced plastic) – see pg 38				
	Steel jacketed or clad with nonmetallic material – see pg 38				
	Cathodically protected noncoated exterior steel – see pgs 38&39				
B. Corrosion Protection For Underground Piping					
	Coated and cathodically protected steel – see pg 39				
	Nonmetallic material (such as fiberglass reinforced plastic or flexible plastic) – see pg 38				
	Cathodically protected noncoated metal – see pgs 38&39				

Section 2: Release/Leak Detection



What Are Your Release/Leak Detection Options?

For USTs installed before August 6, 2007, any of these release/leak detection methods are acceptable for you to use:

- Automatic tank gauging systems
- Interstitial monitoring (with secondary containment)
- Statistical inventory reconciliation (SIR)
- Continuous in-tank leak detection (CITLD)
- Vapor monitoring
- Groundwater monitoring
- Manual tank gauging
- Other methods meeting performance standards or approved by ADEM

For pressurized underground piping installed before August 6, 2007 and suction underground piping (except safe suction – see definition below – can be used without release/leak detection if it meets the requirements listed below) installed before April 25, 2008, you may use any of the release/leak detection methods listed above that are appropriate for underground piping or conduct periodic line tightness testing. If you use pressurized underground piping, you must also have an automatic line leak detector.

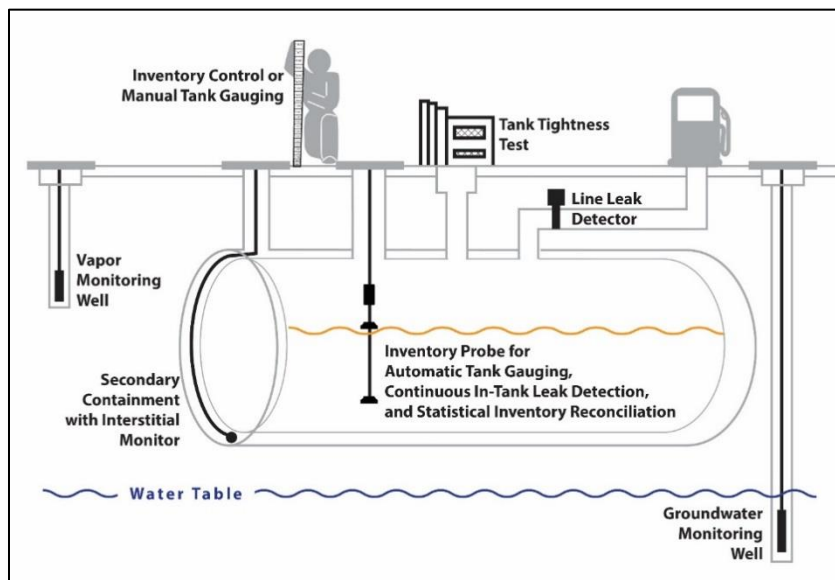
For pressurized underground piping installed on or after August 6, 2007 and suction underground piping (except safe suction – see definition below – can be used without release/leak detection if it meets the requirements listed below) installed on or after April 25, 2008, you must use secondary containment with interstitial monitoring leak detection. If you use pressurized underground piping, you must also have an automatic line leak detector.

Suction piping is considered safe suction if it:

- Is below-grade piping and operates below atmospheric pressure;
- Slopes enough so that the product in the pipe can drain back into the UST when suction is released; and
- Has only one check valve, which is as close as possible beneath the pump in the dispensing unit.

The Alabama UST regulations amended in 2017 remove the deferral for field-constructed underground tanks and underground airport hydrant systems, making them subject to all of the UST requirements. Because these UST systems can be large and unique, some requirements are different from those described in this booklet. Therefore, these systems are not covered in this booklet. Since ADEM requirements are the same as USEPA's requirements for these USTs, please see USEPA's field-constructed tanks and airport hydrant systems website at www.epa.gov/ust/field-constructed-tanks-and-airport-hydrant-systems-2015-requirements.

No later than **December 8, 2020**, emergency generator USTs installed before August 6, 2007 must meet the release/leak detection requirements described in this booklet. Emergency generators installed on or after August 6, 2007 must meet the release/leak detection requirements at installation.



What Are Your Release/Leak Detection Requirements?

You must use proper release/leak detection methods to determine at least every 30 days whether your UST and underground piping are leaking.

Your release/leak detection method must be able to detect a release/leak from any portion of the UST and connected underground piping that routinely contains product.

You must keep the following records:

- Proof that performance claims, including probabilities of detection and false alarm, are met and the means by which performance was determined by either the equipment manufacturer or installer. You must maintain these records for at least five years.
- Results of any sampling, testing, or monitoring must be maintained for at least one year.
- All calibration and maintenance records of release/leak detection equipment permanently located on site must be maintained for at least one year after servicing work is completed.
- All repair records for release/leak detection equipment used on site must be maintained until the UST system is permanently closed.
- Any schedules of required calibration and maintenance provided by equipment manufacturers, and beginning October 13, 2018 any site assessments performed for the use of groundwater or vapor monitoring release detection methods, must be retained for as long as the methods are used for the detection of releases.

What Are Your Additional Release/Leak Detection Requirements?

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No later than October 13, 2018, you must conduct your first annual test of your release/leak detection equipment for proper operation. The testing must be conducted according to one of the following: manufacturer's instructions; a code of practice developed by a nationally recognized association or independent testing laboratory; or requirements ADEM determines are no less protective of human health and the environment than the other two options. Minimum requirements for testing various release/leak detection components are covered under each release/leak detection checklist. You must keep records of this testing for at least three years using ADEM Annual Release Detection Equipment Testing Log, or an equivalent form.

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No later than October 13, 2018, you must conduct your first periodic walkthrough inspection of your release/leak detection equipment. You must keep records of these inspections for at least one year. See more information about walkthrough inspections in Section 7 of this booklet.

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No later than October 13, 2018, if you use groundwater or vapor monitoring for release detection, site assessments demonstrating proper installation and performance must be maintained for as long as the method is used for release detection at your facility. Site assessments must be signed by a licensed professional engineer or professional geologist.

What About Compatibility?

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If you are currently storing regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel, or any other regulated substance identified by ADEM, you must notify the ADEM Groundwater Branch of the presence of the fuel. If you choose to store an alternative fuel in the future, you must notify ADEM 30 days prior to switching to the fuel. You must also keep records demonstrating compatibility of the release/leak detection components, such as probes and sensors, in contact with the regulated substance for as long as the UST system stores the regulated substance. You may document this on the ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form.

Remember, your release/leak detection method must meet specific performance requirements relating to its ability to detect a release/leak. You must also ensure you use a method appropriate for your UST system and the product you store.

Do You Know if Your Release/Leak Detection Meets Performance Requirements?

Release/leak detection must meet specific performance requirements. UST system owners and operators must keep written verification of equipment performance. Equipment manufacturers are required to obtain this verification by hiring an impartial third party to test their release/leak detection equipment and certify that performance requirements are met. An independent workgroup of release/leak detection experts, the National Work Group on Leak Detection Evaluations (NWGLDE), periodically reviews and maintains a list of submitted third-party certifications which includes release and leak detection equipment performance information, thus providing a free and reliable list of evaluations of third-party certifications for various release/leak detection equipment. Frequently updated, this list is available at www.nwglde.org; the publication is *List Of Leak Detection Evaluations For Storage Tank Systems*. **Only release/leak detection equipment on this list is acceptable for use in Alabama.** If you cannot find this release or leak detection performance documentation for your release/leak detection equipment, contact the ADEM UST Compliance Section at (334) 270-5655.

You should check the performance documentation to ensure your release/leak detection method is appropriate for use with your UST system equipment. By checking the documentation, you may discover the method you use has not been approved for use with the type of underground storage tank or underground piping you have. For example, you may learn from the documentation that your method will not work with manifolded underground storage tanks, certain products, high throughput, or certain underground storage tank sizes. That is why you must make sure your release or leak detection method has clear performance documentation stating it will work effectively at your site with its specific characteristics.

What Are Your Release/Leak Detection O&M Responsibilities at Your UST Site?

If you do not understand your release/leak detection O&M responsibilities and do not know what O&M tasks you must routinely perform, your UST site could become contaminated through spills, overfills, or releases from UST equipment. To avoid these problems, use the checklists on the following pages which describe each type of release/leak detection method, discuss actions necessary for proper O&M, and note the records you should submit to ADEM and keep on file.

Locate the methods of UST and underground piping release/leak detection you are using at your facility, review these pages, and periodically review the checklists. You might want to print these checklists and periodically complete them later.

If you have questions about your release/leak detection system, review your owner's manual or call the vendor of your system. The ADEM UST Compliance Section (334) 270-5655 may be able to provide assistance as well.

You will find references to locating release/leak detection recordkeeping forms in this section. Keeping these records increases the likelihood that you are conducting good O&M and providing effective release/leak detection at your UST site.

If you ever suspect or confirm a release, refer to Section 3 of this booklet. *Never ignore release/leak detection alarms or failed release/leak detection tests. Treat them all as potential releases.*

Checklist for Automatic Tank Gauging Systems (ATG) (For USTs Only)

ATG systems must have been 3rd party certified and approved by ADEM. Call the ADEM Groundwater Branch at (334) 270-5655 if you are unsure whether or not the equipment you plan to use is approved.

Description	An automatic tank gauging (ATG) system consists of a probe permanently installed in an UST and wired to a monitor to provide information on product level and temperature. ATG systems automatically calculate the changes in product volume that can indicate a release from your UST.
<p style="text-align: center;">Perform These O&M Actions</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Use your ATG system to test for releases at least every 30 days. Most systems are already programmed by the installer to run a test periodically. If your system is not programmed to automatically conduct the test, refer to your ATG system manual to identify which buttons to push. Testing more often than monthly can catch releases sooner and reduce cleanup costs. <input type="checkbox"/> Make sure the amount of product in your UST is sufficient to run the ATG test. The UST must contain a minimum amount of product to perform a valid test. A good source for determining the minimum amount is the <i>List Of Leak Detection Evaluations For Storage Tank Systems</i> which can be found at www.nwglde.org. <input type="checkbox"/> Water or phase separated entrained water in the bottom of your UST must be measured to the nearest one-eighth of an inch at least once a month. If you find water or phase separated entrained water in your UST, you must investigate and determine the reason for its presence. You should remove water or phase separated entrained water as soon as possible because it can cause corrosion and degrade fuel quality. The presence of water or phase separated entrained water in your UST is an unusual operating condition. <input type="checkbox"/> If your ATG ever fails a test or indicates a release, or there is an unusual operating condition, see Section 3 for information on what to do next. <input type="checkbox"/> No later than October 13, 2018, you must begin inspecting and testing your ATG system every year. At a minimum, test the alarm, battery back-up, and verify the system configuration. For probes and sensors, you must inspect for residual build-up, ensure floats move freely, ensure the shaft is not damaged, ensure accessible cables are free of kinks and breaks, and test alarm operability and communication with the controller. <input type="checkbox"/> ADEM Annual Probe and Sensor Test form must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> No later than October 13, 2018, you must begin performing periodic walkthrough inspections. See Section 7 for more information about these required inspections. <input type="checkbox"/> All UST owners are required to have personnel that are designated and trained operators. Make sure employees who run, monitor, or maintain the release detection system are trained so they know exactly what they have to do and to whom to report problems.
<p style="text-align: center;">Keep These O&M Records</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Keep results of your 30-day release detection and water or phase separated entrained water monitoring for at least one year. Your monitoring equipment may provide printouts that can be used as records. If not, see page 20 for an ADEM Sample 30 Day Release Detection Monitoring Record form. <input type="checkbox"/> Keep results of your annual ATG system operation tests for at least three years. <input type="checkbox"/> Keep all records of calibration and maintenance of your release detection equipment for at least one year and keep all repair records until the UST system is permanently closed or undergoes a change-in-service. <input type="checkbox"/> Keep any schedules of required calibration and maintenance provided by the release detection equipment manufacturer for as long as the equipment is used to detect releases. <input type="checkbox"/> Keep all performance claims supplied by the installer, vendor, or manufacturer for at least five years. <input type="checkbox"/> Keep your periodic walkthrough inspection records for at least one year. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel or any other regulated substance identified by ADEM, keep records demonstrating compatibility for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

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Checklist for Secondary Containment with Interstitial Monitoring (For USTs and Underground Piping)

Interstitial monitoring equipment must have been 3rd party certified and approved by ADEM. Call the ADEM Groundwater Branch at (334) 270-5655 if you are unsure whether or not the equipment you plan to use is approved.

Description	<p>Secondarily-contained UST systems have an inner and outer barrier with an interstitial space that is monitored for leaks. This includes containment sumps when used for interstitial monitoring of underground piping. Examples of secondary containment are double wall USTs and double wall underground piping. The interstitial space can be an open or closed system and can be monitored manually or automatically for evidence of a leak. An open system is at atmospheric pressure and a closed system is under vacuum or pressure.</p>
<p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p>	<p>Perform These O&M Actions</p> <ul style="list-style-type: none"> <input type="checkbox"/> Keep interstitial monitoring access ports clearly marked and secured. <input type="checkbox"/> Use your interstitial monitoring system to check for leaks at least every 30 days. <input type="checkbox"/> If your interstitial monitoring ever fails a test or indicates a leak, or there is an unusual operating condition or evidence of product is found outside the secondary containment, see Section 3 for information on what to do next. <input type="checkbox"/> No later than December 8, 2018, you must begin testing all containment sumps used for underground piping interstitial monitoring every three years for liquid tightness or use a double-walled containment sump with annual interstitial monitoring. An ADEM 3 Year Containment Sump Integrity Test Report form and/or ADEM Manual Interstitial Monitoring Monthly Log, form # 406, must be completed and submitted to ADEM within 30 days of testing or monitoring. The ADEM 3 Year Containment Sump Integrity Test Report form is available from ADEM's website at www.adem.alabama.gov/programs/water/groundwater.cnt and form #406 is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> If you repair or replace any secondary containment areas, you must test them for tightness within 30 days, and complete and submit ADEM 3 Year Containment Sump Integrity Test Report form, within 30 days after testing. <input type="checkbox"/> No later than October 13, 2018, you must begin inspecting and testing your leak detection system every year. You must inspect probes and sensors for residual build-up, ensure floats move freely, ensure the shaft is not damaged, ensure accessible cables are free of kinks and breaks, and test alarm operability and communication with the controller. <input type="checkbox"/> ADEM Annual Probe and Sensor Test form must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> No later than October 13, 2018, you must begin performing periodic walkthrough inspections. See Section 7 for more information about these required inspections. <input type="checkbox"/> All UST owners are required to have personnel that are designated and trained operators. Make sure employees who run, monitor, or maintain the leak detection system are trained so they know exactly what they have to do and to whom to report problems.
<p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p>	<p>Keep These O&M Records</p> <ul style="list-style-type: none"> <input type="checkbox"/> Keep results of your 30-day leak detection monitoring for at least one year. Your monitoring equipment may provide printouts that can be used as records. If not, see ADEM's web site at www.adem.alabama.gov/DeptForms/default.cnt for ADEM Manual Interstitial Monitoring Monthly Log, form # 406. <input type="checkbox"/> Keep results of your annual leak detection system operation tests for at least three years. <input type="checkbox"/> Keep all records of calibration and maintenance of your leak detection equipment for at least one year and keep all repair records until the UST system is permanently closed or undergoes a change-in-service. <input type="checkbox"/> Keep any schedules of required calibration and maintenance provided by the leak detection equipment manufacturer for as long as the equipment is used to detect leaks. <input type="checkbox"/> Keep all performance claims supplied by the installer, vendor, or manufacturer for at least five years. <input type="checkbox"/> For containment sumps used for interstitial monitoring of underground piping, keep records of containment sump testing for three years or keep documentation showing the containment sump is double-walled and the integrity of both walls is periodically monitored for as long as containment sump testing is not performed. <input type="checkbox"/> For containment sump and secondary containment equipment inspections that are part of the periodic walkthrough inspection requirement, keep records of the walkthrough inspection for at least one year. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel or any other regulated substance identified by ADEM, keep records demonstrating compatibility for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

Checklist for Statistical Inventory Reconciliation (SIR) (For USTs and Underground Piping)

SIR systems must have been 3rd party certified and approved by ADEM. Qualitative SIR systems are no longer acceptable for use in Alabama. Call the ADEM Groundwater Branch at (334) 270-5655 if you are unsure whether or not the equipment you plan to use is approved.

Description	<p>Statistical inventory reconciliation (SIR) is typically a method in which a trained professional uses sophisticated computer software to conduct a statistical analysis of inventory, delivery, and dispensing data to determine if a release may be occurring. You must supply the professional with data every month, or you need SIR computer software designed to allow you to enter and analyze your data to perform SIR in house. In either case, the result of the analysis may be pass, inconclusive, or fail.</p>
Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> Supply daily inventory data to your SIR vendor at least every 30 days or use your computer software at least every 30 days to statistically analyze your UST inventory data to determine if a release is occurring. <input type="checkbox"/> If you receive a “fail” or “inconclusive” result, you need to work with your SIR vendor to perform a release investigation within 7 days of receipt of the result, and complete and submit the ADEM Monthly SIR Report, form # 414, and ADEM SIR 7 Day Release Investigation Report, form # 460, to ADEM within 10 days of receipt of the result. These forms are available from ADEM’s web site at www.adem.alabama.gov/programs/water/groundwater.cnt. If the investigation indicates a release has occurred, refer to Section 3 for information on what to do next. If the initial investigation does not indicate a release has occurred and you receive a second consecutive non-passing result, you must again perform an investigation, submit the reports indicated above to ADEM, and refer to Section 3 for information on what to do next. If the UST system is determined to have unusual operating conditions, refer to Section 3 for information on what to do next. <input type="checkbox"/> If you use a gauge stick to gather your UST data for the SIR vendor or for your SIR software, make sure it can measure to one-eighth of an inch and can measure the level of product over the full range of the UST’s height. Periodically check your gauge stick to make sure that you can read the markings and numbers and that the bottom of the stick is not worn. <input type="checkbox"/> At least once a month, you must measure and record the level of water or phase separated entrained water in the bottom of your UST using your tank gauge stick. You will need to use a paste on the stick that changes color when it comes into contact with the water or phase separated entrained water. If you do not measure any water or phase separated entrained water, be sure to write “0” in your records to document that you did check for water or phase separated entrained water. <input type="checkbox"/> If you use an ATG system, keep a record of the water or phase separated entrained water reading at least once a month. <input type="checkbox"/> If you find water or phase separated entrained water in your UST, you must investigate and determine the reason for its presence. You should remove the water or phase separated entrained water as soon as possible because it can cause corrosion and degrade fuel quality. The presence of water or phase separated entrained water in your UST is an unusual operating condition. See Section 3 for information on what to do next. <input type="checkbox"/> Ensure that your product dispenser is calibrated at least annually according to local standards or to an accuracy of 6 cubic inches for every 5 gallons of product withdrawn. <input type="checkbox"/> No later than October 13, 2018, you must begin inspecting and testing your release detection system every year. If you use an ATG system to gather SIR data, annually test your ATG system. At a minimum, test the alarm, battery backup, and verify the system configuration. For probes and sensors, you must inspect for residual buildup, ensure floats move freely, ensure the shaft is not damaged, ensure accessible cables are free of kinks and breaks, and test alarm operability and communication with controller. <input type="checkbox"/> If you use an ATG system to gather SIR data, ADEM Annual Probe and Sensor Test form must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM’s web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> No later than October 13, 2018, you must begin performing periodic walkthrough inspections. See Section 7 for more information about these required inspections. <input type="checkbox"/> All UST owners are required to have personnel that are designated and trained operators. Make sure employees who run, monitor, or maintain the release detection system are trained so they know exactly what they have to do and to whom to report problems.

SIR O&M Recordkeeping Checklist – continued on next page.

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Checklist for Statistical Inventory Reconciliation (SIR) (For USTs and Underground Piping)

- Continued -

<p style="text-align: center;">Keep These O&M Records</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Keep results of your 30-day release detection monitoring for at least one year. ADEM Annual SIR Summary Report, form # 326, must be completed and submitted to ADEM by January 31st of each year. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> If you use an ATG system to gather the SIR data, keep results for your annual ATG system operation tests for at least three years. <input type="checkbox"/> If you use an ATG system to gather the SIR data, keep all records of calibration and maintenance of your ATG system for at least one year and keep all repair records until the UST system is permanently closed or undergoes a change-in-service. <input type="checkbox"/> If you use an ATG system to gather the SIR data, keep any schedules of required calibration and maintenance provided by the release detection equipment manufacturer for as long as the equipment is used to detect releases. <input type="checkbox"/> Keep the records of investigations conducted as a result of any monthly monitoring conclusion of "Inconclusive" or "Fail" for at least 1 year. This may include the results of a tightness test performed during the investigation or a re-evaluation based on corrected delivery or dispenser data. <input type="checkbox"/> Keep all performance claims supplied by the installer, vendor, or manufacturer for at least five years. <input type="checkbox"/> Keep your periodic walkthrough inspection records for at least one year. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel or any other regulated substance identified by ADEM, keep records demonstrating compatibility for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.
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Checklist for Continuous In-Tank Leak Detection (CITLD)

CITLD systems must have been 3rd party certified and approved by ADEM. Call the ADEM Groundwater Branch at (334) 270-5655 if you are unsure whether or not the equipment you plan to use is approved.

Description	<p>Continuous in-tank leak detection (CITLD) encompasses all statistically based methods where the system incrementally gathers measurements on an uninterrupted or nearly uninterrupted basis to determine if a release may be occurring. There are two major groups that fit into this category: Continuous statistical leak detection (also referred to as continuous automatic tank gauging methods) which is for USTs only: And continual reconciliation which is for USTs and underground piping. Both groups typically use sensors permanently installed in the UST to obtain inventory measurements. They are combined with a microprocessor in the ATG system or other control console that processes the data. Continual reconciliation methods are further distinguished by their connection to dispensing meters that allow for automatic recording and use of dispensing data in analyzing if a release may be occurring.</p>
Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> CITLD must operate on an uninterrupted basis or operate within a process that allows the system to gather incremental measurements to determine if a release may be occurring at least once every 30 days. <input type="checkbox"/> Water or phase separated entrained water in the bottom of your UST must be measured to the nearest one-eighth of an inch at least once a month. If you find water or phase separated entrained water in your UST, you must investigate and determine the reason for its presence. The presence of water or phase separated entrained water in your UST is an unusual operating condition. You should remove water or phase separated entrained water as soon as possible because it can cause corrosion and degrade fuel quality and see Section 3 for information on what to do next. <input type="checkbox"/> If your CITLD method ever fails a test, indicates a release, or indicates an unusual operating condition, see Section 3 for information on what to do next. <input type="checkbox"/> No later than October 13, 2018, you must begin inspecting and testing your release detection system every year. At a minimum, test the alarm, battery backup, and verify the system configuration. For probes and sensors, you must inspect for residual buildup, ensure floats move freely, ensure the shaft is not damaged, ensure accessible cables are free of kinks and breaks, and test alarm operability and communication with controller. <input type="checkbox"/> ADEM Annual Sensor and Probe Test form must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> No later than October 13, 2018, you must begin performing periodic walkthrough inspections. See Section 7 for more information about these required inspections. <input type="checkbox"/> All UST owners are required to have personnel that are designated and trained operators. Make sure employees who run, monitor, or maintain the release detection system are trained so they know exactly what they have to do and to whom to report problems.
Keep These O&M Records	<ul style="list-style-type: none"> <input type="checkbox"/> Keep results of your 30-day release detection and water or phase separated entrained water monitoring for at least one year. Your monitoring equipment should provide printouts that can be used as records. See page 20 for an ADEM Sample 30 Day Release Detection Monitoring Record form. <input type="checkbox"/> Keep results of your annual release detection system operation tests for at least three years. <input type="checkbox"/> Keep all records of calibration and maintenance of your release detection equipment for at least one year and keep all repair records until the UST system is permanently closed or undergoes a change-in-service. <input type="checkbox"/> Keep any schedules of required calibration and maintenance provided by the release detection equipment manufacturer for as long as the equipment is used to detect releases. <input type="checkbox"/> Keep all performance claims supplied by the installer, vendor, or manufacturer for at least five years. <input type="checkbox"/> Keep your periodic walkthrough inspection records for at least one year. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel or any other regulated substance identified by ADEM, keep records demonstrating compatibility for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

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Checklist for Vapor Monitoring (For USTs and Underground Piping)

Soil Vapor monitoring equipment must have been 3rd party certified and approved by ADEM. Installation plans and specifications must have been prepared by a registered professional engineer or geologist and approved by ADEM prior to installation. Call the ADEM Groundwater Branch at (334) 270-5655 if you are unsure whether or not your equipment and installation have been approved.

Description	
	<p>Vapor monitoring checks for releases by measuring product vapors in the soil at the UST site. A site assessment determines the number and placement of monitoring wells. Please note that vapor monitoring will not work well with regulated substances, such as diesel fuel, that do not easily vaporize.</p>
<p>UPDATED</p> <p>UPDATED</p> <p>UPDATED</p> <p>UPDATED</p>	<p>Perform These O&M Actions</p> <ul style="list-style-type: none"> <input type="checkbox"/> Clearly mark and secure your vapor monitoring wells. A black triangle on a white background is the standard monitoring well marking. Locks are recommended but deteriorate rapidly in the moist underground environment. "Secure" is generally interpreted to mean requiring a tool to open. <input type="checkbox"/> Use your release detection system to test for releases at least every 30 days. Testing more often than every 30 days can identify releases sooner and reduce cleanup costs and problems. Test for vapors in all of your vapor monitoring wells. <input type="checkbox"/> If your vapor monitoring method ever fails a test or indicates a release, see Section 3 for information on what to do next. <input type="checkbox"/> If you use vapor monitoring for release detection, you must demonstrate proper installation and performance through a site assessment. Beginning October 13, 2018, you must maintain a site assessment for as long as vapor monitoring is used for release detection at your facility. Site assessments must be prepared by a registered professional engineer or geologist. <input type="checkbox"/> No later than October 13, 2018, you must begin inspecting and testing your release detection system every year. If you use permanently installed electronic equipment for vapor monitoring, at a minimum, test the alarm, battery backup, and verify the system configuration. For probes and sensors, you must inspect for residual buildup, ensure floats move freely, ensure the shaft is not damaged, ensure accessible cables are free of kinks and breaks, and test alarm operability and communication with controller. <input type="checkbox"/> ADEM Annual Sensor and Probe Test form must be completed and submitted to ADEM within 30 days the annual test. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> No later than October 13, 2018, you must begin performing periodic walkthrough inspections. These inspections include checking your hand-held equipment for operability and serviceability. See Section 7 for more information about these required walkthrough inspections. <input type="checkbox"/> All UST owners are required to have personnel that are designated and trained operators. Make sure employees who run, monitor, or maintain the release detection system are trained so they know exactly what they have to do and to whom to report problems.
<p>UPDATED</p> <p>UPDATED</p>	<p>Keep These O&M Records</p> <ul style="list-style-type: none"> <input type="checkbox"/> Keep results of your 30-day release detection monitoring for at least one year. Your monitoring equipment may provide printouts that can be used as records. See page 20 for an ADEM Sample 30 Day Release Detection Monitoring Record form. <input type="checkbox"/> Keep results for your annual release detection system operation tests for at least three years. <input type="checkbox"/> Keep all records of calibration and maintenance of your release detection equipment for at least one year and keep all repair records until the UST system is permanently closed or undergoes a change-in-service. <input type="checkbox"/> Keep any schedules of required calibration and maintenance provided by the release detection equipment manufacturer for as long as the equipment is used to detect releases. <input type="checkbox"/> Keep all performance claims supplied by the installer, vendor, or manufacturer for at least five years. <input type="checkbox"/> Keep your periodic walkthrough inspection records for at least one year. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel or any other regulated substance identified by ADEM, keep records demonstrating compatibility for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

Checklist for Groundwater Monitoring (For USTs and Underground Piping)

Groundwater monitoring equipment must have been 3rd party certified and approved by ADEM. Installation plans and specifications must have been prepared by an registered professional engineer or geologist and approved by ADEM prior to installation. Call the ADEM Groundwater Branch at (334) 270-5655 if you are unsure whether or not your equipment and installation have been approved.

Description	
	<p>Groundwater monitoring looks for the presence of liquid product floating on groundwater at the UST site. To ensure a release is detected, follow the site assessment plan, which determines the number and placement of monitoring wells. Note that this method cannot be used at sites where groundwater is more than 20 feet below the surface.</p>
<p>UPDATED</p> <p>UPDATED</p> <p>UPDATED</p> <p>UPDATED</p>	<p>Perform These O&M Actions</p> <ul style="list-style-type: none"> <input type="checkbox"/> Clearly mark and secure your groundwater monitoring wells. A black triangle on a white background is the standard monitoring well marking. Locks are recommended but deteriorate rapidly in the moist underground environment. "Secure" is generally interpreted to mean requiring a tool to open. <input type="checkbox"/> Use your release detection system to test for releases at least every 30 days. Testing more often than every 30 days can identify releases sooner and reduce cleanup costs and problems. Check for free product in all of your groundwater monitoring wells. <input type="checkbox"/> If your groundwater monitoring method ever fails a test or indicates a release, see Section 3 for information on what to do next. <input type="checkbox"/> If you use groundwater monitoring for release detection, you must demonstrate proper installation and performance through a site assessment. Beginning October 13, 2018, you must maintain a site assessment for as long as groundwater monitoring is used for release detection at your facility. Site assessments must be prepared by a registered professional engineer or geologist. <input type="checkbox"/> No later than October 13, 2018, you must begin inspecting and testing your release detection system every year. If you use permanently installed electronic equipment for groundwater monitoring, at a minimum, test the alarm, battery backup, and verify the system configuration. For probes and sensors, you must inspect for residual buildup, ensure floats move freely, ensure the shaft is not damaged, ensure accessible cables are free of kinks and breaks, and test alarm operability and communication with controller. <input type="checkbox"/> ADEM Annual Sensor and Probe Test form must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> No later than October 13, 2018, you must begin performing periodic walkthrough inspections. These inspections include checking your hand-held equipment for operability and serviceability. See Section 7 for more information about these required walkthrough inspections. <input type="checkbox"/> All UST owners are required to have personnel that are designated and trained operators. Make sure employees who run, monitor, or maintain the release detection system are trained so they know exactly what they have to do and to whom to report problems.
<p>UPDATED</p> <p>UPDATED</p>	<p>Keep These O&M Records</p> <ul style="list-style-type: none"> <input type="checkbox"/> Keep results of your 30-day release detection monitoring for at least one year. Your monitoring equipment may provide printouts that can be used as records. See page 20 for sample 30 day Day Release Detection Monitoring Record form. <input type="checkbox"/> Keep results for your annual release detection system operation tests for at least three years. <input type="checkbox"/> Keep all records of calibration and maintenance of your release detection equipment for at least one year and keep all repair records until the UST system is permanently closed or undergoes a change-in-service. <input type="checkbox"/> Keep any schedules of required calibration and maintenance provided by the release detection equipment manufacturer for as long as the equipment is used to detect releases. <input type="checkbox"/> Keep all performance claims supplied by the installer, vendor, or manufacturer for at least five years. <input type="checkbox"/> Keep your periodic walkthrough inspection records for at least one year. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel or any other regulated substance identified by ADEM, keep records demonstrating compatibility for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

Checklist For Manual Tank Gauging (For USTs 1,000 Gallons Or Less)

Description

Manual tank gauging involves taking your UST out of service each week for the test period indicated for your UST size in the table below. During that time, the contents of the UST are measured twice at the beginning and twice at the end of the test period. The measurements are then compared to the appropriate weekly and monthly standards shown in the table below to determine if a release may be occurring.

This method may be used only for USTs of 1,000 gallons or less capacity meeting certain requirements. These requirements, UST size, dimension, and test time, are listed in the table below.

UST Size	Minimum Duration Of Test	Weekly Standard (1 test)	Monthly Standard (4-test average)
Up to 550 gallons	36 hours	10 gallons	5 gallons
551-1,000 gallons (when UST diameter is 64")	44 hours	9 gallons	4 gallons
551-1,000 gallons (when UST diameter is 48")	58 hours	12 gallons	6 gallons

- Perform These O&M Actions**
- Ensure that your tank gauge stick can measure to the nearest one-eighth inch and can measure the level of product over the full range of the UST's height. Periodically check it to make sure that you can read the markings and numbers and that the bottom of the stick is not worn.
 - Once a week, record two inventory readings at the beginning of the test, allow the UST to sit undisturbed for the time specified in the above table, and record two inventory readings at the end of the test. Use the average of the two initial readings and the average of the two final readings to determine the initial and final amounts of product in the UST.
 - Reconcile the numbers weekly and record them using **ADEM Manual Tank Gauging Monthly Log form, or equivalent form. The ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.**
 - At the end of four weeks, reconcile your records for the monthly standard and record the result on the **ADEM Manual Tank Gauging Monthly Log form mentioned above, or use an equivalent form.**
 - It is recommended that you measure the level of water or phase separated entrained water in the bottom of your UST using your gauge stick at least once per month. You should use a paste on the stick that changes color when it comes into contact with the water or phase separated entrained water. **The level of water or phase separated entrained water may be documented on the ADEM Manual Tank Gauging Monthly Log form mentioned above.**
 - If you find water or phase separated entrained water in your UST, you must investigate and determine the reason for its presence. The presence of water or phase separated entrained water in your UST is an unusual operating condition. You should remove water or phase separated entrained water as soon as possible because it can cause corrosion and degrade fuel quality.
 - See Section 3 on what to do next if your UST fails the weekly or monthly standard, or if there is an indication of an unusual operating condition.
 - No later than October 13, 2018, you must begin performing periodic walkthrough inspections. These inspections include checking your tank gauge stick annually for operability and serviceability. See Section 7 for more information about these required walkthrough inspections.**
 - All UST owners are required to have personnel that are designated and trained operators. Make sure employees who run, monitor, or maintain the release detection system are trained so they know exactly what they have to do and to whom to report problems.

- Keep These O&M Records**
- Keep results of your 30-day release detection monitoring for at least one year. Completed ADEM Manual Tank Gauging Monthly Log forms may be used as a records.
 - Keep all records of calibration and maintenance of your release detection equipment for at least one year and keep all repair records until the UST system is permanently closed or undergoes a change-in-service.
 - Keep your periodic walkthrough inspection records for at least one year.**
 - If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel or any other regulated substance identified by ADEM, keep records demonstrating compatibility for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.**

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Checklist For Automatic Line Leak Detection (ALLDs) (For Pressurized Underground Piping)

ALLDs must have been 3rd party certified and approved by ADEM. Call the ADEM Groundwater Branch at (334) 270-5655 if you are unsure whether or not the equipment you plan to use is approved.

Description	<p>Automatic line leak detectors (ALLDs) are designed to detect a catastrophic leak or release from pressurized underground piping. ALLDs must be designed to detect a leak/release at least as small as 3 gallons per hour at a line pressure of 10 pounds per square inch within one hour. When a leak/release is detected, ALLDs must shut off the product flow; restrict the product flow; or trigger an audible or visual alarm and shut off product flow (except they are not required to shut off product flow when used on emergency power generator UST systems). Please note that mechanical and electronic ALLDs need to be installed and operated as close as possible to the submersible pump since they are designed to detect a leak/release in pressurized underground piping only between the detector and the dispenser. Where double walled piping is used, sump sensors or probes may be used as ALLDs to detect a leak/release into the interstitial space. When a piping leak/release is detected in the interstitial space, sump sensors or probes must trigger an audible or visual alarm and shut down the submersible pump (except they are not required to shut down the submersible pump when used on emergency power generator UST systems).</p>
Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> See Section 3 on what to do next if your ALLDs detect a leak/release. <input type="checkbox"/> You must test your mechanical and electronic ALLDs every year by simulating a leak, which evaluates their ability to detect a leak/release. <input type="checkbox"/> ADEM Automatic Line Leak Detector (ALLD) Test Report form # 551 must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> No later than October 13, 2018, you must begin inspecting and testing your sump sensor or probe ALLDs system every year. You must inspect sensors and probes for residual build-up, ensure floats move freely, ensure the shaft is not damaged, ensure accessible cables are free of kinks and breaks. You must test your sump sensor or probe ALLDs by manually activating your audible or visual alarm, and verifying that the submersible pump shuts down upon activation. <input type="checkbox"/> ADEM Annual Sensor and Probe Test form must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> No later than October 13, 2018, you must begin performing periodic walkthrough inspections. See Section 7 for more information about these required inspections. <input type="checkbox"/> All UST owners are required to have personnel that are designated and trained operators. Make sure employees who run, monitor, or maintain the leak/release detection system are trained so they know exactly what they have to do and to whom to report problems.
Keep These O&M Records	<ul style="list-style-type: none"> <input type="checkbox"/> Keep results for your annual leak/release detection system operation tests for at least three years. Your monitoring equipment may provide printouts, which can be used as records. <input type="checkbox"/> Keep all records of calibration and maintenance of your leak/release detection equipment for at least one year and keep all repair records until the UST system is permanently closed or undergoes a change-in-service. <input type="checkbox"/> Keep any schedules of required calibration and maintenance provided by the leak/release detection equipment manufacturer for as long as the equipment is used to detect leaks/releases. <input type="checkbox"/> Keep all performance claims supplied by the installer, vendor, or manufacturer for at least five years. <input type="checkbox"/> Keep your periodic walkthrough inspection records for at least one year. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel or any other regulated substance identified by ADEM, keep records demonstrating compatibility for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

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Checklist For Line Tightness Testing (For Underground Piping)

Line tightness testing equipment must have been 3rd party certified and approved by ADEM. Call the ADEM Groundwater Branch at (334) 270-5655 if you are unsure whether or not the equipment you plan to use is approved.

Description	This method uses a periodic line tightness test to determine if a release is occurring from your underground piping. Tightness testing can be performed manually by either a tester certified by the manufacturer or by using a permanently installed electronic system, which is most always connected to an automatic tank gauging system.
Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> If you have pressurized underground piping and use line tightness testing, the test must be conducted at least annually. <input type="checkbox"/> If you have suction underground piping and use line tightness testing, the test must be conducted at least every three years. Safe suction underground piping, as described at the bottom of page 5, does not need release detection. <input type="checkbox"/> See Section 3 on what to do next if your underground piping fails the tightness test or if the electronic system indicates a release. <input type="checkbox"/> You must have this tightness testing conducted by a tester certified by the manufacturer or use a permanently installed electronic system. <input type="checkbox"/> If you use a manual line tightness test, a certified tester must complete and you must submit an ADEM UST Line Tightness Test Report form # 477 to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> No later than October 13, 2018, you must begin performing periodic walkthrough inspections. See Section 7 for more information about these required inspections. <input type="checkbox"/> All UST owners are required to have personnel that are designated and trained operators. Make sure employees who run, monitor, or maintain the release detection system are trained so they know exactly what they have to do and to whom to report problems.
Keep These O&M Records	<ul style="list-style-type: none"> <input type="checkbox"/> Keep results of your most recent line tightness test until the next test is performed. Keep any results for your electronic release detection equipment operation and maintenance tests for at least three years. Your monitoring equipment may provide printouts, which can be used as records. <input type="checkbox"/> Keep all records of calibration and maintenance of your release detection equipment for at least one year and keep all repair records until the UST system is permanently closed or undergoes a change-in-service. <input type="checkbox"/> Keep any schedules of required calibration and maintenance provided by the release detection equipment manufacturer for as long as the equipment is used to detect releases. <input type="checkbox"/> Keep all performance claims supplied by the installer, vendor, or manufacturer for at least five years. <input type="checkbox"/> Keep your periodic walkthrough inspection records for at least one year. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel or any other regulated substance identified by ADEM, keep records demonstrating compatibility for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

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Section 3: Suspected or Confirmed Releases



You must be fully prepared to respond to releases before they occur. You must know what to do when release detection methods indicate a suspected or confirmed release. Be ready to take the following steps, as appropriate, if you have a release.

Stop The Release

- Take immediate action to prevent the release of more product.
- Use the emergency shutoff switch to stop the flow of product. (Make sure you know where your emergency shutoff switch is located.)
- Turn off the power to the dispenser and place a bag over the nozzle.
- Identify any fire, explosion, or vapor hazards and take action to neutralize these hazards.
- Empty the UST, if necessary, without further contaminating the site. You may need the assistance of your supplier or distributor.

Call For Help

- Contact your local fire or emergency response authority. Make sure you have these crucial telephone numbers prominently posted where you and your employees can easily see them.

Contain The Release

Contain, absorb, and clean up any surface spills or overfills. You should keep enough absorbent material at your facility to contain a spill or overfill of petroleum products until emergency response personnel can respond to the incident. The suggested supplies include, but are not limited to:

- Containment devices, such as containment booms, dikes, and pillows.
- Absorbent material, such as kitty litter, chopped corn cob, sand, or sawdust. Be sure you properly dispose of used absorbent materials.

Page 24 is a blank form to list names and phone numbers of important contacts. Fill out this information for your facility so that you will know who to call in case of an emergency. Print this page from the booklet, fill it out, and post it in a prominent place at your facility.

Print multiple copies of page 24 and update it often. Make sure everyone at your UST facility is familiar with this list of contacts.

- Mats or other material capable of keeping spill or overflow out of nearby storm drains.
- Spark-free flash light.
- Spark-free shovel.
- Buckets.
- Reels of caution tape, traffic cones, and warning signs.
- Personal protective gear.

Report To Authorities

If you observe any of the following, contact the ADEM Corrective Action Section at (334) 270-5655 to report a suspected or confirmed release as soon as possible, but no later than within 24 hours:

- Any spill or overflow of petroleum that exceeds 25 gallons or causes a sheen on nearby surface water. Spills and overfills under 25 gallons that are contained and immediately cleaned up do not have to be reported. If they cannot be quickly cleaned up, you must report them to the ADEM Corrective Action Section at (334) 270-5655.
- Any released regulated substances at the UST site or in the surrounding area — such as the presence of liquid petroleum; soil contamination; surface water or groundwater contamination; or petroleum vapors in sewers, basements, or utility lines.
- Any unusual operating conditions you observe — such as erratic behavior of the dispenser, a sudden loss of product, unexplained presence of water or phase separated entrained water in the UST, or liquid in the interstitial space of secondarily-contained systems. However, you are not required to report if:
 - The system equipment is found to be defective, did not have a release, and is immediately repaired or replaced.
 - For secondarily-contained systems, any liquid in the interstitial space not used as part of the interstitial monitoring method is immediately removed (for example, fuel in the interstitial space of a monitoring system intended to be operated with brine) and any defective system equipment or component is immediately repaired or replaced.
- Results from your release detection system, including investigation of an alarm, indicate a suspected release. However, you are not required to report if:
 - The monitoring device is found to be defective and is immediately repaired, recalibrated, or replaced and further monitoring does not confirm the initial suspected release; or

- The leak is contained within the secondary containment and any liquid in the interstitial space not used as part of the interstitial monitoring method is immediately removed and any defective system equipment or component is immediately repaired or replaced; or
- The alarm was investigated and determined to be a non-release event; for example, from a power surge or caused by filling the UST during release detection testing.

Release Response

Important Contact Information

	<u>Contact Name</u>	<u>Phone #</u>
ADEM:	Groundwater Branch, Corrective Action Unit	(334) 270-5655
Fire Department:	_____	_____
Ambulance:	_____	_____
Police Department:	_____	_____
Emergency Response Contractor:	_____	_____
Repair Contractor:	_____	_____
Other Contacts:	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Release Response Checklist

- Stop the release: Take immediate action to prevent the release of more product. Use the emergency shutoff switch to stop the flow of product. Turn off the power to the dispenser and place a bag over the nozzle. Empty the UST, if necessary, without further contaminating the site.
- Contain the release: Contain, absorb, and clean up any surface releases. Identify any fire, explosion, or vapor hazards and take action to neutralize these hazards.
- Call for help and to report suspected or confirmed releases: Contact your local fire or emergency response authority. Contact the ADEM UST Corrective Action Section at (334) 270-5655 within 24 hours.

Section 4: Spill and Overfill Protection



The purpose of spill and overfill protection equipment is to reduce the potential for a release during fuel deliveries. The equipment must be in working order and used properly to provide adequate protection from spills and overfills.

Even the best spill and overfill protection equipment can become faulty over time if not properly operated and maintained. Small fuel leaks/releases from a poorly maintained spill bucket can result in large amounts of soil contaminated with fuel over time. Also, improperly operating overfill prevention equipment can result in UST overfills of fuel that may end up contaminating surface water and/or soil.

UPDATED

The Alabama UST regulations require operability testing of spill buckets once every three years, and beginning December 8, 2020, will require inspections of overfill prevention equipment once every 3 years. The tests and inspections must be conducted in accordance with a code of practice, manufacturer's instructions, or other equivalent method approved by ADEM. No later than October 13, 2018, walkthrough inspections are required that look at spill equipment at least every 30 days. Records of walkthrough inspections must be kept and must include a list of each area checked, whether each area checked was acceptable or needed action, and a description of actions taken to correct an issue. If owners and operators receive deliveries less frequently than every 30 days, spill prevention equipment may be checked prior to each delivery. Delivery records must be maintained if spill prevention equipment is checked less frequently than every 30 days.

UPDATED

If you repair your spill or overfill prevention equipment, you must test or inspect, as appropriate, the equipment within 30 days after the repair.

The following pages focus on how you can routinely make sure your spill and overfill equipment are operating effectively.

What Is The Difference?

Spill Protection

A spill bucket is installed at the fill pipe to contain the drips and spills of fuel that can occur when the delivery hose is uncoupled from the fill pipe after delivery.

Overfill Protection

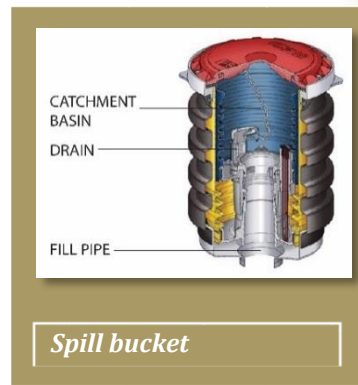
Equipment is installed on the UST and designed to stop product flow, reduce product flow, or alert the delivery person during delivery that the UST is nearing full capacity. This allows the person filling the UST to stop product delivery before the UST becomes full and begins releasing product into the environment.

What Are The Basics Of Spill Protection?

Your USTs must have spill buckets — also called catchment basins — installed at the fill pipe to contain small-volume spills that may occur as a result of fuel deliveries.

- Spill buckets are designed to temporarily contain product spills that might occur during fuel delivery. To contain a spill, the spill bucket must be liquid tight.
- Spill buckets are not designed to contain fuel for long periods. After each delivery, empty and dispose of contents properly.
- Spill buckets need to be large enough to contain any fuel that may spill when the delivery hose is uncoupled from the fill pipe. Spill buckets typically range in size from 5 gallons to 15 gallons.
- If you use correct delivery practices such as the ones described on pages 35, spills should be eliminated or reduced to very small volumes that your spill bucket can easily handle.

The checklist on the next page provides information on properly maintaining your spill bucket.



Your equipment supplier can help you choose the size and type of spill bucket that meets your needs.

If your UST only receives deliveries of 25 gallons or less at a time, the UST does not need to meet the spill and overfill protection requirements. Many used oil USTs fall into this category. Even though these USTs are not required to have spill and overfill protection, you should consider using spill and overfill protection as part of good UST system management.

Checklist For Spill Buckets/Spill Catchment Basin

Description	Spill buckets/spill catchment basins are basins installed at the fill pipe to temporarily contain product spills that may occur during fuel delivery.
<p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p>	<p>Perform These O&M Actions</p> <ul style="list-style-type: none"> <input type="checkbox"/> Some spill buckets may be equipped with a valve that allows you to drain accumulated fuel into your UST. Others may be equipped with a manual pump so fuel can be put into your UST by pumping it through the fill pipe. However, keep in mind that when you pump out or drain your spill bucket into your UST, any water and debris may also enter the UST. If a spill bucket is not equipped with drain valve or pump, then any accumulated fuel or water must be removed manually and disposed of properly. <input type="checkbox"/> No later than October 13, 2018, you must conduct your first 30 day walkthrough inspection. <ul style="list-style-type: none"> <input type="checkbox"/> Visually check for any damage to the spill bucket. <input type="checkbox"/> Remove any liquid or debris from the spill bucket. <input type="checkbox"/> Check for and remove any obstructions, such as tank gauge stick, in the fill pipe. <input type="checkbox"/> Make sure your fill cap is securely fastened. <input type="checkbox"/> If you have a double-walled spill bucket with interstitial monitoring, check your interstitial monitoring device for a leak into the interstitial space. <input type="checkbox"/> Look for evidence that product was released from the spill bucket. <p>Note that if you receive deliveries less frequently than every 30 days, you only have to check your spill bucket before each delivery.</p> <input type="checkbox"/> Test your spill bucket every 3 years. This test should be conducted by a person qualified to conduct spill bucket testing. If you use a double-walled spill bucket and check the interstitial space of your spill bucket for leaks during the walkthrough inspection, then this testing is not required. <input type="checkbox"/> ADEM 3 Year Spill Prevention Equipment (Spill Bucket) Integrity Test Report (Hydrostatic and Vacuum Method), form # 20, must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt. <input type="checkbox"/> See Section 3 on what to do next if the spill bucket fails the test or there is evidence of a release from the spill bucket.
<p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p> <p style="text-align: center;">UPDATED</p>	<p>Keep These O&M Records</p> <ul style="list-style-type: none"> <input type="checkbox"/> Keep records of your spill bucket testing for three years or keep documentation showing the spill bucket is double-walled and the integrity of both walls is periodically monitored for as long as spill bucket testing is not performed. <input type="checkbox"/> Keep records of your periodic walkthrough inspections for one year. <input type="checkbox"/> Keep delivery records for one year if you conduct walkthrough inspections of your spill bucket less frequently than every 30 days. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel, or any other regulated substance identified by ADEM, you must keep records demonstrating compatibility of all UST system components in contact with the regulated substance, including spill buckets, for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

What Are The Basics Of Overfill Protection?

Your USTs must have overfill protection installed to help prevent overfilling of USTs.

Three types of overfill protection devices are commonly used:

- Automatic shutoff devices
- Overfill alarms
- Ball float valves, also referred to as flow restrictors or float vent valves

These forms of overfill protection are discussed in detail on the following pages.

UPDATED

Note that ball float valves may not be installed or replaced for use as overfill protection on or after December 8, 2017.

How Can You Help The Delivery Person Avoid Overfills?

To protect your business, you must make every effort to help the delivery person avoid overfilling your UST.

- Use correct filling practices. If correct filling practices are used, you will not exceed the UST's capacity — see page 35 for a checklist of correct filling practices. Overfills can result when the delivery person makes a mistake, such as ignoring an overfill alarm.
- Use signs; alert your delivery person. The delivery person should know what type of overfill device is present on each UST at your facility and what action will occur if the overfill device is triggered — such as a visual or audible alarm or that the product flow into the UST will stop or slow significantly. Educate and alert your delivery person by placing a sign near your fill pipes, in plain view of the delivery person. See the example below.

Delivery Person – Avoid Overfills

- An overfill alarm is used for overfill protection at this facility.
- Do not tamper with this alarm or attempt to defeat its purpose.
- When the UST is 90% full, the overfill alarm whistles and a red light flashes.
- If you hear the alarm whistle or see the red light flashing, **stop the delivery immediately.**

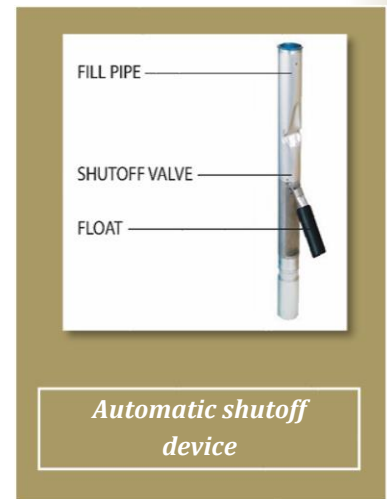
- Make sure you order the right amount of product. Order only the quantity of fuel that will fit into 90 percent of the UST. For example, if you have a 10,000 gallon UST with 2,000 gallons already in the UST, you would order at most a 7,000 gallon delivery (90 percent of 10,000 is 9,000 gallons; subtracting the 2,000 gallons already in the UST leaves a maximum delivery of 7,000 gallons). Use the formula on page 35. Calculate carefully and reduce the chance of overfills.

What Should You Do To Operate And Maintain Your Automatic Shutoff Device?

The automatic shutoff device is a mechanical device installed in line with the drop tube in the fill pipe riser. It slows down and stops delivery when product reaches a certain level in the UST. It must be positioned so that the float arm is unobstructed and can move through its full range of motion.

When installed and maintained properly, the shutoff valve will shut off the flow of fuel to the UST at 95 percent of its capacity or before the fittings at the top of the UST are exposed to fuel.

The checklist on the next page provides information on properly maintaining your automatic shutoff device.



*You should **not** use an automatic shutoff device for overfill protection if your UST receives pressurized deliveries.*

Checklist For Automatic Shutoff Devices

Description	Automatic shutoff devices are mechanical devices installed in the fill pipe riser to slow down and stop delivery when product reaches a certain level in the UST.
Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> You should post signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility. <input type="checkbox"/> No later than December 8, 2020, you must conduct the first 3 year inspection of your overfill device. This inspection should be conducted by a person qualified to conduct overfill inspections. The purpose of the inspection is to make sure the automatic shutoff device is functioning properly and the device will shut off fuel flowing into the UST at 95 percent of the UST capacity or before the fittings at the top of the UST are exposed to fuel. <ul style="list-style-type: none"> <input type="checkbox"/> Make sure the float operates properly. <input type="checkbox"/> Make sure there are no obstructions in the fill pipe that would keep the floating mechanism from working. <input type="checkbox"/> ADEM 3 Year Overfill Prevention Equipment Inspection Report must be completed and submitted to ADEM within 30 days of the inspection. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.
Keep These O&M Records	<ul style="list-style-type: none"> <input type="checkbox"/> You must maintain records of the inspection for three years. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel, or any other regulated substance identified by ADEM, you must keep records demonstrating compatibility of all UST system components in contact with the regulated substance, including overfill prevention equipment, for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

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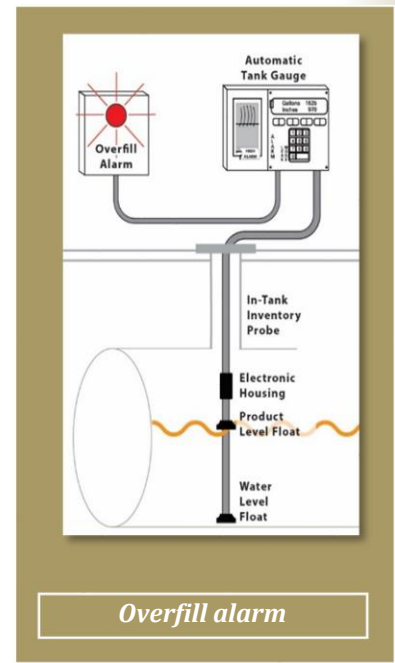
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What Should You Do To Operate and Maintain Your Electronic Overfill Alarm?

This type of overfill device activates an audible and/or visual warning to delivery personnel when the UST is 90 percent full. The alarm must be located so it can be seen or heard from the UST delivery location. Once the electronic overfill alarm sounds, the delivery person has approximately one minute to stop the flow of fuel to the UST.

Electronic overfill alarm devices have no mechanism to shut off or restrict flow. Therefore, the fuel remaining in the delivery hose after the delivery has been stopped will flow into the UST as long as the UST is not yet full.

The checklist on the next page provides information on properly maintaining your overfill alarm.



Checklist For Overfill Alarms

Description	Overfill alarms activate an audible and/or visual warning to delivery personnel when the UST is 90 percent full. Electronic overfill alarm devices have no mechanism to shut off or restrict flow.
<div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; font-weight: bold;">UPDATED</div> <div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; font-weight: bold;">UPDATED</div> Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> You should post signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility. <input type="checkbox"/> No later than December 8, 2020, you must conduct the first 3 year inspection of your overfill device. This inspection should be conducted by a person qualified to conduct overfill inspections. The purpose of the inspection is to make sure the electronic overfill alarm is functioning properly and the alarm activates when the fuel reaches 90 percent of the UST capacity. <ul style="list-style-type: none"> <input type="checkbox"/> Ensure that the alarm can be heard and/or seen from where the UST is fueled. <input type="checkbox"/> Make sure that the electronic device and probe are operating properly. <input type="checkbox"/> ADEM 3 Year Overfill Prevention Equipment Inspection Report must be completed and submitted to ADEM within 30 days of the inspection. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.
<div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; font-weight: bold;">UPDATED</div> <div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; font-weight: bold;">UPDATED</div> Keep These O&M Records	<ul style="list-style-type: none"> <input type="checkbox"/> You must maintain records of the inspection for three years. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel, or any other regulated substance identified by ADEM, you must keep records demonstrating compatibility of all UST system components in contact with the regulated substance, including overfill prevention equipment, for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

What Should You Do To Operate and Maintain Your Ball Float Valve?

UPDATED

Ball float valves cannot be installed or replaced for use as overfill protection on or after December 8, 2017. However, you may continue using ball float valves already installed as long as they operate properly or can be repaired with existing parts.

The ball float valve — also called a flow restrictor or a float vent valve — is installed at the vent pipe in the UST and restricts vapor flow out of the UST as it gets close to being full. The ball float valve must be set at a depth that will restrict vapor flow out of the vent line during delivery at 90 percent of the UST's capacity.

As the UST fills, the ball in the valve rises, restricting the flow of vapors out of the UST during delivery. The flow rate of the delivery will decrease noticeably and should alert the delivery person to stop the delivery.

For ball float valves to work properly, the top of the UST must be airtight so that vapors cannot escape from the UST. Everything from fittings to drain mechanisms on spill buckets must be tight and able to hold the pressure created when the ball float valve engages. Therefore, it is highly recommended that a tank tightness test be performed every few years to ensure that the top of the UST remains air tight.

The checklist on the next page provides information on properly maintaining your ball float valves.



Ball float valve

*You should **not** use a ball float valve for overfill protection if your UST receives pressured deliveries or if your UST system has suction underground piping or single point (coaxial) stage 1 vapor recovery.*

Checklist For Ball Float Valves

Description	Ball float valves are a type of overfill protection device that function by restricting vapor flow out of an UST as it gets close to being full.
UPDATED Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> You should post signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility. <input type="checkbox"/> No later than December 8, 2020, you must conduct the first 3 year inspection of your overfill device. This inspection should be conducted by a person qualified to conduct overfill inspections. The purpose of the inspection is to make sure the ball float valve is functioning properly and will restrict fuel flowing into the UST at 90 percent of its capacity. <ul style="list-style-type: none"> <input type="checkbox"/> Ensure the air hole is not plugged. <input type="checkbox"/> Make sure the ball cage is still intact. <input type="checkbox"/> Ensure the ball still moves freely in the cage. <input type="checkbox"/> Make sure the ball still seals tightly on the pipe. <input type="checkbox"/> ADEM 3 Year Overfill Prevention Equipment Inspection Report must be completed and submitted to ADEM within 30 days of the inspection. This form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.
UPDATED UPDATED Keep These O&M Records	<ul style="list-style-type: none"> <input type="checkbox"/> You must maintain records of the inspection for three years. <input type="checkbox"/> If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel, or any other regulated substance identified by ADEM, you must keep records demonstrating compatibility of all UST system components in contact with the regulated substance, including overfill prevention equipment, for as long as the UST system stores the regulated substance. You may use ADEM Compatibility Demonstration Log For UST Systems Storing A Regulated Substance (Product) With Greater Than 10% Ethanol Or 20% Biodiesel, or an equivalent form. This ADEM form is available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.

What Are Your Responsibilities for Correct Filling

Practices?

As an owner or operator, you are responsible for ensuring that releases due to spilling or overfilling your UST do not occur during fuel delivery. As part of this responsibility, you must:

- Ensure the amount of fuel to be delivered will fit into the available empty space in the UST; and
- Ensure the transfer operation is monitored constantly to prevent overfilling and spilling.

The checklist on the next page provides information on correctly filling your UST.

Correct Filling Practices Checklist	
What To Do Before Your USTs Are Filled	<ul style="list-style-type: none"> <input type="checkbox"/> Post clear signs that alert the delivery person to the overfill devices and alarms in use at your facility. <input type="checkbox"/> Make and record accurate readings for product, and water or phase separated entrained water in the UST before fuel delivery. <input type="checkbox"/> Order only the quantity of fuel that will fit into 90 percent of the UST. <input type="checkbox"/> Remember, the formula for determining the maximum amount of gasoline to order is: $(\text{UST capacity in gallons} \times 90\%) - \text{Product currently in UST} = \text{Maximum amount of fuel to order}$ <ul style="list-style-type: none"> ○ Example: $(10,000 \text{ gal} \times 0.9) - 2,000 \text{ gal} = 7,000 \text{ gal}$ maximum amount to order <input type="checkbox"/> Ensure the delivery person knows the type of overfill device present at the UST and what actions to perform if it activates. <input type="checkbox"/> Review and understand the spill response procedures. <input type="checkbox"/> Verify that your spill bucket is empty, clean, and will contain spills. <input type="checkbox"/> Keep fill ports locked until the delivery person requests access. <input type="checkbox"/> Prior to delivery, the delivery person is responsible for making all hook-ups. <input type="checkbox"/> Make an accurate UST capacity chart available to the delivery person.
What To Do While Your USTs Are Being Filled	<ul style="list-style-type: none"> <input type="checkbox"/> Provide safety barriers around the fueling zone. <input type="checkbox"/> Make sure there is adequate lighting around the fueling zone. <input type="checkbox"/> The person responsible for monitoring the delivery should remain attentive and observe the entire fuel delivery; be prepared to stop the flow of fuel from the truck to the UST at any time; and respond to any unusual condition, leak, or spill that may occur during delivery. <input type="checkbox"/> Keep response supplies readily available for use in case a spill or overfill occurs. <input type="checkbox"/> See Section 3 on what to do next if a spill or overfill occurs.
What To Do After Your USTs Are Filled	<ul style="list-style-type: none"> <input type="checkbox"/> Following complete delivery, the delivery person is responsible for disconnecting all hook-ups. <input type="checkbox"/> Return spill response kit and safety barriers to proper storage locations. <input type="checkbox"/> Make and record accurate readings for product and water (or phase separated entrained water) in the UST after fuel delivery.* <input type="checkbox"/> Verify the amount of fuel received. <input type="checkbox"/> Make sure fill ports are properly secured. <input type="checkbox"/> Ensure the spill bucket is free of product and clean up any small spills.

*Note: The presence of water or phase separated entrained water in your UST is an unusual operating condition. You should remove the water or phase separated entrained water as soon as possible because it can cause problems such as corrosion and degrading fuel quality, and see Section 3 on what to do next.

Section 5: Corrosion Protection



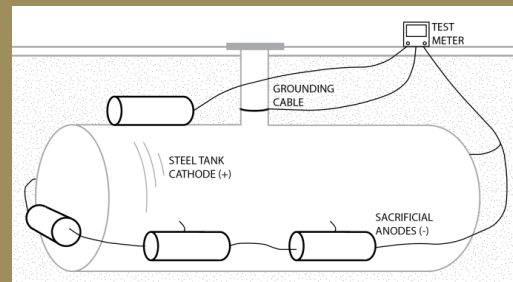
To prevent leaks and/or releases, all parts of your UST system that are in contact with the ground and routinely contain product must be protected from corrosion. The UST system includes the UST, underground piping, and ancillary equipment, such as flexible connectors, fittings, and pumps. Unprotected metal UST components can deteriorate and leak when underground electrical currents act upon them.

One way to protect USTs and components from corrosion is to make them with nonmetallic materials, such as fiberglass reinforced plastic or other nonmetallic materials. Another way is to clad or jacket metal USTs and components with nonmetallic materials such as a fiberglass reinforced plastic or urethane coating. USTs like these do not require O&M for corrosion protection.

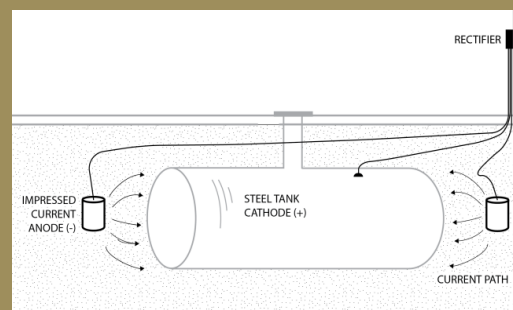
UST components made from metal that are not clad or jacketed with a nonmetallic material, and that routinely contain product and are in direct contact with the ground, must have cathodic protection. These options require O&M.

One type of cathodic protection is a sacrificial anode system. It uses buried sacrificial anodes attached to coated metal USTs and components to provide corrosion protection. Sacrificial anodes are made from a more electrically active metal than the metal USTs and components. When buried and attached to USTs and metal components, the sacrificial anodes suffer the destructive effects of corrosion rather than the metal USTs and components they are attached to.

Bare metal, soil and moisture conditions combine to produce an underground electric current that corrodes hard metal. Over time, this corrosion can cause unprotected USTs to leak.



Sacrificial anode system



Impressed current system

Another type of cathodic protection is an impressed current system. It uses a rectifier to provide direct current to buried anodes. The direct current flows from the buried anodes to the buried metal UST, metal piping, and all other buried metal components that are grounded to the rectifier. Corrosion protection is achieved by overpowering the natural current that is flowing away from the UST system, with the current flowing from the anode toward the UST system. Corrosion is prevented because current flowing away from buried metal corrodes metal, and current flowing toward buried metal prevents corrosion.

The cathodic protection rectifier must always be on and operating to protect your metal UST system from corrosion.

The table below contains your corrosion protection options.

In addition to underground storage tanks and underground piping, all other metal components in direct contact with the ground that routinely hold product — such as flexible connectors, swing joints, fittings, and pumps — must also be protected from corrosion.

Corrosion Protection Option	Description
Nonmetallic Material	UST and/or underground piping is manufactured using a nonmetallic material.
Clad or Jacketed with a Nonmetallic Material	Metal USTs are manufactured using a clad or jacket made from fiberglass or urethane. This option does not apply to underground piping.
Coated and Cathodically Protected	Metal USTs and/or metal underground piping are well coated with a dielectric material and cathodically protected. Cathodic protection may be provided by a sacrificial anode system or an impressed current system.
Noncoated and Cathodically Protected	Metal USTs and/or metal underground piping are not coated and cathodically protected using an impressed current system. This option is only for metal USTs and metal underground piping installed before December 22, 1988.

Checklist for Corrosion Protection Systems (Sacrificial Anode and Impressed Current Systems)

Description	<p>Cathodic protection is one way to protect metal USTs and components from corrosion.</p> <p>Sacrificial anode systems have buried anodes attached to coated metal USTs and components to provide corrosion protection. Sacrificial anodes are made from a more electrically active metal than the UST metal components. When buried and attached to metal USTs and components, the sacrificial anodes suffer the destructive effects of corrosion rather than the metal USTs and components they are attached to.</p> <p>Impressed current systems use a rectifier to provide direct current to buried anodes. To achieve corrosion protection, the direct current flows from the anodes through the soil, to the metal UST system, and all metal components that are grounded to the rectifier. The metal UST system is protected because the current going to it overcomes the corrosion-causing current flowing away from it.</p> <p>Impressed current systems must also meet the additional requirements in the checklist on the following page.</p>
Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> You must have a periodic cathodic protection test conducted by a certified cathodic protection tester to make sure your cathodic protection system is adequately protecting your UST system. This test needs to be conducted: <ul style="list-style-type: none"> ○ Within one month of installation. ○ At least every three years after the previous test. ○ Within one month after any repairs to your UST system: <ul style="list-style-type: none"> ▪ Make sure the cathodic protection tester is certified to perform the test and follows a standard code of practice to determine that test criteria are adequate. ▪ If any test indicates your UST system is not adequately protected, you must have a trained professional examine and fix your cathodic protection system. ▪ Testing more frequently can catch problems before they become big problems. <input type="checkbox"/> For sacrificial anode systems, ADEM Cathodic Protection Monitoring Form for Galvanic Systems, form # 545, must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/DeptForms/default.cnt. <input type="checkbox"/> For impressed current systems ADEM Cathodic Protection Monitoring Form for Impressed Current Systems, form # 332, must be completed and submitted to ADEM within 30 days of testing. This form is available from ADEM's web site at www.adem.alabama.gov/DeptForms/default.cnt.
Keep These O&M Records	<ul style="list-style-type: none"> <input type="checkbox"/> You must keep the results of at least the last two cathodic protection tests.

Checklist for Corrosion Protection Systems (Additional Requirements for Impressed Current Systems)

Description	<p>Impressed current systems use a rectifier to provide direct current to buried anodes. From the anodes, the direct current flows through the soil to the metal UST system to achieve corrosion protection on all metal components that are grounded to the rectifier. The metal UST system is protected because the current going to it overcomes the corrosion-causing current flowing away from it.</p> <p>Impressed current systems must also meet the requirements in the checklist on the previous page.</p>
Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> You must inspect your rectifier at least every 60 days to make sure it is operating within normal limits. You or your employees can perform this periodic inspection. <ul style="list-style-type: none"> <input type="checkbox"/> This inspection requires reading and recording the voltage and amperage readouts and recording them on ADEM Impressed Current Cathodic Protection System 60-Day Inspection Log, form #400 or equivalent form. This form is available from ADEM's web site at www.adem.alabama.gov/DeptForms/default.cnt. You or your employees can perform this periodic inspection. <ul style="list-style-type: none"> <input type="checkbox"/> Make sure that the professional engineer who designed your cathodic protection system provides you with the rectifier's acceptable operating levels so that you can compare the actual rectifier readings to them. <input type="checkbox"/> If your readings are not within these acceptable levels, immediately contact a cathodic protection tester or expert to repair the cathodic protection system. <input type="checkbox"/> The cathodic protection rectifier must always be on and operating to protect your metal UST system from corrosion.
Keep These O&M Records	<ul style="list-style-type: none"> <input type="checkbox"/> You must keep records of at least the last three rectifier readings.

Section 6: Temporary Closure



If you decide to temporarily discontinue using your UST system (stop filling and dispensing product), you must notify ADEM within 30 days by completing and submitting ADEM Notice of Temporary Closure form.

Your USTs are only allowed to contain product for up to 3 months while in temporary closure. Spill and overfill requirements do not have to be met for as long as the UST is not being used. Release and or leak detection, any required corrosion protection monitoring, and operation and maintenance testing and inspections, must continue to be performed when product remains in a temporarily closed UST.

After you empty your UST that is not in use (leaving 1 inch or less of residue), only corrosion protection requirements must continue to be met. However, vent lines must remain open and functioning, and all underground piping, pumps, manways, and ancillary equipment must be capped and secured.

If the corrosion protection requirements are not met for a cathodically protected UST system that is temporarily closed, ADEM may require the USTs to be permanently closed in accordance with ADEM closure requirements. An extension may be applied for only after a site assessment is performed within the temporary closure period and submitted to the Department for approval.

The checklist on the next page provides information on how to properly temporarily close your USTs and underground piping.

If a UST in temporary closure is found to be compromised in any way during temporary closure, the UST must be immediately emptied (if not already empty) and either repaired or permanently closed within 90 days.

Checklist for Temporary Closure (For USTs and Underground Piping)

Description	A UST system is in temporary closure when a UST owner discontinues the use of a UST system (filling and dispensing product).
Perform These O&M Actions	<ul style="list-style-type: none"> <input type="checkbox"/> When you decide to temporarily close an UST, you must notify the Department within 30 days by completing and submitting ADEM Notice of Temporary Closure form # 310. This form is available from ADEM's web site at www.adem.alabama.gov/DeptForms/default.cnt. <input type="checkbox"/> When an UST system is in temporary closure and the UST <u>is not</u> empty, you: <ul style="list-style-type: none"> <input type="checkbox"/> Must continue release and/or leak detection. <input type="checkbox"/> Must continue corrosion protection monitoring (if applicable). <input type="checkbox"/> Must continue operation and maintenance testing and inspections. <input type="checkbox"/> May discontinue spill and overfill requirements. <input type="checkbox"/> Must empty temporarily closed UST (1 inch or less of residue) within 90 days. <input type="checkbox"/> When an UST system is in temporary closure and the UST <u>is</u> empty (1 inch or less of residue), you: <ul style="list-style-type: none"> <input type="checkbox"/> Must continue corrosion protection monitoring (if applicable). <input type="checkbox"/> May discontinue spill and overfill requirements. <input type="checkbox"/> Must keep vent lines open and functioning. <input type="checkbox"/> Must cap and secure all underground piping, pumps, manways, and ancillary equipment. <input type="checkbox"/> If a UST in temporary closure is found to be compromised in any way, you must immediately empty and either repair or permanently close the compromised UST within 90 days. <input type="checkbox"/> When USTs are temporary closed, you are <u>not</u> required to perform walkthrough inspections.
Keep These O&M Records	<ul style="list-style-type: none"> <input type="checkbox"/> You must keep release and/or leak detection, corrosion protection, and other testing and inspection records when applicable. Refer to Section 2 and 5 checklists to determine what records must be kept.

Section 7: Walkthrough Inspections



UPDATED

No later than October 13, 2018, you must conduct your first walkthrough inspection. Below we provide details and frequency of the inspection.

UPDATED

Every 30 days

- Check your spill prevention equipment for damage and remove liquid or debris.
- Check for and remove obstructions in the fill pipe.
- Check the fill cap to ensure it is securely on the fill pipe.
- For double-walled spill prevention equipment with interstitial monitoring, check for a leak into the interstitial space.

UPDATED

Exception: if your UST system receives deliveries at intervals greater than 30 days, you may only check your spill prevention equipment prior to each delivery.

- Check your release/leak detection equipment to ensure it is operating with no alarms or unusual operating conditions present (for example ATG consoles or pressure or vacuum gauges). You do not have to check release/leak detection equipment in containment sumps. Release/leak detection equipment in these areas is tested annually.
- Review your release/leak detection records and ensure they are current.

UPDATED

Annually

- Check your containment sumps for damage and leaks to the containment area or releases to the environment.
- Remove liquid in contained sumps or debris.
- For double-walled containment sumps with interstitial monitoring, check for leaks into the interstitial space.
- Check your hand-held release detection equipment, such as groundwater bailers and tank gauge stick, for operability and serviceability.



Inspecting a containment sump

The Alabama UST regulations allow owners and operators to conduct O&M walkthrough inspections according to a standard code of practice developed by a nationally recognized association or independent testing laboratory or according to requirements developed by ADEM. The inspections must check equipment in a manner comparable to the walkthrough inspection requirements described above. Note that owners and operators must use the entire code of practice if choosing that option for meeting the walkthrough inspection requirement.

In addition to the requirements listed above, you may also want to perform these good site management practices during your walkthrough inspections:

- Fill and monitoring ports: Are covers and caps tightly sealed and locked?
- Spill and overfill response supplies: Do you have the appropriate supplies for cleaning up a spill or overfill?
- Sumps and containment areas: Is there significant corrosion on the UST equipment in these areas? Significant corrosion could result in equipment not working properly.
- Dispenser hoses, nozzles, and breakaways: Are they in good condition and working properly?

If you find problems during the inspection, you or your UST contractor must take action quickly to resolve these problems and avoid serious releases.

Checklist for Walkthrough Inspections

Description	To properly operate and maintain UST systems, owners and operators of UST systems must conduct walkthrough inspections once per month and a more thorough walkthrough inspection once per year. Walkthrough inspections may be performed in accordance with the ADEM requirements, or may be performed in accordance with a nationally recognized association or independent testing laboratory.
<div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; margin-bottom: 10px;">UPDATED</div> <div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; margin-bottom: 10px;">UPDATED</div> <div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; margin-bottom: 10px;">UPDATED</div> <div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; margin-bottom: 10px;">UPDATED</div> <div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; margin-bottom: 10px;">UPDATED</div> <div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; margin-bottom: 10px;">UPDATED</div> <div style="background-color: #e67e22; color: white; padding: 2px; text-align: center; margin-bottom: 10px;">UPDATED</div> <div style="background-color: #e67e22; color: white; padding: 2px; text-align: center;">UPDATED</div>	<p><input type="checkbox"/> No later than October 13, 2018, you must begin performing periodic walkthrough inspections.</p> <p><input type="checkbox"/> As a minimum, during your monthly walkthrough inspection, you must:</p> <ul style="list-style-type: none"> ○ Check your spill prevention equipment for damage and remove liquid or debris. ○ Check for and remove obstructions in the fill pipe. ○ Check the fill cap to ensure it is securely on the fill pipe. ○ For double-walled spill prevention equipment with interstitial monitoring, check for a leak into the interstitial space. ○ Check your release detection equipment to ensure it is operating with no alarms or unusual operating conditions present. ○ Review your release detection records and ensure they are current. <p><input type="checkbox"/> As a minimum, once every year during your walkthrough inspection, you must also:</p> <ul style="list-style-type: none"> ○ Check your containment sumps for damage and leaks to the containment area or releases to the environment. ○ Remove liquid or debris from containment sumps. ○ For double-walled containment sumps with interstitial monitoring, check for leaks into the interstitial space. ○ Check your hand-held release detection equipment, such as groundwater bailers and tank gauge stick, for operability and serviceability. <p><input type="checkbox"/> If you find problems during the inspection, you or your UST contractor must take action quickly to resolve these problems to avoid serious releases.</p> <p><input type="checkbox"/> If a release is discovered during a walkthrough inspection, see Section 3 for information on what to do next.</p> <p><input type="checkbox"/> You may document your walkthrough inspection using ADEM Annual and 30 Day Walkthrough Inspection Checklist Log forms, or you may use the forms provided in a standard code of practice developed by a nationally recognized association or independent testing laboratory. ADEM forms are available from ADEM's web site at www.adem.alabama.gov/programs/water/groundwater.cnt.</p> <p><input type="checkbox"/> As a minimum, walkthrough inspection records must include a list of each area checked, whether each area checked was acceptable or needed action taken, a description of actions taken to correct an issue, and delivery records if spill prevention equipment is checked less frequently than every 30 days due to infrequent deliveries.</p> <p><input type="checkbox"/> When a UST is temporary closed, you are <u>not</u> required to perform a walkthrough inspection for the temporary closed UST.</p> <p><input type="checkbox"/> All UST owners are required to have personnel that are designated and trained operators. Make sure employees who perform walkthrough inspections are trained so they know exactly what they have to do and to whom to report problems</p>
Perform These O&M Actions	
Keep These O&M Records	<input type="checkbox"/> Keep your periodic walkthrough inspection records for at least one year.

Section 8: For More Information



Links to Government UST Program Information

- ADEM Forms:
www.adem.alabama.gov/DeptForms/default.cnt
- ADEM Draft UST Forms:
www.adem.alabama.gov/programs/water/groundwater.cnt
- ADEM UST Regulations:
www.adem.alabama.gov/alEnviroRegLaws/files/Division6Vol2.pdf
- ADEM UST Program Information:
www.adem.alabama.gov/programs/water/groundwater.cnt
- ADEM UST Compliance Information:
www.adem.alabama.gov/programs/water/ustcompliance.cnt
- U.S. Environmental Protection Agency's Office of Underground Storage Tanks:
www.epa.gov/ust
- Tanks Subcommittee of the Association of State and Territorial Solid Waste Management Officials (ASTSWMO):
www.astswmo.org
- New England Interstate Water Pollution Control Commission (NEIWPC):
www.neiwpc.org

To Contact the
ADEM UST
Program by
phone, call the
ADEM
Groundwater
Branch at
(334) 270-5655

Link to List of UST Industry Codes and Standards

- www.epa.gov/ust/underground-storage-tanks-usts-laws-regulations#code

Link to List of Third-Party Evaluated Leak Detection Equipment Approved by ADEM

- www.nwglde.org

Link to List of Other Organizations to Contact for UST Information

- www.epa.gov/ust/underground-storage-tank-ust-contacts#other

