MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF LAND PROTECTION AND REVITALIZATION
OFFICE OF SPILL RESPONSE AND REMEDIATION

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Subject: Division of Land Protection and Revitalization Guidance Memo LPR-SRR-2018-3
NEW UNDERGROUND STORAGE TANK REQUIREMENTS EFFECTIVE JANUARY 1, 2018

To: Regional Petroleum Program Managers

From: Justin Williams
Director, Division of Land Protection and Revitalization

Date: October 2, 2018

Copies: Regional Directors, Deputy Regional Directors, Betty Lamp, Russ Ellison, Alicia Meadows

Summary:

This guidance provides DEQ staff with the implementation policies for the new underground storage tank regulations that became effective on January 1, 2018. A separate guidance document will be created for the regulatory requirements that must be completed by January 1, 2021. This guidance will be incorporated into Volume III of the Storage Tank Program Compliance Manual.

Electronic Copy:

An electronic copy of this guidance is available on DEQ's website at http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/PetroleumProgram/GuidanceRegulations.aspx

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Please contact Alicia Meadows at Alicia.Meadows@deq.virginia.gov or (540) 562-6729 or Russ Ellison at Russell.Ellison@deq.virginia.gov or (804) 698-4269 with any questions regarding the application of this guidance.

Disclaimer:

This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any alternative method. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

NEW UNDERGROUND STORAGE TANK (UST) REQUIREMENTS EFFECTIVE JANUARY 1, 2018

BACKGROUND

The revised federal Underground Storage Tank (UST) regulations became effective on October 13, 2015. The 1988 UST regulation required owners and operators to have spill, overfill, corrosion protection and release detection equipment in place for their UST systems, but did not require proper operation and maintenance for some of that equipment. The 2015 revisions require that UST equipment be properly operated and maintained. The revisions also acknowledge improvements in technology over the last 25 years, including the ability to detect releases from UST systems deferred in the 1988 UST regulation. In order to maintain EPA program delegation, Virginia has revised its UST regulation to conform to the federal regulations.

Changes to Virginia's UST Technical and Financial Responsibility regulations became effective on January 1, 2018. Tank owners/operators must comply with some new regulatory requirements as of January 1, 2018, but will have until January 1, 2021 to demonstrate compliance with the remaining requirements.

PURPOSE

This guidance discusses the new regulatory requirements contained in 9VAC25-580 et seq. that tank owners/operators must comply with as of January 1, 2018. Most requirements in this guidance apply to UST systems that are installed on or after January 1, 2018. **Guidance regarding requirements that become effective January 1, 2021 will be discussed in a separate document.**

NEW NOTIFICATION FORM

DEQ has developed a new one page ownership notification form (Form 7530-3C, Appendix A) which new owners may use to notify DEQ of a change in UST ownership. This form is easier to complete but is limited to new owners that purchase an entire UST facility. The form must be submitted within 30 days of ownership change. Former tank owners may continue to use Form 7530-3A to notify DEQ that the tanks have been sold to a new owner. Owners that purchase individual tanks but do not purchase the entire facility and owners that make changes to tanks at their facility will continue to notify DEQ using the 7530-3 form.

SPILL PREVENTION

SPILL PREVENTION TESTING OF NEWLY INSTALLED SPILL DEVICES

- All spill prevention devices around fill pipes (including remote fills) installed on or after January 1, 2018 must be tightness tested at the time of installation in accordance with the manufacturer's recommendations.
- Spill prevention devices around equipment such as automatic tank gauge and vapor recovery risers do not need to be tested.
- Owners who install double-walled spill buckets may choose to begin monitoring the interstitial space every 30 days or at the time of each delivery (whichever is greater) to preempt the need to do a tightness test in 3 years.

Note: Within 30 days of discontinuing interstitial monitoring of double-walled spill buckets, a tightness test must be conducted.

- The spill prevention device testing must follow criteria developed by the manufacturer or an industry standard, such as Petroleum Equipment Institute Publication (PEI) RP1200 "Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities (PEI RP1200)."

FAILED TEST RESULTS

When a spill prevention device fails an integrity test, it must be repaired, or closed and replaced. Repairs should be conducted immediately following a failed test result or documentation should be provided to DEQ demonstrating that steps are being taken for a timely repair. Continuing to use a leaking spill prevention device could result in ineligibility for reimbursement from the Virginia Petroleum Storage Tank Fund (VPSTF) for cleanup costs should a release occur from the tank system that may have been prevented. A leaking spill prevention device usually means that the tank owner/operator is out of compliance with spill prevention requirements until the device is properly repaired or replaced.

Spill prevention device test failures on their own will not be considered suspected releases. Likewise, a spill device closure assessment with soil samples is not required. However, if there is clear evidence of contamination such as stained soils or the presence of strong vapors, a confirmed release should be reported to DEQ within 24 hours. A case manager will be assigned to the pollution complaint and soil samples will likely be required in cases where there is clear evidence of contamination.

REPAIRS

Repairs must be conducted in accordance with an industry standard or manufacturer's instructions. The repaired device must also be tested following the repair to ensure the integrity of the repaired component. Repair records must be kept for the life of the system.

OVERFILL PREVENTION DEVICES

Owners and operators must not install new or replace existing ball float valves (flow restrictors) to meet the overfill prevention requirement on or after January 1, 2018. Existing ball float valves may continue to be used until they fail a functionality test. Once a ball float valve fails a functionality test, it must be repaired or a new type of overfill device must be used, such as a shut off valve or overfill alarm. Existing ball float valves may continue to be used in conjunction with another primary overfill prevention device as long as the ball float does not interfere with the operation of the overfill prevention equipment being used as the compliant device.

FUNCTIONALITY TESTS

- All overfill prevention devices installed on or after January 1, 2018 must be inspected at the time of installation to ensure that the device will alert the operator prior to the tank overfilling. Shut off valves must alert the transfer operator when the tank is no more than 95% full or automatically shut off flow into the tank so that none of the fittings located on top of the tank are exposed to product due to overfilling.
- Alarms must alert the transfer operator when the tank is not more than 90% full or one minute before overfilling.
- If the UST system is equipped with two or more overfill devices, then both devices need to be tested to ensure that neither device hinders the operation of the other.
- Ball float valves should not be used in conjunction with: suction piping, pumped delivery, coaxial Stage 1 vapor recovery, remote fill pipes with gauge openings, or when shutoff valves are used for overfill. Ball float valves used in these scenarios should fail integrity tests.

The overfill device inspection must follow criteria developed by the manufacturer or an industry standard, such as PEI RP1200. The regulation does not require removal of the overfill device for inspection; however, if the manufacturer or testing standard requires removal, then the overfill device must be removed before inspecting. Additionally, some manufacturers have developed overfill devices and inspection tools that may not require removal of the device for testing after installation. DEQ staff will verify test records for correct methodology and frequency at the time of the facility inspection.

The tank owner or operator must keep the test records for at least 3 years following device inspection.

FAILED OVERFILL PREVENTION DEVICE INTEGRITY TESTS

When an overfill prevention device fails an integrity test it must be repaired or replaced. **Overfill devices cannot be replaced with new ball float valves.** If an overfill device is removed and replaced with a different type of overfill device, tank owners/operators must notify DEQ of the change using Virginia's Notification for Underground Storage Tanks Form 7530-3.

- If an overfill device is removed and replaced with the same type of device, the tank owner/operator must submit to DEQ a signed letter and a work order invoice indicating when the new overfill prevention device was replaced, and what type of device was installed.

REPAIRS

Repairs must be conducted in accordance with an industry standard or manufacturer's instructions. Ball float valves may only be repaired if they are not set to the correct height in the tank. Replacing major components of the overfill device equates to replacing the ball float valve which will not be allowed. Otherwise, if the ball float valve fails the integrity test, it must be replaced with another type of overfill device. The repaired device must also be tested following the repair to ensure the integrity of the repaired component. Repair records must be kept for the life of the system.

CONTAINMENT SUMPS

A containment sump is a liquid-tight container that protects the environment by containing leaks and spills of regulated substances from piping, dispensers, pumps and related components in the containment area. Containment sumps may be single walled or double walled. They may be located at the tank top surrounding the submersible turbine pump (STP), underneath the dispenser (under-dispenser containment sump), or at other points in the piping run (transition or intermediate sump).

CONTAINMENT SUMP TESTING

Containment sumps used for interstitial monitoring installed on or after January 1, 2018 must be tightness tested at the time of installation and every three years thereafter unless the tanks are temporarily closed and empty. Containment sump testing must follow criteria developed by the manufacturer or an industry standard, such as PEI RP1200. If a sump sensor can trigger the pump or dispenser to shut off, then only the bottom of the sump up to the level of the sump sensor activation (about 2 inches) needs to be tested. If the sump sensor shuts off only the dispenser, then an operator must be present at all operating times to shut the pump off or the sump will need to be tested in accordance with a procedure developed by the manufacturer or PEI RP1200 (4" above highest penetration test). The tank owner or operator must keep the test records for at least 3 years following the device inspection.

FAILED TEST RESULTS

When a containment sump used for interstitial monitoring fails an integrity test, it must be repaired or closed and replaced. Repairs should be conducted immediately following a failed test result or documentation should be provided to DEQ demonstrating that steps are being taken for a timely repair. Continuing to use a leaking containment sump, could result in being denied reimbursement by the Virginia Petroleum Storage Tank Fund (VPSTF) for cleanup costs should a release occur from the tank system that may have been prevented. A leaking containment sump usually means that the tank owner/operator is out of compliance with secondary containment and interstitial monitoring requirements until the sump is properly repaired or replaced. Repairs must be conducted in accordance with an industry standard or manufacturer's instructions. The repaired device must also be tested following the repair to ensure the integrity of the repaired component. Repair records must be kept for the life of the system.

Containment sump test failures will not be considered suspected releases. Likewise, a closure assessment with soil samples is not required when removing a containment sump only and not any associated piping. However, if there is clear evidence of contamination such as stained soils or the presence of strong vapors, a confirmed release should be reported to DEQ within 24 hours. A case manager will be assigned to the pollution complaint and soil samples will likely be required in cases where there is clear evidence of contamination.

RELEASE DETECTION

VAPOR AND GROUNDWATER MONITORING SITE ASSESSMENTS

A site suitability assessment is required when groundwater or vapor monitoring is used for release detection. The site must be assessed to ensure the regulatory requirements can be met and to establish the number and position of the wells. Vapor and Groundwater monitoring site assessment requirements may be found in Appendices B and C.

Note: Any site assessments conducted on or after January 1, 2018 to determine site suitability must be certified by a Professional Engineer or Certified Professional Geologist.

STATISTICAL INVENTORY RECONCILIATION (SIR)

The regulation now includes specific requirements for performing SIR as a release detection method. Under the regulation SIR must:

- Report a **quantitative** result with a calculated leak rate;
- Be capable of detecting a leak rate of at least 0.2 gallon per hour or a release of 150 gallons within a 30-day period with a probability of detection of not less than 0.95 and a probability of false alarm of no greater than 0.05; and
- Use a threshold that does not exceed one-half the minimum detectable leak rate.

Although the regulation has been amended with specific requirements for SIR, most changes will not affect Virginia tank owners using SIR as they are already complying with these requirements.

In the past, tank owners/operators submitted SIR results to a vendor every 30 days and would receive the results from the vendor about two weeks later. The past SIR practices resulted in release detection results being obtained every 45 days instead of every 30 days. As of January 1, 2018, a SIR result of pass, fail, or inconclusive must be obtained every 30 days. A tank owner and operator will be considered out of compliance if the SIR result is not determined within the 30 day monitoring period. In order to obtain an SIR result within the 30 day time period, tank owners/operators and SIR vendors may use a rolling 30 day analysis by conducting data analysis more frequently. The most recent 30 days of data may include the past 16 days and approximately 14 days of the previous period's inventory data. Another way the 30 day requirement may be met is by sending the data to the vendor electronically and the vendor immediately conducting the analysis. Tank owners and operators should discuss their options with their SIR vendor.

CORROSION PROTECTION

BARE STEEL TANKS AND PIPING

In most cases, tanks and piping not protected against corrosion by January 1, 2018 will need to be permanently closed. However, most cathodic protection systems may be repaired when the systems fail. DEQ will still allow buried steel piping connectors to be upgraded after January 1, 2018. DEQ will evaluate on a case by case basis whether bare or galvanized piping systems without impressed current systems can upgrade.

INTERNAL LINING

In the 1990's some tank owners upgraded their USTs to meet the corrosion protection requirements by installing internal liners. Although owners and operators may no longer line their UST systems to meet the corrosion protection requirement for tanks, they may internally line their tanks for other reasons. For example, owners and operators may internally line their tanks for fuel compatibility, to repair leaking tanks, or to add secondary containment.

When an internal liner is the only means of corrosion protection for a steel tank or has been used to repair a leaking steel or fiberglass tank, then the liner must be inspected 10 years after installation and every 5 years thereafter in accordance with national standards. If the liner is no longer performing in accordance with the original design specifications and cannot be repaired in accordance with industry standards, the tank owner must now permanently close the tank. The industry standards (NLPA 631 and API 1631) have always required permanent closure of lined tanks that do not meet the tank wall thickness requirements, and will generally be informative on whether a tank may be repaired.

ALTERNATIVES TO CLOSURE

DEQ recognizes that a one size fits all approach to corrosion protection violations is not always practical. DEQ has updated its "Alternatives to Closure for Upgrading Violations – Decision Matrix" in Appendix E for compliance options based upon various corrosion protection scenarios.

SECONDARY CONTAINMENT

All tanks and piping installed in Virginia after September 15, 2010 must be secondarily contained. The 2018 amendment removes the community water supply distance exemption from the secondary containment requirements to conform to the federal regulation amendments.

REPAIRS

The definition of a repair was amended in the regulation to include repairs to all UST system components, even if the component did not leak. Repair now means "to restore to proper operating condition a tank, pipe, spill prevention equipment, overfill prevention equipment, corrosion protection equipment, release detection equipment or other UST system component that has caused a release of product from the UST system or has failed to function properly. "

This means that when any UST system component is repaired, the repair must be conducted in accordance with an industry standard or manufacturer's instructions. Repairs should be conducted immediately following a failed test result or discovery of a faulty system component or documentation should be provided to DEQ demonstrating that steps are being taken for a timely repair. Continuing to use faulty equipment that needs repair, could result in being denied reimbursement by the Virginia Petroleum Storage Tank Fund (VPSTF) for cleanup costs should a release occur from the tank system that could have been prevented. The faulty equipment may also mean non-compliance with the regulatory requirements.

The repaired component must also be tested following the repair to ensure the integrity of the repaired component. Tank owners and operators must keep repair records for the life of the system.

COMPATIBILITY

AMENDMENTS

UST system product compatibility has become increasingly important as the use of biofuels becomes common. The UST regulation has always required that the UST system components be compatible with the substance stored. The new regulation strengthens that requirement by adding specific compatibility requirements for biofuels containing greater than 10% ethanol or greater than 20% biodiesel. Now, tank owners are required to demonstrate compatibility by notifying DEQ at least 30 days prior to storing biofuels containing greater than 10% ethanol or greater than 20% biodiesel.

SECONDARY CONTAINMENT AND REPAIRED COMPONENTS

Secondary containment structures used for interstitial monitoring (sumps and under-dispenser containment UDC) and any repaired UST system components should be compatible with the substance stored. DEQ will begin requiring tank owners/operators to demonstrate that secondary containment systems and repaired system components are compatible with the substance stored for systems installed or components repaired after January 1, 2018.

DEMONSTRATION (COMPATIBILITY FORM)

Tank owners/operators may use the form in Appendix D to demonstrate compatibility and notify DEQ at least 30 days prior to retrofitting an existing UST system or installing a new UST system that will be storing a biofuel containing greater than 10% ethanol or greater than 20% biodiesel. A building permit must be obtained and building code requirements must also be met when applicable. Localities may have additional requirements regarding biofuels. More information regarding biocompatibility may be found at https://www.epa.gov/ust/ust-system-compatibility-biofuels .

TEMPORARILY CLOSED TANKS AND FINANCIAL RESPONSIBILITY

Tank owners that have temporarily closed tanks will need to begin demonstrating financial responsibility by January 1, 2018 even if the tanks are empty. Financial responsibility requirements may be found here http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/PetroleumProgram/StorageTanks/UndergroundStorageTanks/USTFinancialResponsibility.aspx .

AIRPORT HYDRANT FUEL SYSTEMS AND FIELD CONSTRUCTED TANKS

Like the federal regulation, Virginia's 1989 and 2010 UST regulations deferred airport hydrant fuel distribution systems (AHFS) and field constructed tanks (FCT) from most of the requirements except corrective action. As of January 1, 2018, newly installed AHFS and field constructed tanks and the associated underground piping will become fully regulated; however, some requirements will not be effective for existing tanks until January 1, 2021.

DETERMINING IF A TANK IS AN AHFS

An AHFS is an UST system which fuels aircraft and operates under high pressure with large diameter piping that typically terminates into one or more hydrants, also known as fill stands. The hydrant system begins where fuel enters one or more tanks from an external source such as a pipeline, barge, rail car, or other motor fuel carrier.

Airport hydrant systems often have more than one tank and include:

- aboveground and underground storage tanks storing aircraft fuel;
- large diameter piping under very high pressure;
- directly connected underground piping; and
- other connected tanks holding aircraft fuel such as settling tanks or tanks used to relieve pressure in the system.

Airport hydrant systems do not include:

- tanks not storing aircraft fuel, for example, additive tanks;
- tanks not directly connected to the airport hydrant system, for example, tanks used to power an emergency generator in a pump house; and
- piping connected to those tanks.

Many airports have USTs but many small airports do not have piping under very high pressure. The majority of airports in Virginia do not have USTs that meet the definition of an AHFS.

DETERMINING IF A TANK IS A FCT

A FCT is a tank constructed in the field. For example, a tank constructed of concrete that is poured in the field, or a steel or fiberglass tank primarily fabricated in the field is considered field-constructed. FCTs are not pre-fabricated in a factory like conventional UST systems at gas stations. Though FCTs can be conventional sizes, most are for bulk storage of millions of gallons of product.

AHFS AND FCTS INSTALLED ON OR BEFORE JANUARY 1, 2018

The 1988 UST regulation required owners to perform corrective action when releases from FCTs and AHFSs occurred but did not require release reporting and investigation. The amended regulation now makes these requirements applicable to FCTs and AHFSs as of January 1, 2018. Specifically, owners and operators must comply with:

- Release reporting;
- Release investigation;
- Release confirmation; and
- Closure requirements.

Owners and operators of FCTs or AHFSs permanently closed and emptied (less than 1 inch of product) before January 1, 2018 are subject to the closure requirements if a release from the UST may, in the judgment of DEQ, pose a current or potential threat to human health and the environment. Otherwise, FCTs and AHFSs installed prior to January 1, 2018 will not be subject to the closure requirements.

FCTS AND AHFS INSTALLED ON OR AFTER JANUARY 1, 2018 (AND THOSE INSTALLED PRIOR BY 1-1-21)

Owners and operators must meet these requirements at installation:

- Notification;
- Financial responsibility;
- Spill, overfill, and corrosion protection;
- Release detection;
- Operator training;
- Secondary containment with interstitial monitoring;
- Under-dispenser containment for new dispenser systems;
- General operating requirements, including compatibility and repairs; and
- Release response, reporting, corrective action, and closure.

Note: The preceding requirements will become effective for FCTS and AHFS installed on or before January 1, 2018 by January 1, 2021.

For additional information, please refer to the EPA Publication, "Requirements for Field-Constructed Tanks and Airport Hydrant Systems" (https://www.epa.gov/ust/requirements-field-constructed-tanks-and-airport-hydrant-systems).

OPERATOR TRAINING

Virginia did not make any changes to the operator training requirements that became effective September 15, 2010. Training providers are not required to add the new requirements to their existing training programs. Likewise, tank operators with a current Class A or Class B training certificate do not need to complete another training program regarding the new requirements. However, some training providers have or are in the process of amending their training programs to include the new requirements so that new operators will be trained on the past and present UST requirements. If a training provider amends a training program, the program should be submitted to DEQ for review and approval of the amended program unless they have reciprocity approval from another state.

Notification For Underground Storage Tanks (USTs) Change of Ownership For UST Facility

Virginia DEQ Water Form 7530-3C

(See reverse for mailing instructions) **(1/18)**

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE USE ONLY
ID Number
Date Received
Date Entered
Entered By
Comments

New owners of USTs may use this form to request that DEQ change its registration records to reflect a new owner for **all currently in use** and **temporarily out of use** USTs at a facility. UST owners are required to notify DEQ within 30 days of any change in UST ownership.

NOTE: This form may be used only for ownership notification and only when the entire UST facility is transferred. Form 7530-3 must be used for other UST notifications.

PART I: CURRENT OWNERSHIP OF TANKS		PART II: LOCATION OF TANKS	
A. Current Owner Name		A. Facility Name	
B. Current Owner Address		B. Facility Street Address (P.O. Box not acceptable)	
C. City, State, Zip		C. City, Zip	D. County or Municipality
D. Name of Contact	E. Title of Contact	E. Facility Contact Name	F. Facility Contact Title
F. Phone Number ( )	G. Fax Number ( )	G. Contact Phone Number ( )	H. Contact Fax Number ( )
H. E-mail Address		I. Contact E-mail Address	

PART III: FORMER OWNERSHIP OF TANKS		PART IV: TRANSFER INFORMATION
A. Former Owner Name		A. New Facility Name if Changing
B. Former Owner Address		B. Date of Ownership Transfer
C. City, State, Zip		C. Number of Tanks at Facility
D. Former Owner Contact	E. Former Contact Title	D. Comments:
F. Phone Number ( )	G. Fax Number ( )	
H. E-mail Address		

PART V: OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I understand that the owner of the underground storage tanks hereby registered is responsible for compliance with the requirements of Virginia Regulations 9 VAC 25-580-10 et seq. and Federal Regulation 40 CFR Part 280, among other requirements. I warrant and represent that I am the owner or that I have the authority to sign this certification on behalf of the owner. I understand that this notification form is sufficient evidence to establish ownership of tanks subject to 9 VAC 25-580-10 et seq.

Name and Title _____ Signature _____ Date _____

Appendix B – Site Assessment Requirements for Vapor Monitoring

The site assessment should include the following information:

a. **Backfill material.** The site assessment should indicate if the soil/backfill material surrounding the tanks is sufficiently porous to allow vapors to be easily detected. The most commonly used backfill materials, pea gravel or sand, are porous enough for vapors to move to the monitoring wells. Tanks installed in the 70's and 80'smay have been installed in native soils such as clay that are not sufficiently permeable/porous for vapors to move to the wells and be detected within 30 days. If the backfill material is unknown, the tank owner must determine its suitability (in some cases a soil analysis may need to be conducted).

b. **Product Volatility.** The stored substance must be sufficiently volatile to result in a detectable vapor level if a release occurs. Thus, vapor monitoring is an acceptable method for a volatile substance such as gasoline, but not for heavy, less volatile petroleum products such as crude oil or residual fuel oils. For less volatile products, a tracer compound may be combined with the stored product to satisfy the volatility requirement. Since vapor detection of middle distillates like diesel and kerosene is questionable, the site assessment must include demonstration that the monitoring device can detect the stored product. Acceptable demonstrative documentation includes manufacturer's claims or leak detection equipment evaluations.

c. **Moisture Interferences.** Groundwater, rainfall, soil moisture, or other interferences must not render the vapor monitoring inoperative. If backfill is saturated with water, because of a perched water table, fluctuating water table, or rainfall, vapor monitoring devices cannot be used. Saturated backfill conditions will inhibit vapor movement. Additionally, vapor sensors may not properly function if immersed in water.

d. **Background Contamination.** The level of background contamination in the excavation zone must not interfere with the detection of new releases. The "Evaluation of Vapor Monitoring Data for Release Detection" contains instructions for determining background contamination levels and evaluating vapor monitoring data.

e. **Wells are properly designed and positioned**. Typically, properly screened monitoring wells are installed in all four corners of the tank field and provide sufficient evaluation of the tank. Further investigation may be necessary by an environmental consultant for atypical installations.

Appendix C – Site Assessment Requirements for Groundwater Monitoring

Upon installation of the groundwater monitoring method, the site must be assessed to ensure the regulatory requirements can be met and to establish the number and position of the wells. The site assessment should include the following information:

a. **Groundwater is never greater than 20 feet from surface.** The depth to groundwater may be verified via the monitoring well. A measuring stick may be used to determine monitoring well depth. If the well casing is 20 feet from surface and groundwater is present at bottom of the well, then the groundwater is clearly at least 20 feet from surface. If the well collects surface water, then it may not be functioning properly and could produce false positive monitoring. If the depth to groundwater is unknown and questionable, the tank owner may need to hire an environmental consultant to determine depth to groundwater.

b. **Wells are properly designed and positioned.**
The following requirements apply for groundwater monitoring well installation:

   i. The slotted portion of the well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of the regulated substance into the well under both high and low groundwater conditions.
   The slots should appear small, uniform, and at the same depth of the fluctuating water table. The depth to water table should be indicated in the site assessment.

   ii. The well must be sealed from the ground surface to the top of the filter pack.

   iii. The well must intercept the excavation zone (tank pit) or be as close to it as technically feasible. Typically monitoring wells are installed in all four corners of the tank field and provide sufficient evaluation of the tank if they are properly screened and installed at the proper depth. Further investigation may be necessary by an environmental consultant for atypical installations.

c. **Wells are clearly marked and secured.**
Monitoring wells must be clearly marked and secured. Proper markings may be the official American Petroleum Institute (API) triangle symbol or a label indicating the well is a monitoring well and should not be filled. Lids that are bolted down or are locked are considered secured.

d. **Substance stored is not readily miscible in water and has a specific gravity less than one.** The site assessment should verify that the product stored in the tank is not miscible in water with a specific gravity < 1 (meaning that the product is light enough to float on water). Such petroleum products include but are not limited to gasoline, diesel, kerosene, gasohol, heating oil, and used oil. Products with a specific gravity > 1 may include crude oil, bunker C and certain hazardous substances.

e. **Device detects 1/8 inch of free product.**
The most commonly used devices for groundwater sampling include bailers, dipsticks with water/oil sensitive paste, and dedicated monitoring devices. Most of these devices allow for manual measurement of 1/8 inch of free product (such as bailers or dipsticks with water/oil sensitive paste) meet the requirement.

Appendix D: Sample Checklist for Determining UST System Compatibility

DEQ
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Checklist For Determining And Documenting UST System Compatibility

This sample checklist can help owners and operators determine and document the compatibility of their UST systems and notify DEQ 30 days prior to storing biofuels in an UST system.

Instructions: Complete all sections. This will help ensure you have the required information to demonstrate compatibility of an UST system with biofuels containing more than 10 percent ethanol or more than 20 percent biodiesel.

Facility Owner: **Facility Owner Address:**	**Facility Name:** **Facility's Street Address, City, State, Zip Code:**

Facility Id Number:	**Type And Blend Of Regulated Substance:**	**UST Capacity In Gallons:**
Estimated Date of Installation, Repair, or Retrofit:	☐ **Retrofit (existing tank)** ☐ **New installation** ☐ **Repair**	

Complete the checklist below, listing compatibility determination, method*, and description. All answers must be Yes and supported with a sufficient description or documentation for your system to be demonstrated compatible with the biofuel.

UST System Components	**Documentation Demonstrating Compatibility With The Substance Listed Above?**		**Method* A, B, Or C**	**Description Of Component Type, Model Number, And National Laboratory Certification, Listing Or Manufacturer Approval**
Tank	No	Yes		
Piping	No	Yes		

Containment Sumps	No	Yes		
Pumping Equipment	No	Yes		
Release Detection Equipment	No	Yes		
Spill Equipment	No	Yes		
Overfill Prevention Equipment	No	Yes		

*Methods:

A: Certification or listing of UST system equipment or components by a nationally recognized, independent testing laboratory for use with the regulated substance stored

B: Equipment or manufacturer approval. The manufacturer's approval must be in writing, indicate an affirmative statement of compatibility, specify the range of biofuel blends the component is compatible with, and be from the equipment or component manufacturer

C: Use another option determined by your implementing agency to be no less protective of human health and the environment than methods A or B. If using C, list your implementing agency and immediately below describe the approved alternative method for meeting the compatibility requirement

Method C Description:

_____

_____

_____

_____

Note: Owners and operators may find American Petroleum Institute's Recommended Practice 1626, *Storing and Handling Ethanol and Gasoline-Ethanol Blends at Distribution Terminals and Filling Stations*, useful in complying with the compatibility requirements.

In order to be in compliance with the UST regulation compatibility requirements for storing biofuels, you must keep documentation of compatibility of the UST system components listed on this page as long as you store the fuel.

For your records, you should update this checklist each time you repair or replace components of your UST system to ensure you have all the required compatibility documentation while storing biofuels.

APPENDIX E

ALTERNATIVES TO CLOSURE FOR UPGRADING VIOLATIONS-- DECISION MATRIX

This matrix assumes release detection is working and has been properly documented for the last year's worth of records. If not, then a site check is recommended on a case-by-case basis. **For all violations, owners are subject to enforcement action in accordance with the DEQ Enforcement Manual in addition to being responsible for the compliance options listed here.** All repairs require a Tank Tightness Test (TTT) afterward per regulation.

Scenario	Compliance Options other than closure	Comments
(1) Bare or galvanized steel UST and/or underground piping known to have no lining or CP.	None.	Must permanently close the unprotected steel structure and submit a closure assessment.
(2) Bare steel UST with some form of CP upgrade (almost always impressed current) evident, but without documentation that an integrity assessment was properly accomplished and CP properly installed, or that the installed CP system was designed by a CP expert. Six month and three year tests may have been performed, not performed, not documented, or are overdue. **(Includes cases where CP impressed current systems were turned off for more than 90 days.)**	Owner must: (1) obtain TTT (case specifics may necessitate high level TTT); (2) perform a manned entry integrity assessment; (3) obtain corrosion expert certification of eligibility and system design; and (4) perform CP periodic testing (i.e., -850 mV or 100mV shift test).	Site specific criteria provide for some RO discretion for the appropriate TTT method.
(3) Bare steel UST upgraded with CP but tank's integrity assessment shows that tank was not eligible for upgrade. However, CP expert has certified installed CP system and tank has passed all subsequent required CP system tests.	Owner must perform high accuracy TTT (tracer type test). If tank passes tracer-type TTT, tank has been brought into compliance and owner may continue with CP without having to do another integrity assessment. If tank fails tracer-type TTT, report suspected release and the UST system must be permanently closed and a closure assessment submitted to DEQ. Decision to allow tank repair will depend on site-specific circumstances related to tank conditions and remediation requirements. If repair (9-VAC-25-580110) is appropriate, owner must continue CP. Lining will not be accepted as a repair for this scenario. For such late-to-upgrade tanks, no 10-year IC+TTT release detection option will be allowed.	

(4) Bare steel UST with documentation that CP system was properly designed and installed, but subsequent six month or three year test of CP system shows failure or is not documented. (Do not reset 3 yr. clock.)	For systems which failed, repair and retest. For systems which were not tested or tests not documented, simply test CP system. If it passes, tank has been brought into compliance and CP test clock remains on original three year testing cycle (from initial CP upgrade). If it fails, allow repair of CP system in accordance with CP expert recommendations and CP test clock remains on original three-year testing cycle (from initial CP upgrade).	
(5) Bare steel UST with documentation that CP system was properly designed and installed (passed initial test), but later tests (three year intervals) not documented / performed.	Test CP system. If test fails, repair CP system in accordance with CP expert recommendations.	
(6) Bare steel UST with documentation of proper impressed current CP upgrade but it no longer meets –850mV/100mV shift criteria.	Modify CP system – restart six-month test after modification.	
(7) Bare steel UST with proper CP upgrade and testing documentation. Owner wants to add lining.	Lining a tank, which has already been upgraded with CP, is acceptable but owner still must maintain CP and conduct required CP testing.	EPA/DEQ support more protection of existing bare steel tank upgrades, but lining cannot replace CP as sole method.
(8) Bare steel UST purported to be lined, but without documentation that lining was installed according to a national code of practice, and without documentation that a required periodic (10 year and five year) internal inspection was conducted and passed.	Internally inspect lining and, if necessary, repair it if the lining is repairable according to industry standards. If the liner cannot be repaired, then the tank must be permanently closed. (TTT should be conducted (not required) before internal inspection.)	
(9) Bare steel UST with documentation of acceptable lining upgrade, but no documentation lining has been inspected at 10-year point and/or every five years thereafter.	Internally inspect lining and, if necessary, repair it if it is eligible for repair according to NLPA 631 or API 1631. Re-inspect lining at five-year intervals thereafter.	If inspection indicates lining is intact or if lining is repaired, owner has option to add CP and forego periodic lining
(10) Bare steel UST with no documentation that lining upgrade was performed to national code of practice, but later periodic internal inspections have been documented.	Continue normal internal inspection schedule.	

(11) Lined tank, owner wants to change to CP (Adding CP to lined "existing" tank saves future lining inspection costs and protects metal structure.)	Liner must pass lining inspection prior to adding CP. If liner fails, it must be repaired. If it is ineligible for repair then CP may not be added. Requires integrity assessment (ASTM G- 158) and CP expert certification that tank is sound and free of holes prior to adding CP – no future lining inspections required. Cathodic protection must be maintained for the life of the tank and or piping even if a liner is added.	EPA has always supported increased protection of the primary metal tank structure. This policy is already part of EPA existing tank upgrade guidance. (Manned entry or ultrasonic (internal) through the lining.)
(12) Bare steel UST with properly documented lining and CP	Owner must meet requirements for CP as a minimum. Lining inspections are not necessary.	
(13) ACT-100 – Owner asserts tank is ACT-100 but has no proof.	Regions may elect to require the owner to physically demonstrate tank is ACT-100 (e.g., by excavation) or may rely on documentation such as installation records or registration records.	Registration evidence alone can be accepted.
(14) StiP-3 UST — Owner asserts tank is StiP-3 but has no proof.	Regions may elect to require the owner to demonstrate tank is StiP-3 (e.g., by excavation) or may rely on documentation such as installation records, registration records or a sworn affidavit.	Registration evidence alone can be accepted. (Would a CP test that showed a potential of > -850 be proof that a tank was a StiP-3? No not necessarily but more likely than not, yes.)
(15) StiP-3 UST w/o record of required initial six-month test. (Assumes three year test not yet due or due and not performed.)	Perform CP test. If tank passes, proceed with CP at initial three-year intervals. If tank fails, apply STI guidance or impressed current to repair. (Do not reset 3-yr. clock.)	The ASTM G-158 is not recommended because there is a problem with performing integrity assessments on StiP-3 tanks, in that it's hard to properly apply the statistical analysis to the assessment.
(16)StiP-3 with impressed current added--- tank fails 100mV-shift test.	CP expert modifies according to NACE.	

(17)StiP-3 UST with initial 6-month test but failure to meet 850mV standard.	Repair tank by adding anodes according to STI guidance or by installing impressed current.	
(18)StiP-3 UST with documentation it passed initial test, but later tests (three year intervals) not documented / performed.	Perform test. If tank passes, tank has been brought into compliance and CP test clock remains on original three year testing cycle (from initial CP upgrade). If tank fails, repair by adding anodes according to STI guidance or by installing impressed current. (Do not reset 3-yr. clock.)	