

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF AIR AND WASTE MANAGEMENT

TANK MANAGEMENT BRANCH

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PROPOSED

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1351 Regulations Governing Underground Storage Tank Systems

PART D: Requirements For Installation, Operation And Maintenance Of Underground Storage Tank Systems Storing Hazardous Substances

1.0 Installation, Operation and Maintenance Requirements for UST Systems Storing Hazardous Substance

1.1 General Requirements for UST Systems Storing Hazardous Substance

- 1.1.1 Owners and Operators shall ensure that all UST Systems installed for the storage of Hazardous Substance shall be designed, constructed, installed and operated in accordance with manufacturer's specifications, and accepted engineering practices and procedures; and in a manner which will prevent Releases of Hazardous Substances to the ground waters, surface waters or soils of the State due to corrosion, structural failure, manufacturing defects, spills and overfills for the Operational Life of the Underground Storage Tank System.
- 1.1.2 The material used in the construction and lining of the Underground Storage Tank System shall be Compatible with Regulated Substances to be stored in the UST System.
- 1.1.3 Components of the UST System shall be approved by Underwriters Laboratories or equivalent third party certified.
- 1.1.4 All UST Systems Storing Hazardous Substance shall be designed and installed in accordance with the secondary containment requirements in accordance with §1.4 of this Part.
- 1.1.5 Bare steel UST Systems or steel UST Systems coated with asphalt are prohibited.
- 1.1.6 Owners and Operators shall install, operate and maintain all equipment such that manufacturer's warranties are not voided.
- 1.1.7 Hazardous Substance shall not be deposited into an UST System that is not in compliance with the Financial Responsibility requirements of Part F of these Regulations.
- 1.1.8 Owners and Operators shall replace all existing double elbow swing joints with flexible connectors installed in accordance with §1.14 of this Part, not later than January 1, 2011.

1.2 General Installation Requirements for UST Systems Storing Hazardous Substance

- 1.2.1 Prior to the installation of any Hazardous Substance UST System a site survey shall be initiated by the Facility Owner and Operator. The pre installation site survey shall be conducted to determine the locations of nearby buildings, underground utilities and sewer lines.
- 1.2.2 Private/ and public drinking water wells, rivers, streams, lakes, canals, and other environmentally sensitive locations shall be recorded and incorporated into the design of the UST System Facility.
- 1.2.3 UST Owners and Operators shall notify the Department at least thirty (30) days prior to installation of all Hazardous Substance UST Systems. Notice shall include a site plan, the scale of which shall be one inch to ten feet or less (1 inch 10 feet), and which shall at a minimum include the following:
 - 1.2.3.1 The information determined from the pre-installation site survey in §1.2.1 of this Part; and
 - 1.2.3.2 Size and location of Tanks including Tank dimensions, depth of cover, empty Tank weight, Tank manufacturer and Tank type; and
 - 1.2.3.3 The ~~Tank~~ UST System installation location, streets, roads, other properties bordering the construction site; and
 - 1.2.3.4 Piping dimensions and layout; and
 - 1.2.3.5 Dimensions and locations of vents; and
 - 1.2.3.6 Type of Hazardous Substance to be stored; and
 - 1.2.3.7 Location of dispensers; and
 - 1.2.3.8 Location of overfill device, spill prevention system and monitoring devices including dimensions of spill containment devices and sumps when applicable; and
 - 1.2.3.9 Materials of construction for Tank(s), ~~the~~ Pipes and associated appurtenances, including manufacturer name, model numbers and any manufacturers catalog information requested by the Department; and
 - 1.2.3.10 Location of and access to check valves, anti-siphon valves, automatic ~~Line~~ line leak detectors, and flexible connectors; and
 - 1.2.3.11 Location of Cathodic Protection components and test stations; and
 - 1.2.3.12 Location of utilities (both above and underground); and
 - 1.2.3.13 Location of electrical service components; and
 - 1.2.3.14 Details and dimensions of anchoring method including hold down pads, cover pads, or deadmen and electrical isolation methods associated with the anchoring system if applicable. Indicate on plan if area is subject to vehicle traffic; and
 - 1.2.3.15 ~~Location of nearby private/public drinking water wells and surface water bodies. Map with the distance clearly labeled in feet from the UST System to all Domestic and Industrial wells and surface water bodies within one hundred and fifty (150) feet of the UST System.~~
- 1.2.4 After the Effective Date of these Regulations new Hazardous Substance UST Systems shall not be installed within a minimum distance of a one hundred and fifty (150) foot radius from Public or

Industrial wells, unless otherwise approved by the Department. A Replacement, Retrofit or Upgrade of an UST System shall not be considered a new installation for the purposes of this Section.

1.2.5 After the Effective Date of these Regulations new Hazardous Substance UST Systems shall not be installed within a minimum distance of a one hundred (100) foot radius from a Domestic well, unless otherwise approved by the Department. A Replacement, Retrofit or Upgrade of an UST System shall not be considered a new installation for the purposes of this Section.

1.3 UST System Designs for UST Systems Storing Hazardous Substance

1.3.1 Acceptable designs for Hazardous Substance UST System construction include:

1.3.1.1 Secondly contained Cathodically Protected Steel; or

1.3.1.2 Secondly contained Fiberglass Reinforced Plastic; or

1.3.1.3 Secondly contained Steel with Non-Metallic or Coated Outer Shell; or

1.3.1.4 Other equivalent design approved by the Department.

1.3.2 UST Systems Storing Hazardous Substance shall be installed in accordance with these Regulations, the manufacturer's specifications, accepted engineering practices and the following industry standards:

1.3.2.1 PEI RP100, *Recommended Practices For Installation Of Liquid Storage Systems*.

1.3.2.2 NFPA 30, *Flammable and Combustible Liquids Code*.

1.3.2.3 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages*.

1.3.2.4 OSHA, 29 CFR, 1926 Subpart P, *Excavations*.

1.3.3 All Tanks shall be equipped with a strike plate located beneath all Tank openings.

1.4 Secondary Containment Design Requirements for UST Systems Storing Hazardous Substance

1.4.1 The Department reserves the right to require Secondary containment or equivalent protection on any portion of the UST System where aquifers underlying the UST Facility are determined to need such protection, or where groundwater below the UST Facility is within a well head protection area, or where groundwater is susceptible to contamination in order to protect the safety, health, welfare and/or environment of the State.

1.4.2 Secondary containment systems shall be designed, constructed and installed to:

1.4.2.1 Contain the Hazardous Substances Released from the UST System until they are detected and removed; and

1.4.2.2 Prevent the Release of Hazardous Substances to the environment at any time during the Operational Life of the UST System; and

1.4.2.3 Be checked for evidence of a Release at least once every thirty (30) calendar days.

1.4.3 Secondary containment systems shall include the following:

- 1.4.3.1 Double-walled Tank; and
 - 1.4.3.2 Double-walled Hazardous Substance and vapor return Piping and, where required, vent Piping; and
 - 1.4.3.3 Containment Sumps at the Tank top and under each dispenser that meet the requirements of §1.25 of this Part; and
 - 1.4.3.4 Tanks and Piping shall have interstitial monitoring that shall be checked for evidence of a Release at a minimum of once very thirty (30) calendar days and shall comply with the preventative maintenance program requirements of §1.9.4.4 of this Part; or
 - 1.4.3.5 Other equivalent technology approved by the Department.
- 1.4.4 All Secondary containment systems shall be constructed in accordance with acceptable engineering practice and industry standards and shall have a Release Detection system in accordance with §1.9 of this Part.
- 1.5 Double Wall UST Design Requirements for UST Systems Storing Hazardous Substance
- 1.5.1 Acceptable UST system designs in §1.3 of this Part shall be fabricated in double walled construction in accordance with accepted engineering practice and industry standards.
 - 1.5.2 A double walled Tank which is designed and manufactured in accordance with the following requirements satisfies the requirements for Secondary containment in §1.4 of this Part:
 - 1.5.2.1 The interstitial space of the double walled Tank can be monitored for Releases; and
 - 1.5.2.2 Outer jackets made of steel shall be coated as prescribed in §1.6.2. of this Part; and
 - 1.5.2.3 There are no penetrations of any kind through the jacket to the Tank except top entry manholes and fittings; and
 - 1.5.2.4 The outer jacket shall cover the entire circumference of the Tank; and
 - 1.5.2.5 The jacket shall be able to contain a liquid or be able to contain a vacuum from the time of manufacture completion until the time of installation.
- 1.6 Cathodically Protected Steel UST Design Requirements for UST Systems Storing Hazardous Substance
- 1.6.1 Cathodically Protected steel UST Systems shall be designed, constructed, installed and tested in accordance with NACE Standard RP0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection* and the applicable industry standards, including but not limited to the following:
 - 1.6.1.1 UL 58, *Standard for Steel Underground Tanks for Flammable and Combustible Liquids.*
 - 1.6.1.2 UL 1746, *Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks.*
 - 1.6.1.3 STI-P3, *Specification for sti-P3® System for External Corrosion Protection of Underground Steel Storage Tanks.*

- 1.6.1.4 STI F-841, *Standard for Dual Wall Underground Steel Storage Tanks*.
- 1.6.1.5 STI RP-972, *Recommended Practice for the Addition of Supplemental Anodes to sti-P3® Underground Storage Tanks*.
- 1.6.2 The Tank shall be coated with a suitable Dielectric Material in accordance with NACE Standard RP0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection*.
- 1.6.3 Field-installed Cathodic Protection systems shall be designed, constructed, installed and tested in accordance with manufacturer's specifications, accepted engineering practice and the requirements listed in this Section.
- 1.6.4 Each Cathodic Protection system shall include sufficient monitoring stations to enable Owners and Operator s to check on the adequacy of the Cathodic Protection system.
- 1.6.5 UST Systems that are protected by Sacrificial Anodes shall be electrically insulated from the Piping system with dielectric fittings, bushings, washers, sleeves or gaskets which are chemically stable when exposed to Hazardous Substance, additives, corrosive soils or groundwater.
- 1.7 Fiberglass Reinforced Plastic UST Design Requirements for UST Systems Storing Hazardous Substance
 - 1.7.1 Fiberglass reinforced plastic UST Systems shall be designed, constructed, installed and tested in accordance with the following industry standard:
 - 1.7.1.1 UL 1316, *Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol Gasoline Mixtures*.
 - 1.7.2 Fiberglass reinforced plastic UST Systems shall be of sufficient structural strength to withstand normal handling and underground use and shall be Compatible with the Hazardous Substance and additives stored, corrosive soils and groundwater. UST System construction materials shall be of sufficient density and strength to form a hard impermeable shell which will not crack, wick, wear, soften or separate under normal service conditions.
 - 1.7.3 Fiberglass Reinforced Plastic Tanks shall be tested for deflection in accordance with the manufacturer's requirements at the time of installation.
- 1.8 Steel with Non-Metallic or Coated Outer Shell UST Design Requirements for UST Systems Storing Hazardous Substance
 - 1.8.1 Steel with Non-Metallic or Coated Outer Shell UST Systems shall be designed, constructed, installed and tested in accordance with the following industry standards, as applicable:
 - 1.8.1.1 UL 1746, *Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks*.
 - 1.8.1.2 UL 58; *Standard for Steel Underground Tanks for Flammable and Combustible Liquids*.
 - 1.8.1.3 STI F-922, *Specification for Permatank®*.
 - 1.8.1.4 STI F-894, ACT -100® *Specification for External Corrosion Protection of FRP Composite Steel Underground Storage Tanks*.

1.8.1.5 STI F-961, ACT -100U® *Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks.*

1.8.1.6 STI F-841, *Standard for Dual Wall Underground Steel Storage Tanks.*

1.8.2 The coating shall not corrode under adverse underground electrolytic conditions and shall be Compatible with the Hazardous Substances and additives stored.

1.8.3 The coating shall be factory inspected for air pockets, cracks, blisters pinholes and electrically tested by a ten thousand (10,000) volts holiday test performed over 100 percent of the surface for coating short circuits or coating faults or in accordance with the manufacturer's specifications.

1.8.4 Any defects shall be repaired in accordance with standard engineering practice and the manufacturer's requirements.

1.9 Release Detection Requirements for UST Systems Storing Hazardous Substance

1.9.1 General Requirements

1.9.1.1 Owners and Operators of UST Systems shall provide a method, or combination of methods of Release Detection on all UST Systems that meet the following requirements:

1.9.1.1.1 Can detect a Release from any portion of the Tank and the connected underground Piping that routinely contain Hazardous Substance; and

1.9.1.1.2 Is installed, calibrated, operated, and maintained in accordance with the manufacturer's specifications, including routine Maintenance and service checks for operability or running condition; and

1.9.1.1.3 Meets the performance standards for Release Detection in this Section, with any performance claims and their manner of determination described in writing by the equipment manufacturer or installer. The method shall be capable of detecting the leak rate or quantity specified for ~~p~~Precision tank ~~t~~Testing, automatic tank gauging, ~~t~~Line leak detectors, and ~~t~~Line tightness testing methods specified in these Regulations with a probability of detection of at least 0.95 and a probability of false alarm no greater than 0.05-; and

1.9.1.1.4 Is operational prior to Regulated Substance being placed in the UST System.

1.9.1.2 Owners and Operators shall implement the Release investigation procedure in Part E of these Regulations if the Release Detection equipment or method shows indication of a Release.

1.9.1.3 Failure by Owners and Operators to maintain records of required Release Detection monitoring and inspection may be cause for the Department to require ~~T~~ank tightness test(s) and inspection(s) of the UST Facility and a Release investigation in accordance with Part E of these Regulations at expense of Owners and Operators.

1.9.2 Methods of Release Detection for Underground Storage Tanks Storing Hazardous Substance

1.9.2.1 Owners and Operators shall monitor UST Systems for Releases through the use of inventory control procedures and at least one of the following Release Detection methods:

1.9.2.1.1 Continuous Interstitial Monitoring; or

1.9.2.1.2 ~~Automatic Tank Gauge performing Tank tightness testing; or~~

~~4.9.2.1.3~~ Department Approved Alternative Method.

1.9.3 Inventory Control Requirements for Underground Storage Tanks Storing Hazardous Substance

1.9.3.1 Inventory control procedures shall meet the following requirements:

1.9.3.1.1 Every Owner and Operator shall perform inventory control procedures and shall maintain inventory control records for each Tank containing a Hazardous Substance. Records shall be kept for each Tank, or cluster of Tanks if they are interconnected, and shall include measurements of bottom water levels, sales, use, deliveries, inventory on hand and losses or gains. Reconciliation of records shall be kept current, shall account for all variables which could affect an apparent loss or gain and shall be in accordance with generally accepted practices. The data shall be accumulated for each day a Tank has Hazardous Substance added or withdrawn but not less frequently than once ~~a week~~ every seven (7) calendar days, and shall include as a minimum:

1.9.3.1.1.1 Description and amount of Hazardous Substance in the Tank measured in ~~gallons~~ inches to the nearest one-eighth (1/8") of an inch. The equipment used shall be capable of measuring the level of Hazardous Substance over the full range of the Tank's height to the nearest one eighth (1/8") of an inch. These measurements shall be converted from inches to gallons and these measurements and conversions shall be performed daily; and

1.9.3.1.1.2 Inputs and outputs of Hazardous Substance in gallons recorded daily; and

1.9.3.1.1.3 All deliveries and measurements shall be made through a drop tube that extends to within ~~6~~ 5.9 inches of the Tank bottom; and

1.9.3.1.1.4 Hazardous Substance dispensing equipment is metered and recorded within the local standards for meter calibration or an accuracy of six (6) cubic inches for every five (5) gallons of substance withdrawn; and

1.9.3.1.1.5 Weekly assessment of the amount of water in the UST System. The measurement of water level in the bottom of the ~~†~~Tank shall be made to the nearest one eighth (1/8") of an inch. If the measurement shows two (2) inches or more of water, the water shall be removed from the Tank within seven (7) days. Water shall be properly disposed in accordance with all local, state and federal requirements ; and

1.9.3.1.1.6 Daily reconciliation of the amount of Hazardous Substance added to and removed from the Tank. Recommended procedures for Tank inventory and reconciliation procedures are detailed in API Publication 1621, *Bulk Liquid Stock Control at Retail Outlets*, and shall include at a minimum:

1.9.3.1.1.6.1 Losses or gains from each day's inventory shall be reconciled ~~once during~~ at the end of each calendar month; and

1.9.3.1.1.6.2 For any day in which there is a loss of five percent (5%) or more of the ~~Hazardous Substance~~ calculated daily inventory or for any month in which there is a significant loss or gain of Hazardous Substance that meets or exceeds one percent (1%) of the total monthly throughput plus one hundred and thirty (130) gallons, or any month in which there is an unexplainable consistent negative

trend, the Release investigation procedure in Part E of these Regulations shall be followed; and

1.9.3.1.1.6.3 Tanks equipped with automatic inventory control systems or continuously operating automatic in tank gauging systems may use these devices to perform inventory reconciliation procedures; and

1.9.3.1.1.7 All automatic systems utilized for performing inventory procedures shall comply with the preventative maintenance program requirements of §1.9.5.3 of this Part.

1.9.3.2 The Department may, at its discretion, approve other types of inventory control methods or a combination of methods or devices not specified in this section upon a determination that the proposed method or combination of methods is no less protective of human health, safety or the environment than the above requirements.

1.9.3.3 In instances where the hazardous nature of the Hazardous Substance will not permit implementation of standard inventory procedures, alternative procedures such as continuously functioning automatic in tank gauging subject to the requirements of §1.9.5 of this Part shall be implemented.

1.9.3.4 Failure to maintain and reconcile inventory control records may be cause for the Department to require Tank tightness test(s) and inspection(s) of the UST Facility at the expense of Owners and Operators.

1.9.4 Interstitial Monitoring Release Detection Requirements for Underground Storage Tanks Storing Hazardous Substance

1.9.4.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a leak from any portion of the Tank that routinely contains Hazardous Substance.

1.9.4.2 At a minimum of once every thirty (30) calendar days Owners and Operators shall inspect all interstitial monitoring devices utilized for Release Detection for evidence of a Release from the UST System and shall record the results.

1.9.4.3 Owners and Operators shall maintain records of the monthly interstitial Release monitoring inspections for the life of the UST System.

1.9.4.4 Owners and Operators shall have all interstitial monitoring equipment inspected by a certified technician once every twelve (12) months as part of a preventive Maintenance program to minimize in-service failures. Any equipment malfunctions identified as a result of the inspection shall be rectified immediately. The inspection shall at a minimum include:

1.9.4.4.1 Inspection of the console for proper printer operation ~~if so equipped~~; and

1.9.4.4.2 Verification of the system setup values and battery backup; and

1.9.4.4.3 Verification of the test programming; and

1.9.4.4.4 Verification of the operability of all warning and alarm indicator lights and audible alarms; and

- 1.9.4.4.5 Inspection and testing of all probes and interstitial sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation; and
- 1.9.4.4.6 Inspection of all cables that are visible during normal operating conditons for any cracking or swelling; and
- 1.9.4.4.7 Correction of any problems found as a result of the required inspection.
- 1.9.4.5 Owners and Operators shall maintain records of the annual inspections of the interstitial monitoring equipment and any Repairs performed as a result of the inspection for the life of the UST System.
- 1.9.5 Automatic Tank Gauge Release Detection Requirements for Underground Storage Tanks Storing Hazardous Substance
 - 1.9.5.1 ~~Monthly Tank tightness testing~~ Interstitial monitoring systems with Automatic tank gauging (ATG) equipment shall meet the following requirements:
 - 1.9.5.1.1 ~~The ATG equipment can detect a 0.1 gallons per hour leak rate from any portion of the Tank that routinely contains Hazardous Substance; and~~
 - 1.9.5.1.2 The ATG equipment shall be capable of producing a record of interstitial monitoring Release Detection test results; and
 - 1.9.5.1.3~~2~~ At a minimum of once ~~during each calendar month~~ every thirty (30) calendar days ~~The~~ ATG equipment shall perform a Release Detection test for each Tank and shall produce a record of such test; and
 - 1.9.5.1.4~~3~~ If used for inventory control, the ATG equipment shall be capable of conducting inventory control in accordance with §1.9.3 of this Part.
 - 1.9.5.2 Owners and Operators shall maintain a record of all interstitial monitoring Release Detection ~~tests~~ performed by the ATG equipment for the life of the UST System.
 - 1.9.5.3 Owners and Operators shall have all ATG equipment inspected by a certified technician once every twelve (12) months as part of a preventive Maintenance program to minimize in-service failures. Any equipment malfunctions identified as a result of the inspection shall be rectified immediately. The inspection shall at a minimum include:
 - 1.9.5.3.1 inspection of the ATG console for printer operation if so equipped; and
 - 1.9.5.3.2 verification of the system setup values and battery backup; and
 - 1.9.5.3.3 verification of the test programming; and
 - 1.9.5.3.4 verification of the operability of all warning and alarm indicator lights and audible alarms; and
 - 1.9.5.3.5 inspection and testing of the probes and sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation; and

1.9.5.3.6 Inspection of all cables that are visible during normal operating conditons for any cracking or swelling; and

1.9.5.3.7 Correction of any problems found as a result of the required inspection.

1.9.5.4 Owners and Operators shall maintain records of the annual inspections of the ATG and any Repairs performed as a result of the inspection for the life of the UST System.

1.9.6 Alternative Release Detection Methods

1.9.6.1 Release Detection methods not specified in this Section will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to installation for approval. Alternative methods shall meet the following requirements:

1.9.6.1.1 The method can detect a 0.1 gallon per hour leak rate or a Release of seventy-five (75) gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less; or

1.9.6.1.2 The method or a combination of methods or devices can detect a Release as effectively as any of the Release Detection methods allowed in §1.9.2 of this Part. If the method or a combination of methods or devices is approved, Owners and Operators shall comply with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.

1.10 Anchoring Requirements for UST Systems Storing Hazardous Substance

1.10.1 Support and anchorage shall be provided for all new installations to avoid Tank flotation and shall be installed in accordance with the PEI RP100, *Recommended Practices for Installation of Underground Liquid Storage Systems*.

1.10.2 One or more of the following methods of anchorage shall be utilized:

1.10.2.1 Reinforced concrete deadmen anchors; or

1.10.2.2 Bottom hold-down pad which consists of eight inches of reinforced concrete that extends 18 inches beyond Tank sides and 12 inches beyond each end; or

1.10.2.3 Reinforced concrete slab over Tank.

1.10.3 All exposed metallic components of hold down systems shall be Electrically Isolated and Cathodically Protected when the hold down system is required by the Department.

1.10.4 The backfill depth shall be consistent with the requirements in PEI RP100 *Recommended Practices for Installation of Underground Liquid Storage Systems*.

1.11 Backfill Material Requirements for UST Systems Storing Hazardous Substance

1.11.1 Backfill material shall consist of sand, crushed rock or pea gravel. The material shall be clean, washed, inert, free flowing, homogeneous, well granulated, non corrosive, and free of debris, rock, ice, snow or organic material. Particle length or crushed rock or pea gravel shall be no less than one-eighth inch(1/8") and no more than three-fourths inch (3/4") in size. Backfill material shall comply with the Tank manufacturer's specifications. Mixing of backfill with native soil and/or foreign objects is prohibited.

1.11.2 The backfill depth shall be consistent with the requirements in PEI RP100, *Recommended Practices for Installation of Underground Liquid Storage Systems*.

1.12 Installation of a Hazardous Substance UST System In An Existing UST Field Requirements

1.12.1 If an UST system shall be installed in or near a previous UST System Facility, Owners and Operators shall provide a means of Release Detection that will, at a minimum, detect any future Release from any portion of the UST System.

1.13 Tank and Piping Installation, Inspection and Testing Requirements for UST Systems Storing Hazardous Substance

1.13.1 Prior to installation Tank system materials and equipment shall be inspected for flaws, surface cracks, holes, large scrapes, blisters, indentations and other indications of damage. All defects and repairs to the UST System shall be recorded and the record submitted with a site completion report to the Department.

1.13.2 UST(s) shall be pressure tested according to the manufacturer's specifications prior to installation of the UST(s) into the excavation. The installer shall soap the exterior, particularly its seams and fittings, and pressure test the UST(s) using the manufacturer's specifications to locate and correct defects. Tank and interstitial space testing shall be conducted according to the manufacturer's recommendations and accepted engineering practices.

1.13.3 After installation all Piping, including all interstitial spaces, shall be pressure tested according to the manufacturer's specifications prior to backfilling the excavation.

1.13.4 After installation of the Tank and integral Piping is complete and prior to the initial use of the UST System, the entire system shall be tested in accordance with current industry standards and practices and in the following manner to ensure the system is tight:

1.13.4.1 All testing of UST Systems shall be accomplished by the Precision Test method described in NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases* or other test approved by the Department which is of equivalent or superior accuracy; and

1.13.4.2 All testing of UST Systems shall be able to account for the effects of thermal expansion or contraction of the Hazardous Substances, vapor pockets, Tank deformation, evaporation or condensation, temperature stratification in the UST and the location of the water table; and

1.13.4.3 The required Precision Tests shall be conducted by a person trained and certified in the correct use of the necessary equipment, and shall be performed in accordance with the testing procedures and requirements established by the test system manufacturer and current industry standards and practices.

1.13.5 The Department reserves the right to request confirmatory system tightness tests to verify any test results submitted by an Owner, Operator, or contractor.

1.13.6 Owners and Operators shall permit periodic inspection of the UST System installation by the Department.

1.13.7 During the installation of all new UST Systems, every stage of the construction shall be documented with photographs to demonstrate that the UST System was installed in compliance with the requirements for new UST Systems. Upon completion of the installation, copies of the

photographs, as built plan, and required certification(s) as required in Part A §§4.6.11 and 4.6.12 shall be submitted to the Department within thirty (30) days of the completion of the UST System installation. The Facility Owner and Operator shall keep copies of all documents and photographs on file for the life of the UST Facility.

1.14 General Piping Installation Requirements for UST Systems Storing Hazardous Substance

- 1.14.1 Piping shall be installed in accordance with the manufacturer's specifications.
- 1.14.2 The Piping layout shall be designed to minimize crossed lines and interference with conduit and other UST System components. If crossing of lines is unavoidable, clearance shall be provided to prevent contact of the pipes.
- 1.14.3 All Hazardous Substance, vent and vapor return Piping shall slope back to the Tank with a minimum slope of one-eighth (1/8) inch per foot.
- 1.14.4 The pipe joints shall be cut and deburred according to manufacturer's specifications to provide liquid tight seals.
- 1.14.5 When rigid Piping is used, flexible connector(s) shall be installed at the Tank end of each Hazardous Substance ~~line~~ Piping, vent ~~line~~ and vapor recovery ~~line~~ as well as at the base of each dispenser and vent riser on all new installations. Double elbow swing joints on existing UST Systems shall be replaced with flexible connectors by January 1, 2011.
- 1.14.6 All underground metal fittings, flexible connectors, joints, and pipes shall be isolated from contact with the soil.

1.15 UST Piping Design Requirements for UST Systems Storing Hazardous Substance

- 1.15.1 Underground Piping shall be protected from corrosion in accordance with accepted corrosion engineering practices and shall be designed, constructed, installed and tested in accordance with the following industry standards, as applicable:
 - 1.15.1.1 NFPA 30, *Flammable and Combustible Liquids Code*.
 - 1.15.1.2 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages*.
 - 1.15.1.3 NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases*.
 - 1.15.1.4 UL 971, *Standard for Nonmetallic Underground Piping for Flammable Liquids*.
 - 1.15.1.5 UL 567, *Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe-Connection Fittings for Petroleum Products and LP-Gas*.
 - 1.15.1.6 PEI RP100, *Recommended Practices for Installation of Underground Liquid Storage Systems*.
- 1.15.2 All integral Piping systems shall be designed, constructed, and installed in a manner which will permit periodic tightness testing of the entire Piping system without the need for excavation.
- 1.15.3 Acceptable designs for Underground Piping construction include fiberglass reinforced plastic and flexible plastic Piping.

1.16 Fiberglass Reinforced Plastic and Flexible Plastic Piping Design Requirements for UST Systems Storing Hazardous Substance

1.16.1 Fiberglass reinforced plastic and flexible plastic Piping shall be designed, constructed, installed and tested in accordance with the manufacturer's specifications.

1.16.2 Fiberglass reinforced plastic and flexible plastic Piping shall be designed, constructed, installed and tested in accordance with the following industry codes, as applicable:

1.16.2.1 UL 971, *Standard for Nonmetallic Underground Piping for Flammable Liquids*.

1.16.2.2 UL 567, *Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe-Connection Fittings for Petroleum Products and LP-Gas*.

1.16.2.3 NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases*.

1.16.2.4 NFPA 30, *Flammable and Combustible Liquids Code*.

1.16.2.5 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages*.

1.16.2.6 PEI RP 100, *Recommended Practices for Installation of Underground Liquid Storage Systems*.

1.16.3 The construction materials, joints and joint adhesives of all Fiberglass reinforced plastic and flexible plastic pipes shall be compatible with the Hazardous Substance and additives stored, soil and groundwater.

1.16.4 Pipes, fittings and adhesives shall be designed, fabricated, and factory tested in accordance with generally accepted structural, material and performance standards for underground Piping systems.

1.16.5 All underground Piping systems shall be designed, constructed and installed with access ports to permit Line tightness testing without the need for extensive excavation.

1.17 Suction Piping Design Requirements for UST Systems Storing Hazardous Substance

1.17.1 Suction Piping shall operate at less than atmospheric pressure and shall be designed, constructed, and installed to meet the requirements of §1.17.1.1 or §1.17.1.2 of this Part:

1.17.1.1 Safe suction Piping systems shall be designed and constructed in accordance with the following requirements:

1.17.1.1.1 The below grade Piping shall be constructed so that if suction is Released the contents of the pipe will drain back into the Tank; and

1.17.1.1.2 Only one (1) check valve shall be included in each suction ~~line~~ Pipe; and

1.17.1.1.3 The check valve shall be located directly below and as close as practical to the suction pump.

1.17.1.2 Suction Piping systems with a foot valve (U.S. Suction) shall be designed and constructed in accordance with the following requirements:

1.17.1.2.1 The below grade Piping shall be constructed so that the Piping slopes back to the Tank; and

1.17.1.2.2 A foot valve is installed at the Tank.

1.18 General Release Detection Requirements for UST Piping for UST Systems Storing Hazardous Substance

1.18.1 Owners and Operators shall equip all underground Piping that routinely contains Hazardous Substances with a method, or combination of methods of Release Detection that can detect a Release from any portion underground Piping that routinely contains Hazardous Substance.

1.18.2 UST Piping interstitial and sump monitoring systems shall be designed, constructed installed and maintained to detect a leak from any portion of the Piping that routinely contains Hazardous Substance.

1.18.3 Release Detection methods not specified in this Section will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to installation for approval. Alternative methods shall meet the following requirements:

1.18.3.1 The method can detect a 0.1 gallon per hour leak rate or a Release of seventy-five (75) gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less; or

1.18.3.2 The method or a combination of methods or devices can detect a Release as effectively as any of the Release Detection methods allowed in §1.19 of this Part. If the method or a combination of methods or devices is approved, Owners and Operators shall comply with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.

1.18.4 Owners and Operators shall implement the Release investigation procedure in Part E of these Regulations if the Piping Release Detection equipment or method shows indication of a Release.

1.19 Pressurized Piping Release Detection Requirements for UST Systems Storing Hazardous Substance

1.19.1 Line Leak Detector Requirements

1.19.1.1 Underground Piping that conveys Hazardous Substances under pressure shall be equipped with an automatic line leak detector.

1.19.1.2 The automatic line leak detector shall alert the Owner and Operator to the presence of a leak by restricting or shutting off the flow of the Hazardous Substance.

1.19.1.3 Mechanical and Electronic automatic line leak detectors shall be capable of reacting to leaks of three (3) gallons per hour at ten (10) pounds per square inch line pressure within one (1) hour.

1.19.1.4 Owners and Operators shall conduct an annual test of the operation of the automatic line leak detector in accordance with the manufacturer's test protocols while installed in the UST System and under normal operating conditions. All Mechanical and Electronic automatic line leak detectors shall pass a function test at least once every twelve (12) months at three (3) gallons per hour (gph) at ten (10) pounds per square inch line pressure within one (1) hour.

1.19.2 ~~Tightness Test~~ Piping Interstitial Monitoring Requirements

1.19.2.1 ~~Owners and Operators shall conduct an annual tightness test of the entire pressurized underground Piping system, including the primary and secondary Piping, in accordance with NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases. Owners and Operators of Hazardous Substance UST Systems with underground pressurized Piping systems constructed of double wall design shall utilize continuous interstitial monitoring systems that meet the following requirements:~~

1.19.2.1.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a Release from any portion of the Piping that routinely contains Hazardous Substance; and

1.19.2.1.2 At a minimum of once every thirty (30) calendar days, Owners and Operators shall provide proof via the interstitial monitoring equipment record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications; and

1.19.2.1.3 Owners and Operators shall maintain records of the Piping interstitial Release Detection records for the life of the UST System; and

1.19.2.1.4 The interstitial monitoring system shall be designed and maintained to alert the Owner and Operator to the presence of a Release by shutting off the flow of the Hazardous Substance; and

1.19.2.1.5 All sump and interstitial sensors shall comply with the testing and monitoring requirements of §1.27 of this Part; and

1.19.2.1.6 All Containment Sumps shall comply with the testing and monitoring requirements of §1.25 of this Part

1.19.2.2 ~~Owners and Operators of UST Systems that have underground pressurized Piping systems shall use a line tightness test method designed to detect a Release from any portion of the underground Piping system that routinely contains Hazardous Substances.~~

1.19.3 ~~Line Leak Detector and Tightness Test~~ Requirements for Double Wall Piping Systems

1.19.3.1 ~~Owners and Operators of UST Systems with underground pressurized Piping systems constructed of double wall design may utilize interstitial monitoring systems to comply with the line leak detector requirements of §1.19.1 of this Part and the piping tightness test requirements of §1.19.2. of this Part if the following requirements are met:~~

~~1.19.3.1.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a Release from any portion of the Piping that routinely contains Regulated Substance; and~~

~~1.19.3.1.2 The system shall be designed and maintained to ensure that the delivery system will automatically shut off if a release is detected; and~~

~~1.19.3.1.3 At a minimum of once during each calendar month, Owners and Operators shall provide proof via the automatic tank gauge record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications; and~~

~~1.19.3.1.4 Owners and Operators shall maintain records of the monthly interstitial Release Detection ATG records for the life of the UST System; and~~

~~1.19.3.1.5 All sump and interstitial sensors shall comply with the testing and monitoring requirements of §1.27. of this Part.~~

~~1.19.3.1.6 All tank top containment sumps containing the interstitial monitoring device shall be tested once every twelve (12) calendar months.~~

1.20 Suction Piping Release Detection Requirements for UST Systems Storing Hazardous Substance

1.20.1 Release Detection is not required for suction Piping that is designed and constructed to meet the requirements of §1.17.1.1 of this Part.

1.20.2 Suction Piping designed and constructed to meet the requirements of §1.17.1.2 of this Part shall have Release Detection in accordance with §1.18 of this Part.

1.20.3 Owners and Operators of UST Systems with underground suction Piping systems constructed of double wall design may utilize continuous interstitial monitoring systems to comply with the Release Detection requirements of §1.18 this Part if the following requirements are met:

1.20.3.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a Release from any portion of the Piping that routinely contains Regulated Substance; and

1.20.3.2 At a minimum of once every thirty (30) calendar days, Owners and Operators shall provide proof via the automatic tank gauge record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications; and

1.20.3.3 Owners and Operators shall maintain records of the interstitial Release Detection automatic tank gauge records for the life of the UST System; and

1.20.3.4 All sump and interstitial sensors shall comply with the testing and monitoring requirements of §1.27 of this Part; and

1.20.3.5 All Containment Sumps shall comply with the testing and monitoring requirements of §1.25 of this Part.

1.21 ~~Spill Protection~~ Spill Prevention Requirements for UST Systems Storing Hazardous Substance

1.21.1 No Person shall construct, install, use, or maintain any UST Facility without providing a reliable means of ensuring that Releases due to spilling do not occur.

1.21.2 To prevent spilling associated with Hazardous Substance transfer to the UST System, Owners and Operators shall comply with the requirements of ~~one of~~ the following industry standards:

1.21.2.1 NFPA 30, *Flammable and Combustible Liquids Code*; or

1.21.2.2 NFPA 385, *Standard for Tank Vehicles for Flammable and Combustible Liquids*; or

1.21.2.3 API RP1621, *Bulk Liquid Stock Control at Retail Outlets*.

1.21.3 Owners and Operators shall equip all UST Systems with impervious spill containment devices that form a liquid tight seal around the fill pipe connection.

- 1.21.4 After ~~the Effective Date of these Regulations~~ January 11, 2008 all spill containment devices installed around the fill pipe shall have a minimum containment capacity of fifteen (15) gallons or be of a design that provides equivalent environmental protection. All spill containment devices installed prior to ~~the Effective Date of these Regulations~~ January 11, 2008 shall have a minimum capacity of five (5) gallons.
- 1.21.5 Owners and Operators shall immediately upon discovery remove water, Regulated Substance or debris that accumulates in the spill containment device. Owners and Operators shall maintain spill containment devices to be capable of containing a spill of the containment design capacity at all times.
- 1.21.6 All precautions shall be taken to prevent ~~†~~ Tank overfilling, spilling and dripping.
- 1.21.7 Owners and Operators shall test spill containment devices once every twelve (12) months for tightness, or in accordance with the manufacturer's specifications or when deemed necessary by the Department to determine if a threat to human health, safety or the environment exists.
- 1.21.8 Spill containment devices of double wall design with continuous monitoring of the interstitial space and the interstitial sensors are tested in accordance with §1.27 of this Part are exempt from the testing requirements of §1.21.7 of this Part. ~~Owners and Operators shall maintain records of the continuous interstitial monitoring of the spill containment device.~~
- 1.21.9 Owners and Operators shall report, investigate, and clean up any spills and overfills in accordance with Part E of these Regulations.

1.22 ~~Overfill Protection~~ Overfill Prevention Requirements for UST Systems Storing Hazardous Substance

- 1.22.1 No Person shall construct, install, use, or maintain any UST Facility without providing a reliable means of ensuring that Releases due to overfilling do not occur.
- 1.22.2 The Person In Charge of the transfer of Hazardous Substance to the UST shall adhere to proper safety precautions and procedures for transfer as found in NFPA 385, *Standard for Tank Vehicles for Flammable and Combustible Liquids*, and API RP1621, *Bulk Liquid Stock Control at Retail Outlets*, and shall comply with the following:
- 1.22.2.1 The Person In Charge of the transfer operation shall first check the UST to ensure that the volume available in the UST is greater than the volume of Hazardous Substance to be transferred to the UST before the transfer is made; and
- 1.22.2.2 During the transfer, the Person In Charge shall constantly monitor the entire transfer operation to prevent an Overfill Release; and
- 1.22.2.3 At the conclusion of the transfer the Person in Charge shall collect, any Hazardous Substance that remains in the transfer hose and shall ensure it is properly managed and does not reach the environment; and
- 1.22.2.4 The Person in Charge shall take all reasonable precautions to prevent spilling and dripping.
- 1.22.3 Owners and Operators shall install and maintain overfill ~~protection~~ prevention that consists of equipment that shall:
- 1.22.3.1 Automatically shut off the flow into the UST when the UST is no more than ninety five (95%) percent full; or

- 1.22.3.2 Alert the transfer operator when the UST is no more than ninety (90%) percent full by restricting the flow into the UST or triggering a high-level alarm; or
- 1.22.3.3 Restrict flow thirty (30) minutes prior to overfilling, alert the Operator with a high level alarm one minute before overfilling, or automatically shut off flow into the UST so that none of the fittings located on top of the Tank are exposed to Hazardous Substance due to overfilling; or
- 1.22.3.4 Be an automatic partial flow shut off float vent or vapor valve installed inside the UST(s) set to restrict flow when the UST is no more than ninety percent (90%) full. Vent or vapor restriction devices shall not be installed in ~~storage UST~~ systems that are equipped with suction pumps, remote fill ~~lines~~ Piping, remote vapor ~~lines~~ Piping or receive pressurized deliveries.
- 1.22.4 UST Systems that receive pressurized deliveries require a high level alarm that is triggered at no more than ninety (90%) percent full for overfill ~~protection~~ prevention or an automatic flow shut-off valve designed for pressurized deliveries.
- 1.22.5 Owners and Operators shall report, investigate, and clean up any spills and overfills in accordance with Part E of these Regulations.
- 1.23 Fill Line Protection Requirements for UST Systems Storing Hazardous Substance
 - 1.23.1 Owners and Operators shall clearly mark all fill ~~l~~lines for UST Systems to indicate the size of the Tank and the type of Hazardous Substance stored. These markings shall be as follows:
 - 1.23.1.1 A label or permanent tag at the fill connection which states the size of the UST System and the specific type of Hazardous Substance stored; and
 - 1.23.1.2 Fill covers shall be marked with a color-symbol system in a manner that will readily identify the Hazardous Substance stored in the ~~t~~tank and a legend for the color-symbol shall be prominently posted at a distance that can be readily seen from the location of the fill pipe; and
 - 1.23.1.3 A different color symbol shall be used for each type of Hazardous Substance or grade of Hazardous Substance being stored at the Facility; and.
 - 1.23.1.4 Hazardous Substance USTs shall not be marked with any color or symbol identified in API RP 1637, *Using the API Color-Symbol System to Mark Equipment and Vehicles for Product Identification at Service Stations and Distribution Terminals* or API IP 1542, *Identification Markings for Dedicated Aviation Fuel Manufacturing and Distribution Facilities, Airport Storage and Mobile Fuel Equipment*.
 - 1.23.2 Pipes and other openings not used for transfer of Hazardous Substance at the UST Facility shall not be painted any color which would be associated with the color symbol designated for marking the Hazardous Substance or any other Regulated Substance stored at the Facility. It is particularly important that openings with access to soil and ground water, such as Monitor Wells, not be confused with Hazardous Substance fill ~~l~~lines.
- 1.24 Corrosion Protection Operation and Maintenance Requirements for UST Systems Storing Hazardous Substance
 - 1.24.1 General Requirements

1.24.1.1 Owners and Operators of steel UST Systems with corrosion protection systems shall operate and maintain the system in accordance with the following industry standards:

1.24.1.1.1 NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection*.

1.24.1.1.2 NACE TM0101, *Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems*.

1.24.1.1.3 NFPA 30, *Flammable and Combustible Liquids Code*.

1.24.1.1.4 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages*.

1.24.1.2 Owners and Operators of steel UST Systems with corrosion protection systems shall maintain and operate the corrosion protection system to continuously provide corrosion protection to the metal components of the UST System that routinely contain a Hazardous Substance and are in contact with the ground to ensure that Releases due to corrosion are prevented for the life of the UST System.

1.24.1.3 Cathodic Protection systems shall be designed and installed to allow determination of the current operating status.

1.24.2 Sacrificial Anode Cathodic Protection System Operation and Maintenance Requirements

1.24.2.1 Owners and Operators shall test all UST Systems equipped with Sacrificial Anode Cathodic Protection systems for proper operation using standard corrosion engineering practices and in accordance with the following requirements:

1.24.2.1.1 Testing procedures shall be done in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection* and the manufacturer's specifications, and shall include the following:

1.24.2.1.1.1 a minimum of three (3) voltage readings along the center line for UST Systems less than twenty thousand (20,000) gallons and a minimum of five (5) voltage readings along the center line for UST Systems greater than or equal to twenty thousand (20,000) gallons; and

1.24.2.1.1.2 a minimum of one (1) voltage reading for every ten (10) feet of Piping.

1.24.2.2 All Sacrificial Anode Cathodic Protection systems that protect underground Facility components shall be tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards, within six (6) months of installation and at least once every twelve (12) months thereafter.

1.24.2.3 The Sacrificial Anode Cathodic Protection system shall be tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards, within six (6) weeks after underground work is performed at or near a site with a Sacrificial Anode Cathodic Protection system and once every twelve (12) months thereafter.

1.24.2.4 Owners and Operators shall Repair or replace the Sacrificial Anode Cathodic Protection system in accordance with NACE RP0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection* and the requirements of §1.6. of this Part, if the Sacrificial Anode Cathodic Protection system is not operating in accordance with the

manufacturer's specifications and the requirements of these Regulations. This includes but is not limited to failure to register a negative voltage of at least 0.85 volts for each UST. An individual certified by a nationally recognized industry standard setting organization shall determine the cause of the failure and make the necessary Repairs within sixty (60) days of the discovery of the failure of the corrosion protection system.

1.24.2.5 UST System Owners and Operators shall notify the Department within forty-eight (48) hours of the discovery of the failure of a Sacrificial Anode Cathodic Protection system.

1.24.2.6 The Department shall approve, either verbally or in writing, all Cathodic Protection Repair or replacement plans prior to work commencing.

1.24.2.7 ~~The Department shall review the Release Detection and Cathodic Protection records of the UST System and based upon this information may require that Owners and Operators determine the current integrity of the UST System if the Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations prior to making Repairs to the corrosion protection system. If the Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations, the Department shall review the Release Detection and Cathodic Protection records of the UST System prior to repair or replacement of the Cathodic Protection system. The Department may require that Owners and Operators determine the current integrity of the UST system.~~

1.24.2.8 The following information shall be submitted to the Department prior to Repair or replacement of the Sacrificial Anode Cathodic Protection system:

1.24.2.8.1 Results of one of the following:

1.24.2.8.1.1 The two (2) most recent Sacrificial Anode Cathodic Protection system tests including the failed test, or

1.24.2.8.1.2 The results of an internal assessment, or

1.24.2.8.1.3 The results of a third party approved integrity assessment; and

1.24.2.8.2 Records of the Tank Release Detection method from the date of the most recent passed Sacrificial Anode Cathodic Protection test.

1.24.2.9 If the tank has an internal lining, no internal assessment results will be accepted for the purpose of determining the current integrity of the UST System.

1.24.2.810 Impressed current Cathodic Protection systems shall not be utilized as a Repair, Upgrade or Replacement for a failed Sacrificial Anode Cathodic Protection system after January 11, 2008.

1.24.2.911 The use of alternate methods of monitoring shall be those described in NACE RP 0285 Corrosion Control of Underground Storage Tank Systems by Cathodic Protection and shall only be used with prior written approval from the Department.

1.24.2.4012 Owners and Operators shall maintain a record of the operation of Sacrificial Anode Cathodic Protection systems to demonstrate compliance with the requirements of this Section. These records shall be retained in a permanent record and shall at a minimum provide the following information:

1.24.2.4012.1 The results of all tests and inspections of the Sacrificial Anode Cathodic Protection system.

1.25 Containment Sump Requirements for UST Systems Storing Hazardous Substance

- 1.25.1 All dispenser, Tank top, transition and any other Containment Sumps installed after ~~the Effective Date of these Regulations~~ January 11, 2008 shall be Product Tight and shall be tested for tightness once every thirty-six (36) months, or in accordance with the manufacturers' specifications, or when deemed necessary by the Department to determine if a threat to human health, safety or the environment exists.
- 1.25.2 All dispenser, Tank top, transition and any other Containment Sumps of double wall design with continuous monitoring of the interstitial space and the interstitial sensors are tested in accordance with §1.27 of this Part are exempt from the testing requirements of §1.25.1 of this Part.
- 1.25.3 All dispensers, Tank top, transition and any other Containment Sumps tightness testing methods utilized shall be in accordance with the manufacturer's specifications or approved by the Department.
- 1.25.4 All access manholes associated with Containment Sumps shall be sized such that the manhole skirt is sufficiently larger than the Containment Sump lid to allow adequate access to the sump and allow for surface water drainage.
- 1.25.5 A Containment Sump installed prior to ~~the Effective Date of these Regulations~~ January 11, 2008 that contains a sump sensor utilized to comply with the Tank or Piping Release Detection requirements of §1.9, §1.18, §1.19 or §1.20 of this Part, shall be Product Tight and shall be tested to ensure it is Product Tight once every thirty-six (36) months.
- 1.25.6 All dispenser Containment ~~s~~Sumps installed after ~~the Effective Date of these Regulations~~ January 11, 2008 shall be installed and maintained as to be capable of being visually inspected at all times for evidence of a Release and shall not be filled with any material such as pea gravel or native soil, or the dispenser Containment ~~s~~Sump shall be continuously monitored for Releases.
- 1.25.7 Owners and Operators shall immediately upon discovery remove water, Regulated Substance or debris that accumulates in any Containment Sump.

1.26 Dispenser Sump Requirements for UST Systems Storing Hazardous Substance

- 1.26.1 Dispenser sumps shall be designed and installed such that any Hazardous Substance accumulating within the sump is contained and conveyed to the Tank top sump via the Piping interstitial space where it can be monitored and detected.
- 1.26.2 If equipped with a dispenser sump sensor, the sensor shall be equipped with an automatic audible or visual Release Detection alarm system.

1.27 Testing and Monitoring Procedures for Sump and Interstitial Sensors for UST Systems Storing Hazardous Substance

- 1.27.1 All sensors utilized for Release Detection shall be equipped with an automatic audible ~~and~~ or visual alert system and shall shut down the UST System in the event of an alarm.
- 1.27.2 Owners and Operators shall ~~inspect and perform a functionality test of~~ inspect and perform a functionality test of all sump and interstitial sensors installed after ~~the Effective Date of these Regulations~~ January 11, 2008 at a minimum of

once every twelve (12) months in accordance with the manufacturer's specifications, or as directed by the Department to verify proper sensor operation.

1.27.3 Owners and Operators shall ~~inspect and~~ perform a functionality test of all sump and interstitial sensors, installed prior to the Effective Date of these Regulations January 11, 2008, used to comply with the Release Detection requirements of §§1.9, §1.18, §1.19, or §1.20, or the requirements of §1.21.8 or §1.25.2 of this Part, a minimum of once every twelve (12) months in accordance with the manufacturer's specifications, or as directed by the Department to verify proper sensor operation.

1.27.4 All sensors installed in a sump for the purpose of detecting a Release from the UST System shall be installed no more than 1" from the bottom of the sump such that the sensor is capable of detecting any accumulation of Regulated Substance.

1.28 Repair, Retrofit and Upgrade Requirements for UST Systems Storing Hazardous Substance

1.28.1 All Repairs, Upgrades, Retrofits and replacements to UST Systems shall meet the applicable design, installation, maintenance and operational standards in Part D, §1 of these Regulations or shall be approved by the Department prior to installation.

1.28.2 ~~Documentation of Repair completion shall be submitted to the Department in accordance with Part E, §2.2.2 of these Regulations.~~ Owners and Operators shall report any abnormal operating conditions to the Tank Management Branch in accordance with the requirements of Part E, §1.2 of these Regulations.

1.28.3 All equipment installed after ~~the Effective Date of these Regulations January 11, 2008~~ shall be installed, operated and maintained such that manufacturer's warranties are not voided.

1.28.4 Owners and Operators shall ensure that Repairs, Retrofits or Upgrades will prevent Releases due to structural failure or corrosion as long as the UST System is used to store Hazardous Substance.

1.28.5 Owners and Operators shall test the Cathodic Protection system in accordance with §1.24 of this Part within six (6) weeks and once every twelve (12) months thereafter following the Repair of any Cathodically Protected UST System, to ensure it is operating properly.

1.28.6 Owners and Operators shall maintain records for each Repair, Retrofit and Upgrades for the Operational Life of the UST system.

1.28.7 After any Repair, Retrofit or Upgrade to an UST System, Owners and Operators shall have the applicable portions of the UST System tested for tightness in accordance with §§1.13 of this Part these Regulations, or as directed by the Department, before the UST System is placed into service.

1.28.8 Repairs to fiberglass reinforced plastic Tanks may be made only by the manufacturer or by its authorized representatives.

1.28.9 Owners and Operators may not Repair holes in Piping and fittings, but shall replace any piece of such Piping or fittings from which a Release has occurred. Replacement Piping and fittings shall meet all applicable Piping requirements in §1 of this Part. Loose fittings and joints in Piping that have been tightened to eliminate leakage may be put back into service.

1.28.10 At any time during the course of a Repair, Retrofit or Upgrade there is an indication of a Release the requirements of Part E of these Regulations must be followed.

1.28.11 At any time excavation of soil or removal of concrete, asphalt or other cover is required during the course of a Repair, Retrofit or Upgrade, Owners and Operators shall perform a Site Assessment to measure for the presence of a Release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. The Site Assessment shall be completed within ten (10) days of the Repair, Retrofit or Upgrade of the UST System.

1.28.12 Within sixty (60) days of completion of a Repair, Retrofit or Upgrade of an UST System Owners and Operators and UST Contractors shall submit documentation to the Tank Management Branch including but not limited to the following:

1.28.12.1 Repair, Retrofit or Upgrade completion documentation; and

1.28.12.2 Results of sampling required in Part E of these Regulations or §1.28.10 of this Part; and

1.28.12.3 Results of any UST System tests required by the Department.

1.29 Routine Inspection Requirements for UST Systems Storing Hazardous Substance

1.29.1 Owners and Operators shall conduct an inspection ~~once during each~~ at an interval no less frequently than once every twenty-eight (28) to thirty-one (31) calendar month days to monitor the condition of the UST System including but not limited to all dispensers, dispenser sumps, access ports, spill containment devices, sumps and Containment Sumps. The routine inspection shall ~~include~~ at a minimum include the following:

1.29.1.1 The removal of all dispenser covers and visual inspection for any evidence of a Release of Hazardous Substance and inspection of all fittings, couplings and filters; and

1.29.1.2 The removal of all Containment Sump and sump covers and visual inspection of the sump for any evidence of a Release of Hazardous Substance or intrusion of water; and

1.29.1.3 The inspection of all access ports to make sure that the covers, caps and adaptors are tightly sealed; and

1.29.1.4 The removal of all spill containment device covers and inspection to ensure all spill containment devices are empty and free of debris, water or Hazardous Substance.

1.29.2 A record of all routine inspections shall be kept on file by Owners and Operators for a minimum of three (3) years and shall be made available to the Department upon request. The records shall at a minimum include the results of all inspections including any Repairs made.

1.29.3 If at any time during a routine inspection evidence of a Release of Hazardous Substance is discovered Owners and Operators shall follow the investigation requirements of Part E of these Regulations.

1.30 Internal Lining Requirements for UST Systems Storing Hazardous Substance

1.30.1 An internal lining may be added to UST Systems Storing Hazardous Substance to improve the ability of an UST System to prevent the release of Hazardous Substance.

1.30.2 An internal lining shall not be ~~utilized~~ added to UST Systems to meet corrosion protection requirements after ~~the most recent date of promulgation of these Regulations~~ January 11, 2008.

1.30.3 The internal lining installation, operation and maintenance shall meet the following requirements:

1.30.3.1 The lining shall be installed in accordance with the following industry standards:

1.30.3.1.1 API RP 1631, *Interior Lining and Periodic Inspection of Underground Storage Tanks*.

1.30.3.1.2 NLPA Standard 631, Chapter A, *Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks*.

1.30.3.1.3 NLPA Standard 631, Chapter B, *Future Internal Inspection Requirements for Lined Tanks*.

1.30.3.2 The lined Tank shall be tested for tightness in accordance with Part B, §2.9.7 and found to be tight before the Tank is put back into service; and

1.30.3.3 Within ten (10) years after lining, and every five (5) years thereafter, Owners and Operators shall conduct an internal inspection of ~~the lined Tank~~ any Tank that was lined prior to January 11, 2008 in accordance with NLPA Standard 631, Chapter A, *Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks* and Chapter B, *Future Internal Inspection Requirements for Lined Tanks*, and API RP 1631, *Interior Lining and Periodic Inspection of Underground Storage Tanks*. At the time of the inspection, the lined Tank shall be structurally sound and comply with the original design specifications. If any damage is found, Repairs shall be made in accordance with standard engineering practice, industry standards and the requirements of these Regulations or the Tank shall be replaced in accordance with the requirements in §1 of this Part.

1.30.3.4 When an internally lined bare steel Tank is not inspected at a minimum in accordance with the intervals required in §1.30.3.3 of this Part and subsequently fails an internal inspection test the Tank shall be Removed or Closed In Place.

11 DE Reg. 922 (01/01/08)

2.0 Change In Service Requirements for UST Systems Storing Hazardous Substance

2.1 Change In Service Notification Requirements for UST Systems Storing Hazardous Substance

2.1.1 Owners and Operators shall notify the Department of all Changes In Service in accordance with the requirements of §4.0 of Part A of these Regulations.

2.2 General Requirements for Change in Status from In Service to Out Of Service for UST Systems Storing Hazardous Substance

2.2.1 Owners and Operators shall continue operation and maintenance of corrosion protection in accordance with the applicable requirements of §1 of this Part when an UST System is Out of Service.

2.2.2 Owners and Operators shall continue operation and maintenance of Release Detection in accordance with the applicable Release Detection requirements for Tanks and Piping in §1 of this Part, when the Out of Service ~~tank~~ UST System is not empty. Release Detection is not required if the UST System has been rendered empty.

2.2.3 The UST System is empty when all Hazardous Substances have been removed using commonly employed practices so that no more than one inch or 2.5 centimeters of residue, or 0.3 percent by weight of the total capacity of the UST System, remains in the system.

2.2.4 Owners and Operators shall comply with the routine inspection requirements of §1.29 of this Part, if the Out of Service UST System is not empty and requires Release Detection in accordance with §2.2.2 of this Part.

2.2.35 When any UST System is Out of Service for three (3) months or more, Owners and Operators shall ~~comply with the following requirements:~~

2.2.35.1 Leave vent ~~l~~ines open and functioning; and

2.2.35.2 Cap and secure all other ~~lines~~ Pipes, pumps, manways, and Ancillary Equipment.

2.2.46 When an UST System is Out Of Service for twelve (12) months, Owners and Operators shall:

2.2.46.1 Permanently Remove or Close in Place the UST System in accordance with the applicable requirements of these Regulations; or

2.2.46.2 Render the UST System empty in accordance with the definition in §2.2.23 of this Part and complete a Site Assessment in accordance with §2.4 of this Part including any required hydrogeologic investigation and Remedial Action in accordance with Part E of these Regulations.

2.3 General Requirements for Change in Status from Out of Service to In Service for UST Systems Storing Hazardous Substance

2.3.1 Prior to a change in status of an UST System from Out of Service, for an UST System that has been Out of Service for three (3) months or more, to In Service, Owners and Operators shall ensure that the UST System meets the following requirements prior to being placed In Service:

2.3.1.1 The UST system shall meet the requirements of §1 of this Part; and

2.3.1.2 The UST System shall be tested for tightness ~~in accordance with the requirements of Part B, §2.9.7 of these Regulations~~ as applicable; and

2.3.1.3 All Cathodically Protected UST Systems shall be tested and all necessary Repairs made in accordance with the requirements of §1.24 of this Part.

2.4 Change In Service Site Assessment Requirements for UST Systems Storing Hazardous Substance

2.4.1 Within thirty (30) days of rendering the UST System empty as required in §2.2.46.2 of this Part, Owners and Operators shall complete a Site Assessment designed to measure for the presence of a Release where contamination is most likely to be present. The Site Assessment is not restricted to the property containing the UST System. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. A Site Assessment plan shall be approved by the Department prior to implementation.

2.4.2 If contaminated soils, contaminated groundwater, or ~~Free Product LNAPL~~ as a liquid or a vapor is discovered as a result of the Site Assessment performed in accordance with §2.4.1 of this Part, or

by any other manner, Owner and Operators shall begin a hydrogeologic investigation and Remedial Action in accordance with the requirements of Part E of these Regulations.

2.5 Change In Service Recordkeeping Requirements for UST Systems Storing Hazardous Substance

2.5.1 Owners and Operators shall submit the following documents to the Department within thirty (30) days of the completion of the Site Assessment required in §2.4 of this Part:

2.5.1.1 A site plan detailing the UST(s) location and surrounding area; and

2.5.1.2 The approved Site Assessment plan with sampling points clearly marked; and

2.5.1.3 Chain of custody for all samples submitted for laboratory analysis; and

2.5.1.4 Results of any on-site screening performed; and

2.5.1.5 Laboratory test results for all samples submitted for laboratory analysis; and

2.5.1.6 Documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the Change In Service of the UST System, including manifests and receipts for soil, water, and Hazardous Substances.

2.6 Financial Responsibility Requirements for Out of Service Hazardous Substance USTs

2.6.1 Owners and Operators shall comply with the requirements of Part F of these Regulations for Out of Service UST Systems until the UST System is permanently Removed or Closed In Place in accordance with the requirements of this Part and all requirements of Part E of these Regulations are completed.

3.0 Removal or Closure in Place for UST Systems Storing Hazardous Substance Requirements

3.1 Removal or Closure in Place Notification Requirements for UST Systems Storing Hazardous Substance

3.1.1 Owners and Operators shall notify the Department of all Removals or Closures in Place in accordance with the requirements of §4.0 of Part A of these Regulations.

3.2 Removal or Closure in Place General Requirements for UST Systems Storing Hazardous Substance

3.2.1 The Removal and Closure in Place procedures shall comply with the following industry standards:

3.2.1.1 API RP 1604, *Closure of Underground Petroleum Storage Tanks*.

3.2.1.2 API 2015, *Safe Entry and Cleaning of Petroleum Storage Tanks*.

3.2.1.3 OSHA, 29 CFR, 1910.146, *Permit Required Confined Spaces*.

3.3 Removal or Closure in Place Site Assessment Requirements for UST Systems Storing Hazardous Substance

3.3.1 At the time of Removal of an UST System, Owners and Operators shall perform a Site Assessment to measure for the presence of a Release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations and measurement methods,

Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. The Site Assessment shall be completed within ten (10) days of the Removal of the UST System.

3.3.2 At the time of Closure in Place of an UST System, Owners and Operators shall perform a Site Assessment to measure for the presence of a Release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. A Site Assessment plan shall be approved by the Department prior to implementation. The Site Assessment shall be completed within ten (10) days of the Closure in Place of the UST System.

3.3.3 If contaminated soils, contaminated groundwater, or ~~Free Product~~ LNAPL as a liquid or a vapor is discovered as a result of the Site Assessment performed in accordance with §3.3.1 and §3.3.2 of this Part, or by any other manner, Owner and Operators shall begin a hydrogeologic investigation and Remedial Action in accordance with the requirements of Part E of these Regulations.

3.4 Removal or Closure in Place Recordkeeping Requirements for UST Systems Storing Hazardous Substance

3.4.1 Owners and Operators shall submit the following documents to the Department within sixty (60) days of the Removal or Closure in Place of an UST System:

3.4.1.1 A site plan detailing the UST(s) location and surrounding area; and

3.4.1.2 A site map with sampling points clearly marked; and

3.4.1.3 Results of any on-site screening performed; and

3.4.1.4 Chain of custody for all samples submitted for laboratory analysis; and

3.4.1.5 Laboratory test results for all samples submitted for laboratory analysis; and

3.4.1.6 Documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the Removal of the UST System, including manifests and receipts for soil, water, and Regulated Substances and the UST System disposal; and

3.4.1.7 Documentation of Tank cleaning prior to UST System Closure in Place.

3.5 Removal or Closure in Place Financial Responsibility Requirements for UST Systems Storing Hazardous Substance

3.5.1 Owners and Operators shall comply with the requirements of Part F of these Regulations until the UST System is permanently Removed or Closed In Place in accordance with the requirements of this Part and all requirements of Part E of these Regulations are completed.

3.6 Applicability to Previously Removed or Closed In Place UST Systems Storing Hazardous Substance

3.6.1 When a Release is suspected from a previously Removed, Closed In Place or abandoned UST System, the Owner, Operator and Responsible Party shall comply with the requirements of Part E of these Regulations. If a Release is confirmed the Owner, Operator and Responsible Party shall Remove or Close In Place the UST System in accordance with all applicable requirements of these Regulations.

4.0 Change In Substance Stored Requirements for UST Systems Storing Hazardous Substance

- 4.1 Change In Substance Stored Notification Requirements for UST Systems Storing Hazardous Substance
 - 4.1.1 Owners and Operators shall notify the Department of all Changes in Substance Stored in accordance with the requirements of §4.0 of Part A of these Regulations.
- 4.2 Change In Substance Stored General Requirements for UST Systems Storing Hazardous Substance
 - 4.2.1 Before the Change In Substance Stored, Owners and Operators shall empty and clean the UST System by removing all liquids and accumulated sludge in accordance with the following industry standards:
 - 4.2.1.1 API RP 1604, *Closure of Underground Petroleum Storage Tanks*.
 - 4.2.1.2 API 2015, *Safe Entry and Cleaning of Petroleum Storage Tanks*.
 - 4.2.1.3 OSHA, 29 CFR, 1910.146, *Permit Required Confined Spaces*.
- 4.3 Change In Substance Stored Site Assessment Requirements for UST Systems Storing Hazardous Substance
 - 4.3.1 Within thirty (30) days of the completion of the cleaning of the UST System required in §4.2 of this Part, Owners and Operators shall perform a Site Assessment to measure for the presence of a Release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. A Site Assessment plan shall be approved by the Department prior to implementation.
 - 4.3.2 If contaminated soils, contaminated groundwater, or ~~Free Product~~ LNAPL as a liquid or a vapor is discovered as a result of the Site Assessment performed in accordance with §4.3.1 of this Part, or by any other manner, Owner and Operators shall begin a hydrogeologic investigation and Remedial Action in accordance with the requirements of Part E of these Regulations.
- 4.4 Change In Substance Stored Recordkeeping Requirements for UST Systems Storing Hazardous Substance
 - 4.4.1 The Owner and Operator shall submit the following documents to the Department within thirty (30) days of the Change In Substance Stored in an UST System:
 - 4.4.1.1 A site plan detailing the UST(s) location and surrounding area; and
 - 4.4.1.2 The approved Site Assessment plan with sampling points clearly marked; and
 - 4.4.1.3 Chain of custody for all samples submitted for laboratory analysis; and
 - 4.4.1.4 Results of any on-site screening performed; and
 - 4.4.1.5 Laboratory test results for all samples submitted for laboratory analysis; and

- 4.4.1.6 Documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the Change in Substance Stored of the UST System, including manifests and receipts for soil, water, and Regulated Substances.
- 4.5 Change In Substance Stored Financial Responsibility Requirements for UST Systems Storing Hazardous Substance
 - 4.5.1 Owners and Operators shall comply with the requirements of Part F of these Regulations until the UST System is permanently Removed or Closed In Place in accordance with these Regulations or does not store a Regulated Substance and all requirements of Part E of these Regulations are completed.