15A NCAC 05H .1504 PIT AND TANK CONSTRUCTION STANDARDS

(a) All pits, series of pits, tanks, and tank batteries shall be constructed and maintained to contain all Exploration and Production (E & P) wastes from the drilling, completing, recompleting, producing, servicing, and plugging of an oil or gas well and shall be constructed, operated and maintained to protect public health, safety, and the environment.

(b) The pit, series of pits, tanks, and tank batteries shall be installed and maintained in accordance with the following requirements:

(1) the location of pit(s) and tanks(s) shall be in accordance with the minimum setbacks as required in Rules .1601 and .1602 of this Subchapter, or in an approved variance pursuant to Rule .1603 of this Subchapter;

(2) pits shall be located in cut material to the fullest extent possible. Pits shall be constructed adjacent to the high wall for sloping well sites. If the pit cannot be constructed in cut material, at least 50 percent of the pit shall be constructed below original ground level to prevent failure of the pit dike. Pit dikes constructed of fill material shall be compacted according to soil texture and moisture content pursuant to 15A NCAC 02K .0208, which is incorporated by reference, including subsequent amendments and editions;

(3) all pits and open tanks shall maintain a minimum of three feet of freeboard at all times and be sized so as to contain the projected volume of E&P waste along with the volume of precipitation that would fall within a 25-year 24-hour storm event;

(4) if Subparagraph (b)(3) of this Rule is violated, the permittee shall notify the Department within two hours of discovery and take the necessary actions to ensure the structural stability of the pit or open tank, prevent spills, and restore the three feet of freeboard; and

(5) tank design, installation, and use shall comply with API Specifications 12B "Specification for Bolted Tanks for Storage of Production Liquids," Specification 12D "Specification for Field Welded Tanks for Storage of Production Liquids," Specification 12F "Specification for Shop Welded Tanks for Storage of Production Liquids," or Specification 12P "Specification for Fiberglass Reinforced Plastic Tanks," which are incorporated by reference, including subsequent amendments and editions. These documents, published by API, may be viewed online for no charge at http://publications.api.org/.

(c) Any pit that contains E & P waste shall comply with the following standards:

(1) pits shall have a primary and secondary synthetic liner;

(2) each synthetic liner shall have a coefficient of permeability no greater than 1×10^{-10} centimeters per second and shall be at least 30 millimeters in thickness for polyvinyl chloride or at least 40 millimeters in thickness for high-density polyethylene;

(3) each synthetic liner shall be designed, constructed and maintained so that the physical and chemical characteristics of the liner are not adversely affected by the E & P waste or by ultraviolet light pursuant to ASTM D5747/D5747M-08 (2013) e1 "Standard Practice for Tests to Evaluate the Chemical Resistance of Geomembranes to Liquids";

(4) the synthetic liner shall be resistant to failures or damage during transportation, handling, installation, and use;

(5) adjoining sections of synthetic liners shall be sealed together to prevent leakage and tested in accordance with the manufacturer's directions. Testing results shall be maintained by the permittee and provided to the Department upon request in accordance with Rule .0202 of this Subchapter;

(6) the synthetic liner shall be trenched and anchored into the top of the berm;

(7) the pit shall be constructed with a leak-detection zone between the upper and lower synthetic liners designed to:

(A) reduce the maximum predicted head acting on the lower membrane liner to less than one inch and to detect a leak within 24 hours;

(B) function without damaging the liners; and

(C) allow permittee to monitor, record, remove, or repair any leakage within the zone;

(8) the liner sub-base shall be smooth, uniform, and free from debris, rock, and other materials that may puncture, tear, cut, or otherwise cause the liner to fail. The liner sub-base and subgrade shall be capable of bearing the weight of the material above the liner without causing settling that may affect the integrity of the liner;

(9) the pit shall have a perimeter berm that is a minimum of two feet in width along the crest of the berm, to prevent stormwater runoff from entering the pit;
(10) the bottom of the pit shall be at least four feet above the seasonal high groundwater table and bedrock;
(11) fencing in accordance with Rule .2006(a) of this Subchapter; and
(12) netting, screening, or otherwise render nonhazardous to wildlife in accordance with Rule .2006(b) of this Subchapter.

(d) Monitoring and alarm technology shall be used to continuously verify the integrity of the primary pit liner. If the primary liner failure is discovered at any time, the pit shall be emptied and the liner repaired prior to placing the pit back in service.

(e) The leak detection systems shall be monitored on a monthly basis to determine if the primary liner has failed. The primary liner has failed if the volume of water passing through the primary liner exceeds the action leakage rate, as calculated using accepted procedures, or 1,000 gallons per acre per day, whichever is larger.

(f) If a liner becomes torn or otherwise loses integrity, the pit shall be managed to prevent the pit contents from leaking out of the pit, the pit contents shall be removed, and the liner repaired prior to placing the pit back in service. Pit contents shall be disposed of in accordance with the Waste Management Plan in accordance with Rule .2002 of this Subchapter.

(g) If the liner drops below the three feet of freeboard, the pit shall be managed to prevent the pit contents from leaking from the pit and the three feet of lined freeboard shall be restored.

(h) The permittee shall provide and maintain secondary containment for all tanks and production equipment of sufficient capacity to contain 110 percent of the volume of either the largest tank within the containment system or the total volume of all interconnected tanks, whichever is greater. Secondary containment structures shall be constructed of a material compatible with the fluids being stored and maintained to prevent loss of fluids.

(i) Tanks for the storage of produced hydrocarbons shall not be buried and shall contain the following components:
(1) activated charcoal filters installed on vent stacks. Activated charcoal filters shall be maintained and replaced according to manufacturer's specifications;
(2) low-pressure relief valves installed on vent stacks. Relief valves shall remain functioning at all times;
(3) hatch lids shall have a functioning seal and shall be secured at all times unless the permittee is on-site;
(4) lightning arrestors installed on each tank to comply with API Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents," which is incorporated by reference, including subsequent amendments and editions. This document, published by API, may be viewed online for no charge at http://publications.api.org/;
(5) tanks shall be elevated such that leaks on their sides or bottoms are readily discernible; and
(6) tanks shall be installed above a surface impermeable to materials that the tank will contain.

(j) The Commission may grant or deny a variance from any construction standard of this Rule. The applicant or permittee shall submit a request for a variance in accordance with Rule .0301 of this Subchapter. In granting or denying the request the Commission shall determine that the applicant or permittee has met the following two factors:
(1) the requested variance to deviate from the standards and rule will provide equal or greater protection of public health, welfare, and the environment; and
(2) construction in accordance with the standards of this Rule is not technically or economically feasible.

History Note: *Authority 113-391(a)(5)c; 113-391(a)(5)d;*
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