



Wastewater storage tanks and oil/water separators may be used as part of an electric power facility drainage system to meet the secondary containment requirements.

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PART 2

Many electrical utilities are subject to the United States Environmental Protection Agency's (EPA) Spill Prevention Control and Countermeasure (SPCC) regulation. EPA's SPCC requirements apply to non-transportation related facilities that could reasonably be expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines. The regulation targets facilities that have (1) a total aboveground oil storage capacity of more than 1,320 gallons; or (2) an aboveground oil storage capacity of more than 660 gallons in a single container; or (3) total underground buried storage capacity of more than 42,000 gallons.

SPCC regulated electric power facilities are usually located adjacent to water and are engaged in the generation, transmission, and/or distribution of electric power, and that use equipment (transformers and circuit breakers) which contain dielectric fluid (mineral oil) for insulation, compressor oil and hydraulic oil. These facilities include power plants (including hydroelectric and cogeneration facilities), substations, switching stations, test facilities, equipment storage and maintenance yards and customer industrial installations.

Operations related to SPCC at these facilities include the transfer of bulk lube oil for maintenance activities, the storage of diesel fuel oil for emergency power generators and the storage of insulation (dielectric) oil contained within electrical equipment (transformers, oil circuit breakers, capacitors, regulators, etc.).

SPCC regulations requires containment of drainage from these operating areas of the facility in order to prevent oil spills and contaminated runoff from reaching storm drains, streams, ditches, rivers, bays and other navigable waterways.

Secondary containment or diversionary structures must be in place to control oil contaminated drainage or leaks around electrical equipment and associated storage tanks, pipelines, valves and connection joints.

For these purposes, many facilities use dikes and underground wastewater storage tanks for protection against environmental discharges and for fire protection. These systems called Closed Drainage Systems.



The HighGuard exterior coating demonstrates an excellent balance of flexibility, impact strength, abrasion resistance, and corrosion resistance. Just 75 mils of this dielectric polyurethane coating will provide permanent and fully effective corrosion protection.

CLOSED DRAINAGE SYSTEMS

Large volume underground wastewater storage tanks are commonly employed at electric power facilities for transformer oil and oily wastewater containment on site during normal operation as well as in emergency situations. These closed drainage systems are drainage systems designed to intercept liquids (oil and wastewater from rainwater, snow melt and firefighting operations) discharged from a dike area and contain these liquids before pump-out for proper treatment or disposal off site.

Closed drainage systems may be preferred at locations where effective gravity drainage to an underground oil/water separator is difficult or costly to achieve or in environmentally sensitive areas where strict discharge limits cannot be satisfied by traditional gravity drainage systems with oil/water separators.

Additionally, these systems may be favored as the spill capacity of the dike containment system can be increased by adding an adequately sized wastewater storage tank. For instance, in an electrical substation application, the tank is typically sized to take a minimum of 90 minutes of firewater spray from one of the transformer areas and 110% of the oil volume of the largest transformer.

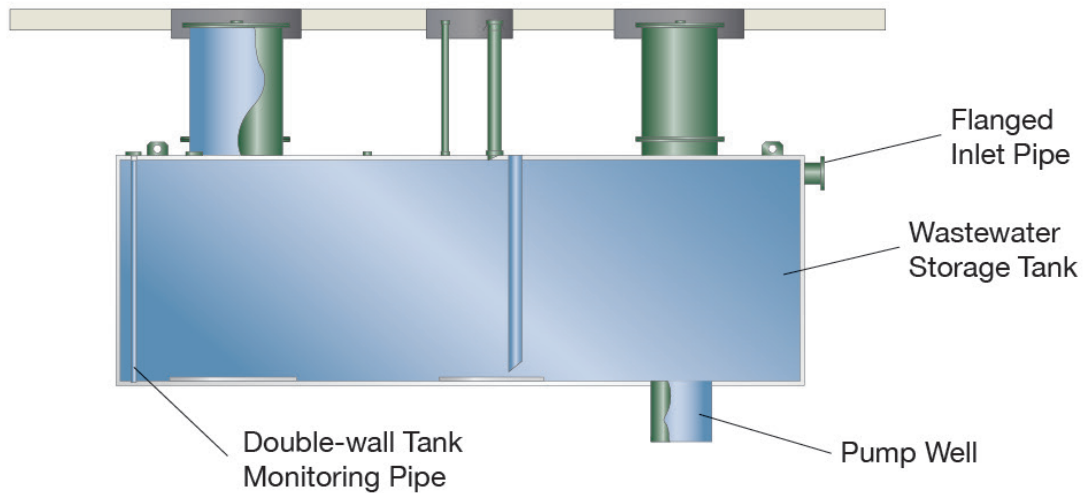
HighDRO® Wastewater Storage Tanks (HD-WWST) are regularly applied to the design of a closed drainage system. HighDRO® Wastewater Storage Tanks (HD-WWST) are of double-walled construction with electronic leak detection.

These tough factory-welded and coated carbon steel wastewater storage tanks are pressure tested for tightness to ensure quality and dependability.

The high strength and impermeable steel shell combines with the protective internal linings and thick HighGuard exterior coating to form a hard, inert barrier to prevent corrosion.

The HighDRO® Wastewater Storage Tank has a properly sized inlet drain line but has no outlet. It is not directly connected to a storm or sanitary sewer line. This “tight tank” is maintained empty at all times and is kept ready as an emergency holding tank. Accordingly, it must be pumped out at regular intervals or after every spill.

WASTEWATER STORAGE TANK

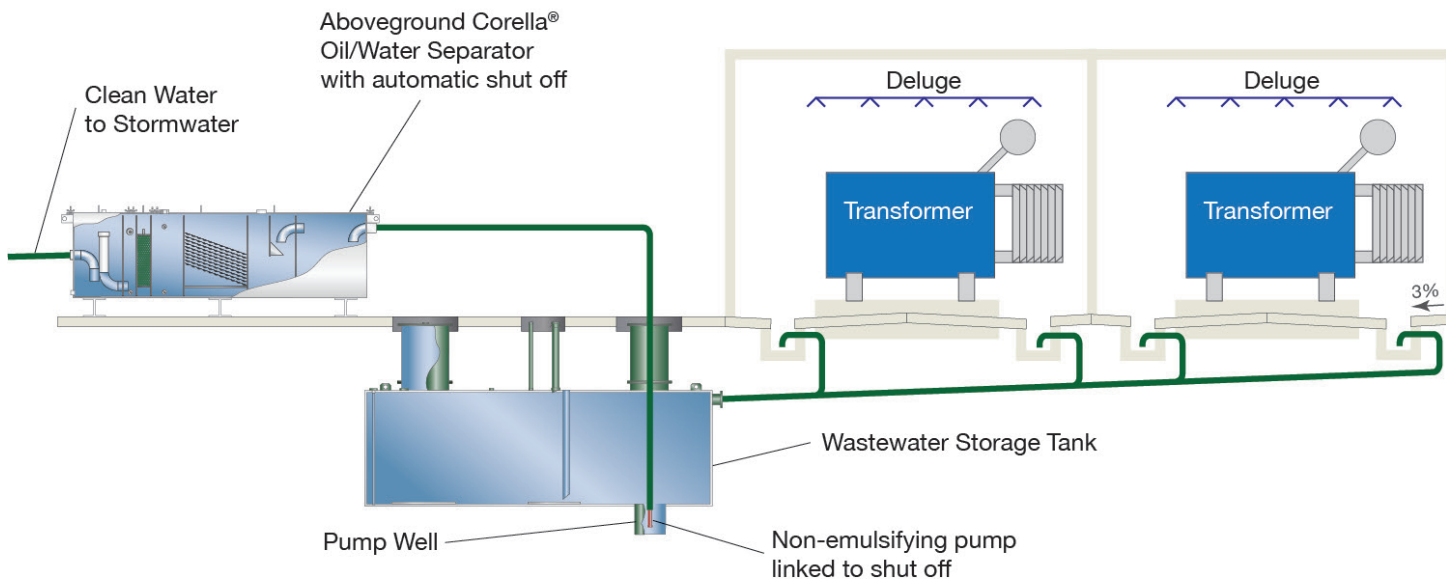


In the event of a spill in the dike containment structure, high oil sensors in the dike containment structure (or emergency activation by site personal) will open the normally closed motor operated valve installed between the dike and the HD-WWST. Flow from the dike containment structure is then directed to the HD-WWST for 100% containment.

Once the situation is stabilized and during site cleanup, the sensors and valve are reset (closed) and the HD-WWST can be pumped out and any accumulated wastewater and properly disposed of offsite.

If rainwater is allowed to enter the closed drainage system, where permitted, the contents of the receiving tank can be pumped to an aboveground Corella® Oil/Water Separator and treated prior to discharge to a storm or sanitary sewer.

Closed Drainage System with Wastewater Storage Tanks and optional Aboveground Corella® Oil/Water Separator



As in the belowground oil/water separators, these separators are equipped with the non-clogging Corella® coalescers that accelerate the separation process and greatly reduce the level of oil and oily coated solids discharged into the storm or sanitary sewer systems.

These rectangular separators can serve as a stand-alone oil/water separator or can be readily adapted for use in conjunction with Advanced Hydrocarbon Filtration Systems for discharges into environmentally sensitive areas.

After an emergency situation, as with the Gravity Drainage System, cleaning of any impacted areas of the electrical power facility is required. It will be necessary to empty the HighDRO® Wastewater Storage Tank and cleanup work must be undertaken in accordance with appropriate environmental guidelines.



Advanced Hydrocarbon Filtration Systems (AHFS) are used in applications where hydrocarbon removal beyond the capability of a standard oil/water separator is necessary.

See Part 1: Creative Solutions to Secondary Containment at Electrical Power Facilities

Contact: Bob Duppstadt, Sales Manager
bduppstadt@highlandtank.com
814-893-1109

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DEFINITIONS

Dike - A wall/barrier of sufficient height constructed around an oil tank or fluid filled equipment to contain spillage of oil or hazardous liquids. The volume or space inside the dike should be greater than the volume of the tank or fluid filled equipment.

Closed Drainage - A drainage system designed to retain liquids within a diked area and wastewater storage tank(s) for treatment or disposal as required.

Coalescing Oil/Water Separators - Enhanced Gravity Oil/Water Separator that contains flow retarding devices, baffling and coalescing plates designed to separate gross amounts of oil and settleable solids from the wastewater effluents of industrial oily water sources.

Gravity Drainage - A drainage system designed to remove liquids to a remote location, such as an oil/water separator (and oil containment tank), for treatment and/or retention prior to discharge.

Gravity Separation - Oil/water separation without the use of chemicals or mechanical means i.e. using gravity only based on Stokes law. Oil/sand interceptors and all coalescing oil/water separators use gravity separation.

Oil Containment System - The oil containment system refers to the transformer dikes, together with a suitable combination of flame traps, pipes, oil/wastewater containment tank, spill tanks and coalescing oil/water separators as required. The oil containment system is not designed as an oil storage system. It is designed for emergency situations and the treatment of minor oil contamination from transformer dikes.

PPM (Parts Per Million) - An oil/water concentration of 10 ppm can also be expressed as 10 mg/L which is equivalent to a mixture that is visibly free of floating oils and greases, i.e. no visible oil.

Secondary Containment - An overflow area used to capture oil spills and contaminated firefighting water.

Sensitive Areas - Any parcel of land or waterway that has environmental attributes that contribute to the retention and or creation of wildlife habitat, soils stability, or other vital ecological functions.

Wastewater Storage Tank - A buried protected steel vessel that provides containment of oil spills and contaminated firefighting water. Also known as a "tight tank".

Waste - Captured oil and sediment originating from within the oil containment system.

Waterway - Any river, stream, lake, lagoon, swamp, wetlands, unconfined surface water, natural or artificial watercourse, dam or tidal waters (including navigable waters such as harbors, bays and oceans).



Stoystown, PA
One Highland Road
Stoystown, PA 15563-0338
814.893.5701

Manheim, PA
4535 Elizabethtown Road
Manheim, PA 17545-9410
717.664.0600

Watervliet, NY
958 19th Street
Watervliet, NY 12189-1752
518.273.0801

Greensboro, NC
2700 Patterson Street
Greensboro, NC 27407-2317
336.218.0801

Lebanon, PA
2225 Chestnut Street
Lebanon, PA 17042-2504
717.664.0602

Friedens, PA
1510 Stoystown Road
Friedens, PA 15541-7402
814.443.6800



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