

UNDERGROUND STORAGE TANKS – CLOSURE REQUIREMENTS

(For assistance, please contact EHS at (402) 472-4925, or visit our web site at <http://ehs.unl.edu/>)

Purpose

The purpose of this SOP is to summarize the closure process required under the State Fire Marshal (SFM) regulations (Nebraska Title 159), Nebraska Department of Environmental Quality (NDEQ) regulations, and applicable UNL procedures.

Scope

This SOP applies primarily to UST systems that are not exempt or excepted from Nebraska Title 159 requirements. In summary, and as it relates to the topic of this SOP:

- UST systems of less than 110 gallons are exempt from most requirements, including notification, registration, and formal closure activities. The only regulatory requirement that applies to this type of UST is notification to Nebraska Department of Environmental Quality (NDEQ) if it is suspected that the UST system leaked contaminants to the surrounding soil. This is determined through visual indication and/or noticeable odor. Closure activities are minimal, either remove or abandon in place. This work can be conducted without the services of a licensed tank contractor. Submittal of a closure assessment/report to NDEQ is not required.
- Small farm (i.e., less than 1100 gallons), residential, and heating oil USTs are also exempt from most requirements. However, they must be registered with the SFM, and the SFM notified of the intent to remove or close the UST. In addition, both NDEQ and the SFM must be notified if it is suspected that the UST system leaked contaminants to the surrounding soil. This is determined through visual indication and/or noticeable odor. Closure activities can be conducted without the services of a licensed tank contractor and a closure assessment/report is not required.
- A certified tank closure contractor must supervise closure and removal activities of all other UST systems.

Ownership

UNL is responsible for all closure and post-closure activities and costs associated with USTs that were owned or operated by UNL. UNL is not responsible for USTs that were neither owned nor operated by UNL. However, in practice, when an UST that was not owned/operated by UNL is encountered during an excavation/construction project, UNL will generally assume responsibility for those closure activities necessary to continue with the construction/excavation project.

Types of Closures

Closure of an UST may be accomplished by either removal or abandonment in-place. Both methods have multiple requirements, which are discussed later in this SOP. Removal is the preferred method, and usually costs less than abandonment in-place.

An UST that has been taken temporarily out-of-service must go through the closure process within 12 months, unless the following conditions are met:

- Corrosion protection systems are continually operated and maintained.
- Leak detection systems are continually operated and maintained, unless the tank has been emptied (no more than 1” of residue or 0.3% by weight of the total capacity of the UST system).
- Vent lines must remain open and functioning.
- Other lines, pumps, manways, and ancillary equipment (e.g., piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of product) must be capped and/or secured, as appropriate.
- An extension has been granted by the SFM and a contamination assessment is performed. An extension is temporary, usually granted for 12 months.

An UST that meets all current design standards and the conditions outlined above may remain temporarily out-of-service indefinitely.

Closure Permits

Closure permits are required for tank or piping removals or closures-in-place. At least 30-days prior, notice of intent to permanently close must be made to the SFM. A closure permit must also be obtained. The notice of intent and permit is to be obtained by the closure contractor. Copies of the permit should be forwarded to EHS.

Closure Process

The following general activities must be conducted as part of the closure process. In addition, the SFM adopted by reference certain American Petroleum Institute practices and standards, including API Recommended Practice 1604, *Removal and Disposal of Used Underground Petroleum Storage Tanks* and API Publication 2015, *Cleaning Petroleum Storage Tanks*.

- All liquids and accumulated sludge must be removed.
- The tank must be removed from the ground or filled with an inert solid material. Removal is the preferred method.
- Disposal of removed tanks must be in accordance with regulatory requirements and described in the SFM Closure Report.
- NFPA work practices must be observed. These include, but are not limited to:
 - No smoking in the tank excavation area.
 - Use of hand tools to expose tank fittings and in preparation for tank atmosphere purging procedures.
 - Securing of the area from pedestrian and vehicular traffic.
 - Locating and marking utility lines.
 - Purging of the tank to create an inert atmosphere.
 - Prompt removal of the excavated tank from the premises, or securing the tank in an inaccessible area during necessary temporary storage.

Contaminated soils removed from UST sites must be managed either as special waste or hazardous waste, depending on analytical test results. Disposal must be accomplished with oversight of EHS to ensure that proper disposal permits and other

regulatory requirements are met. In addition, temporary storage of soil after excavation and before disposal must meet certain conditions. Therefore, consult EHS prior to excavating any soil.

Site Assessment

A site assessment is required when an UST is permanently closed using either method of closure (removal or abandonment in-place). The site assessment is designed to detect previous leaks that may have occurred from the UST system. While the assessment process involves evaluating the tank and piping for leakage and resulting soil or groundwater contamination, the assessment process differs slightly depending on whether the tank is removed or closed in-place.

A. In-Place Closure Assessment

1. Tank

A minimum of two soil borings must be taken, at each end of the tank, through the backfill. If the distance between these two borings is greater than 25', a third boring midway between the two is also required.

- i. The soil borings must be a minimum of 2" in diameter and completed using a hollow stem auger.
- ii. At a minimum, the borings must be advanced until soil contamination is encountered. EHS recommends advancing the borings to groundwater, regardless.
- iii. Samples must be taken every 5' of the boring and at the point at which contamination is first encountered. A sample of the ground water must be taken if the boring is advanced that far.
- iv. Boring logs must be maintained to identify predominant soil types. The boring logs must also record the depth at which contamination was encountered.
- v. If contamination is encountered, the UNL Project Manager or tank contractor must notify EHS immediately. EHS or the tank contractor must notify the SFM and NDEQ within 24 hours of the discovery or immediately if the release poses a threat to the environment or public safety.
- vi. Soils must be submitted for the following analysis, depending on the product previously stored in the tank.
 - o OA-1 or EPA Method 8260 for analysis of volatile Contaminants of Concern (BTEX, MtBE, and n-Hexane) in both soils and water.
 - o OA-2 is used for the analysis of TEH (as diesel fuel, fuel oil, or kerosene).
 - o Other potential Contaminants of Concern (depending on prior storage history) may include metals, chlorinated solvents, and ethylene glycol.

2. Piping/Lines

Soil borings must also be taken to assess potential contamination that may have arisen from product lines. As in the tank assessment, borings must be advanced until contamination is encountered (EHS recommends advancing all borings to groundwater); samples must be taken every 5' of the boring and of the groundwater and submitted for the analysis noted above; and boring logs must be maintained. Borings are to be placed at the following locations:

- i. One boring at the point where the product line leaves the tank excavation.
- ii. One boring drilled within 3' of each dispenser island, placed in the best estimated down gradient direction of ground water flow.
- iii. Borings in-between the above, if the distance is greater than 25' (number that is necessary to have a maximum distance between each boring of 25').

B. Removal Assessment

When a removal is conducted as the method of closure, the assessment process also includes visual inspection of the integrity of the tank and piping. Sampling locations are selected based on the visual inspection.

1. Tank

- i. The tank and associated piping must be visually inspected for holes, cracks, corrosion, or any signs of leakage. All welds and seams must be thoroughly scraped and inspected. The results of the visual inspection must be recorded in the assessment report.
- ii. The capacity of the tank must be recorded in the assessment report.
- iii. Excavation must continue until all backfill materials have been removed and undisturbed native soils at the base of the excavation are exposed. Over-excavation, even in the presence of contamination, is not required. EHS generally recommends over-excavation only if the extent of contamination is small and discrete; or unusual circumstances warrant immediate removal of the contamination. If significant contamination is encountered or suspected, a remedial action plan must be submitted through EHS to NDEQ for approval prior to any over-excavation.
- iv. A minimum of two samples per tank must be collected and analyzed from undisturbed native soils at the base of the excavation. Sample locations must correspond to points of potential leakage from the tank or line, based on visual inspection of the tank and soils. If no evidence of leakage is found and the tank integrity is good, one sample must be collected at each end of the tank at the base of the excavation.

2. Piping

As with the tank, piping must also be excavated, inspected for integrity, and removed with excavation to native soils. The same rule of thumb for over-excavation related to the tank pertains to the piping.

- i. Sample native soils at areas of obvious contamination or points of suspected or known leakage. If no leakage is suspected, one sample should be taken every 10' beginning at the tank excavation perimeter and extending to the dispensers.

C. Assessment Report

Following closure, a closure assessment report and certification of compliance must be completed and submitted to the SFM by the tank contractor within 45 days of the closure. Copies of the assessment report and certification should be maintained on-site in the tank files and forwarded to EHS.

At a minimum, the assessment report must contain the following information:

1. Methods used to inspect and verify presence/absence of contamination.
2. If contamination noted, a description of the cause and location of contamination, and notifications made (including agency, contact, date, time, and content of notification).
3. Sample chain of custody records, including the name of the lab and analytical reports.
4. Site drawing of the tank system (tanks and product lines) placement and/or excavation and dispenser(s) location. The site drawing shall be to scale, including distances and directions measured. The relationship of the tank system to permanent objects, such as curbs or buildings, must be depicted in order to facilitate location at a later date. The location of the facility shall be placed on a separate map (e.g., 7.5 minute quadrangle, city, county, highway, hand drawn) or described in a narrative. Map or narrative shall provide the exact location of the facility in relation to cross streets or other map benchmarks.
5. Location at which samples were collected.
6. Type of regulated substance last stored in the tank.
7. Description of the contaminated soil disposal method and final disposal location.
8. Completed Certificate of Compliance.
9. Completed tank closure checklist.
10. Actual tank dimensions.
11. Documentation of evidence of petroleum contamination in soils or groundwater and corresponding depth of contamination.
12. Boring logs (as an addendum), including predominant soil type of each sample and observations relative to potential contamination.
13. Results of the visual inspection of the tank and piping, as applicable.
14. Capacity of the tank.
15. Final disposal method/location for the tank and piping.