

## Appendices

Appendix A – Report Formats	67
1. Site Check Report	68
2. Notice of Intent: UST Permanent Closure or Change-in-Service Form (UST-3)	73
3. 24-Hour Release and UST Leak Reporting Form (UST-61)	75
4. 20-Day Report	78
5. UST Closure Report (following UST-12 format) and Site Investigation Report for Permanent Closure or Change-in-Service of UST (UST2A or UST-2B)	82
6. Initial Abatement Action (Site Check, UST Closure with UST-2 Form, Excavation, Post-Excavation Soil Contamination Assessment) Report	89
Appendix B – Reporting Tables	98
1. Table B-1 Site History – UST/AST System and Other Release Information	99
2. Table B-2: Site History – UST/AST Owner/Operator and Other Responsible Party Information	100
3. Table B-3: Summary of Soil Sampling Results	101
4. Table B-4: Summary of Groundwater and Surface Water Sampling Results	102
5. Table B-5: Private/Public Water Supply Well and Other Receptor Information	103
6. Table B-6: Property Owners/ Occupants	104
7. Table B-7: Monitoring and Remediation Well Construction Information	105
8. Table B-8A: NAPL Recovery Information	106
9. Table B-8B: Cumulative Volume of NAPL Recovered from Site	106
10. Table B-9: Current and Historical Groundwater Elevation and FP Thickness	107
Appendix C – UST Systems: Regulated or Not Regulated under 15A NCAC 2N	108
Appendix D – Collecting Soil Samples	111
Appendix E – Disposal of Contaminated Soil and Groundwater	112
Appendix F – Guidelines Pertaining to Contaminant Sources other than USTs	118

**Appendix A – Report Formats**

1. Site Check Report
2. Notice of Intent: UST Permanent Closure or Change-in-Service Form (UST-3 Form)
3. 24-Hour Release and UST Leak Reporting Form (UST 61 Form)
4. 20-Day Report
5. UST Closure Report (following UST-12 format) and Site Investigation Report for Permanent Closure or Change-in-Service of UST (UST-2 Form)
6. Initial Abatement Action (Site Check, UST Closure with UST-2 Form, Excavation, Post-Excavation Soil Contamination Assessment) Report

# 1 Site Check Report

A Site Check Report following the format outlined below must be submitted to the Permits and Inspection Branch AND appropriate regional office of the UST Section within thirty (30) days of receipt of the Notice of Regulatory Requirements in which the site check is requested. If the results of the site check indicate that no contamination is present meeting or exceeding any of the following criteria:

1. no non-aqueous phase liquid (NAPL) was observed,
2. no soil contamination was detected at or above -
  - a. 50 mg/kg TPH GRO,
  - b. 100 mg/kg TPH DRO, or
  - c. any applicable MSCCs (where sampled), and
3. no groundwater contamination was detected at or above the applicable 2L standards (where groundwater has been sampled),

then the report format that follows should be used to prepare a Site Check Report.

If contamination in excess of any of these limits is present, then initial response and abatement actions must be performed, and an Initial Abatement Action Report (Appendix A, p. 89, which incorporates the information required by the Site Check Report format,) must be submitted within 90 days of release discovery, instead.

*(Note that if, as a consequence of the site check, all or part of the UST system is closed, a UST Closure Report and UST-2A or UST-2B form (Appendix A, p. 82) must be submitted to both the Permits and Inspection Branch AND the appropriate regional office of the UST Section within 30 days of completion of closure. Where the results of the investigation meet the standards described above, the UST Closure Report requirements should be incorporated into the Site Check Report. Where the investigation results in a requirement to perform initial response and abatement actions, both the Site Check Report and UST Closure Report requirements should be incorporated into the Initial Abatement Action Report.)*

Complete the minimum elements of the Site Check Report format as presented in Sections A-J below.

## A. Site Information

### 1. Site Identification

- ☐ Date of Report: \_\_\_\_\_ Site Risk: \_\_\_\_\_
- ☐ Facility I.D.: \_\_\_\_\_ UST Incident Number (if known): \_\_\_\_\_
- ☐ Site Name: \_\_\_\_\_
- ☐ Street Address: \_\_\_\_\_
- ☐ City/Town: \_\_\_\_\_ Zip Code: \_\_\_\_\_ County: \_\_\_\_\_
- ☐ Description of Geographical Data Point (e.g., diesel fill port): \_\_\_\_\_
- ☐ Location Method (GPS, topographical map, other): \_\_\_\_\_
- ☐ Latitude (*decimal degrees*): \_\_\_\_\_ Longitude (*decimal degrees*): \_\_\_\_\_

2. Information about Contacts Associated with the Leaking UST System (*Addresses must include street, city, state, zip code and mailing address, if different.*)

UST/AST Owner: \_\_\_\_\_ Email: \_\_\_\_\_  
 Address: \_\_\_\_\_ Tel: \_\_\_\_\_  
 UST/AST Operator: \_\_\_\_\_ Email: \_\_\_\_\_  
 Address: \_\_\_\_\_ Tel: \_\_\_\_\_  
 Property Owner: \_\_\_\_\_ Email: \_\_\_\_\_  
 Address: \_\_\_\_\_ Tel: \_\_\_\_\_  
 Property Occupant: \_\_\_\_\_ Email: \_\_\_\_\_  
 Address: \_\_\_\_\_ Tel: \_\_\_\_\_  
 Consultant/Contractor: \_\_\_\_\_ Email: \_\_\_\_\_  
 Address: \_\_\_\_\_ Tel: \_\_\_\_\_  
 Analytical Laboratory: \_\_\_\_\_ State Certification No: \_\_\_\_\_  
 Address: \_\_\_\_\_ Tel: \_\_\_\_\_

3. Information about Release

Date Discovered: \_\_\_\_\_  
 Estimated Quantity of Release: \_\_\_\_\_  
 Cause of Release: \_\_\_\_\_  
 Source of Release (e.g., Dispenser/Piping/UST): \_\_\_\_\_  
 Sizes and Contents of Tanks or Other Containment from which the Release Occurred: \_\_\_\_\_

**B. Executive Summary**

<Provide Executive Summary here.>

**C. Table of Contents**

<Create Table of Contents here.>

**D. Site History and Characterization**

Present information relevant to site history and characterization, using the following outline:

1. Provide information for UST/AST owners/operators and other responsible parties.
  - List the names, addresses, telephone numbers, and dates of ownership/operation of all previous UST/AST owners, UST/AST operators, and other responsible parties. Present in table form in Section I (Use Reporting Table B-2, Site History, UST/AST Owner/Operator and Other Responsible Party Information, from *Guidelines*, Appendix B.).
2. Provide UST information (inclusive of all USTs, currently and historically in place at facility). For each UST, provide the following information in table form in Section I (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.):
  - Tank identification number (keyed to a site map showing the locations of all UST systems);
  - Last contents of tank;
  - Previous contents of tank (if any);
  - Capacity of tank in gallons;
  - Construction (material and structure);
  - Tank dimensions;
  - Installation date;
  - Description of piping and pump(s) associated with each UST;
  - Status of UST (in use or not in use, closed in place, closed by removal; date of last use, date of closure, etc.); and
  - Indication of a release.

Provide a discussion (to supplement Table B-1 and the UST location map) of the spatial and historical relationships among tanks and between tanks and piping and dispensers and a brief description of all historical compliance issues and releases (indicate incident number).

3. Provide information about petroleum AST systems, petroleum spills, and other non-UST petroleum releases (inclusive of all ASTs, currently and historically in place at site and all spills at site), as indicated:
  - ⇒ List, describe, and indicate location of ASTs and associated piping and pump(s) currently and historically in place at facility) and describe historical releases (indicate incident number). For each AST, present the information in table form in Section I (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.); and
  - ⇒ List, describe, and indicate location and date of spills that have occurred at site). For each spill, present the information in table form in Section I (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.).
4. Provide a brief description of site characteristics (including land use of site and surrounding area, topography, vegetation, surface water, wells, buildings, surface cover, soil type, depth to and nature of bedrock, depth to groundwater, direction of groundwater flow, etc.).

#### **E. Site Check Procedures**

1. Present and summarize the results of tank and line tightness testing (referring to Section J, Appendix A, Tightness testing results and supporting documentation). If these tightness testing results did not indicate a leak and if instead environmental contamination was the basis for suspecting a release, describe the environmental contamination.
2. Describe site check procedure (For guidance, refer to the *Guidelines*, Section 4.3, Site Check Requirements). Reference site and sampling location maps and cross-sections in Section H of this report. Explain how the selection of sample types and locations was influenced by the nature of the stored substance, the type of initial alarm or cause for suspicion, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence and source of a release. Describe the condition of the UST system (pitting, holes, etc.) where it can be observed.
3. Document any soil excavation activities
  - ⇒ Describe excavation procedures noting the condition of the soil encountered and the dimensions of the excavation in relation to the tanks, piping, and/or pumps;
  - ⇒ Note the depth from the land surface to the top and to the base of the tank and to the piping;
  - ⇒ Note the volume of soil excavated;
  - ⇒ Describe the soil type(s) encountered;
  - ⇒ Describe the type and source of backfill used;
  - ⇒ Note if groundwater, NAPL, or bedrock was encountered during the excavation process; and
  - ⇒ Describe the method of temporary storage, sampling, and treatment/disposal of soil.

#### **F. Site Investigation**

1. Describe field screening, including:
  - ⇒ Physical characteristics of the soil samples, as observed during collection;
  - ⇒ Field instrumentation used to screen soils;
  - ⇒ Field instrument calibration procedures; and
  - ⇒ Screening results (Refer to table provided in Section I.).
2. Document soil sampling information (Refer to tables and appendices provided in Sections I and J.), including:
  - ⇒ Lithological descriptions from logs for borings, excavations;
  - ⇒ Type of samples (from excavation, borehole, direct push boring, stockpiled soil, etc.);
  - ⇒ Sample collection procedures (grab, split spoon, hand auger, etc.);
  - ⇒ Location of soil samples;
  - ⇒ Depth of soil samples (feet below land surface);
  - ⇒ Time/date collected;
  - ⇒ Sample identification; and
  - ⇒ Method(s) of soil sample analysis.
3. Document groundwater and surface water sampling information (Refer to tables and appendices provided in Sections I and J.), including:
  - ⇒ Location of water samples (e.g., of monitoring well, water supply well, stream sampling point);
  - ⇒ Field measurements (pH, dissolved oxygen, specific conductivity, temperature, etc.);

- ⇒ Sample collection procedures (grab, bailer, etc.);
  - ⇒ Time/date collected;
  - ⇒ Sample identification; and
  - ⇒ Method(s) of water sample analysis.
4. Document quality-control measures information (Refer to tables and appendices provided in Sections I and J.), including:
    - ⇒ Sample handling procedures including sample preservation techniques and sample transport procedures;
    - ⇒ Decontamination procedures;
    - ⇒ Time and date samples were submitted to lab; and
    - ⇒ Collection of samples for quality control purposes (e.g., duplicates, field blanks, trip blanks).
  5. Describe soil and groundwater investigation results, including:
    - ⇒ Presentation of analytical results for soil and groundwater samples (Refer to table(s) provided in Section I and to appendix with laboratory analytical results provided in Section J.) and discussion of the results in relation to the cleanup levels or action levels, as appropriate; and
    - ⇒ Discussion pertaining to the effect of quality control sample results on the interpretation of soil, groundwater, or surface water analytical results.

### G. Conclusions and Recommendation

1. Present conclusions, referencing maps, tables, and appendices in Sections H-J, as follows:
  - ⇒ Indicate that soil contaminant levels are below the action level of 50 mg/kg TPH GRO and 100 mg/kg DRO, with no soil MSCC exceedances (if sampled);
  - ⇒ Indicate that NAPL is not present;
  - ⇒ Indicate if groundwater or bedrock was encountered during investigation and, if so, at what depth below land surface;
  - ⇒ Indicate if groundwater assessment was necessary due to the proximity of the UST system to groundwater or bedrock (or to the presence of a slab or tank for which removal was determined to be economically or technologically unfeasible), thereby preventing the reliable determination of a release by soil assessment alone;
2. If soil contaminant levels were below the action levels, and if groundwater contamination and NAPL were not encountered, then no further action should be requested.

### H. Figures

Provide the following:

1. A topographic map illustrating the area within 1500-foot radius of the UST system, showing:
  - ⇒ Topographic contours;
  - ⇒ Site location;
  - ⇒ Buildings;
  - ⇒ Adjacent streets, roads, highways (identified by street names and numbers);
  - ⇒ Surface water bodies;
  - ⇒ Groundwater flow direction (if determined); and
  - ⇒ North arrow and scale.
2. A site map\* and cross-sections illustrating the UST/AST system(s), drawn to scale, showing:
  - ⇒ Buildings and property boundaries;
  - ⇒ Underground utilities, such as sewer lines and other conduits; basements; and vaults;
  - ⇒ Water supply wells, surface water bodies
  - ⇒ Location and orientation of current and former UST(s)/AST(s), pumps, product lines, sumps, etc.;
  - ⇒ Length, diameter and volume of current and former UST(s)/AST(s);
  - ⇒ Type of material(s) stored in UST(s)/AST(s) (currently and formerly);
  - ⇒ Soil sample identification (unique letter and/or numerical code), location, and depth;
  - ⇒ Groundwater monitoring locations, if applicable;
  - ⇒ Groundwater flow direction, if determined; and
  - ⇒ North arrow; and scale.
3. Map(s)\* and geological cross-sections, drawn to scale, depicting all soil analytical results obtained to date and final confirmatory sample results, to include:
  - ⇒ Description of soil and bedrock lithology (as determined by investigation to date);
  - ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc.(current and former); spills;
  - ⇒ Soil sample identification (unique letter and/or numerical code), location, and depth;

- ⇒ Final limits of any excavations:
  - ⇒ Soil sample analytical results; and
  - ⇒ North arrow and scale.
4. Map(s)\* and geological cross-sections, drawn to scale, depicting the groundwater and surface water analytical results,\*\* to include;
- ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc.(current and former); spills;
  - ⇒ Groundwater sample identification (unique letter and/or numerical code referencing monitoring or water supply well) and location;
  - ⇒ Surface water sample identification (unique letter and/or numerical code) and location; and
  - ⇒ Groundwater and surface water sample analytical results.
5. A potential receptor map that clearly identifies water supply wells (municipal or public/private wells, etc.) and other potential receptors (surface water bodies, basements, utilities, etc.) which are at risk.

*\*Note: Use a single base map to prepare site plans using a map scale of 1 in. = 40 ft.; use a smaller scale for large sites. Maps and figures should include conventional symbols, notations, labeling, legends, scales, and north arrows and should conform to accepted practices of map presentation described in the USGS Geological Survey publication "Topographic Map Symbols", <http://store.usgs.gov>. Scale should be expressed as a graphic scale and a verbal statement (e.g., 1 in. = 40 ft) or ratio. Refer to <http://geokov.com/Education/map-scale.aspx>.*

*\*\* If applicable*

## I. Tables

Provide the following:

1. Site History (Complete Tables B-1 and B-2 from *Guidelines*, Appendix B);
2. Public and Private Water Supply Well and Other Receptor Information (Complete Table B-5 from *Guidelines*, Appendix B)\*;
3. Field Screening Results
4. Soil Sample Identification, Location, Depth, Analytical Methods
5. Summary of Soil Sampling Results (Complete Table B-3 from *Guidelines*, Appendix B);
6. Summary of Groundwater and Surface Water Sampling Results (Complete Table B-4 from *Guidelines*, Appendix B)\*;
7. Monitoring and Remediation Well Construction Information (Complete Table B-7 from *Guidelines*, Appendix B)\*;

*\*If applicable*

## J. Appendices

Provide the following:

Appendix A	Tightness testing results and supporting documentation
Appendix B	Notification of Intent: UST Permanent Closure or Change-in-Service (UST-3 Form)*
Appendix C	Site Investigation Report for Permanent Closure or Change-in-Service of UST (UST-2 Form)*
Appendix D	Site Specific Health and Safety Plan (HASP)
Appendix E	Certificate of UST disposal*
Appendix F	Groundwater field measurements (pH, dissolved oxygen, specific conductivity, temperature, etc.)*
Appendix G	Standard procedures (sampling, field equipment decontamination, field screening, etc.)
Appendix H	Soil, water, NAPL, and sludge disposal manifests and soil treatment permits*
Appendix I	Complete chain-of-custody records
Appendix J	Copy of all laboratory analytical records
Appendix K	Photographs of site check activities (optional)
Appendix L	Geologic logs for excavation(s)/borings

*\*If applicable*

**2 Notice of Intent: UST Permanent Closure or Change-in-Service**  
**UST-3 Form - Front page only**  
*(next page)*



# UST-3 Notice of Intent: UST Permanent Closure or Change-in-Service

**Return completed form to:**

The DWM Regional Office located in the area where the facility is located. Send a copy to the Central Office in Raleigh so that the status of the tank may be changed to "PERMANENTLY CLOSED" and your tank fee account can be closed out. SEE MAP ON THE BACK OF THIS FORM FOR THE CENTRAL AND REGIONAL OFFICE ADDRESSES.

STATE USE ONLY

I.D. # \_\_\_\_\_

Date Received \_\_\_\_\_

**INSTRUCTIONS (READ THIS FIRST)**

Complete and return at least **thirty (30) days** prior to closure or change-in-service activities. If a Professional Engineer (P.E.) or a Licensed Geologist (L.G.) provides supervision for closure or change-in-service site assessment activities and signs and seals all closure reports then at least a **five (5) working-days** notice is acceptable.

Completed UST closure or change-in-service site assessment reports, along with a copy of the UST-2 form, should be submitted to the appropriate Division of Waste Management (DWM) Regional Office within thirty (30) days following closure activities. The UST-2 form should also be submitted to the Central Office in Raleigh so that the status of the tanks may be changed to permanently closed and your tank fee account can be closed out.

UST closure and change-in-service site assessments must be completed in accordance with the latest version of the *Guidelines for Site Checks, Tank Closure and Initial Response*. The guidelines can be obtained at <http://deq.nc.gov/about/divisions/waste-management/waste-management-permit-guidance/underground-storage-tanks-section>. Note: To close tanks in place you must obtain prior approval from the DWM Regional office located in the region where the facility is located.

You must make sure that USTs removed from your property are disposed of properly. When choosing a closure contractor, ask where the tank(s) will be taken for disposal. Usually, USTs are cleaned and cut up for scrap metal. This is dangerous work and must be performed by a qualified company. Tanks disposed of illegally in fields or other dumpsites can leak petroleum products and sludge into the environment. If your tanks are disposed of improperly, you could be held responsible for the cleanup of any environmental damage that occurs.

**I. OWNERSHIP OF TANKS**

**II. LOCATION**

Owner Name (Corporation, Individual, Public Agency, or Other Entity)		Facility Name or Company		
Street Address		Facility ID # (If known)		
City	County	Street Address		
State	Zip Code	City	County	Zip Code
Phone Number		Phone Number		

**III. CONTACT PERSONNEL**

Name:	Company Name:	Job Title:	Phone Number:
-------	---------------	------------	---------------

**IV. TANK REMOVAL, CLOSURE IN PLACE, CHANGE-IN SERVICE**

- |  |  |   |
|--|--|---|
| <ol style="list-style-type: none"> <li>Contact local fire marshal.</li> <li>Plan entire closure event.</li> <li>Conduct Site Soil Assessment.</li> <li>If removing tanks or closing in place, refer to API Publication 2015 <i>Cleaning Petroleum Storage Tanks</i> and 1604 <i>Removal and Disposal of Used Underground Petroleum Storage Tanks</i>.</li> </ol> | <ol style="list-style-type: none"> <li>Provide a sketch locating piping, tanks and soil sampling locations.</li> <li>Submit a closure report in the format of UST-12 (including the form UST-2) within thirty (30) days following the site investigation.</li> <li>If a release from the tanks has occurred, the site assessment portion of the tank closure must be conducted under the supervision of</li> </ol> | <p>a P.E. or L.G., with all closure site assessment reports bearing the signature and seal of the P.E. or L.G. If a release has not occurred, the supervision, signature or seal of a P.E. or L.G. is not required.</p> <ol style="list-style-type: none"> <li>Keep closure records for three (3) years.</li> </ol> |
|--|--|---|

**V. WORK TO BE PERFORMED BY**

Contractor Name:		Contractor Company Name:		
Address:		State:	Zip Code:	Phone No:
Primary Consultant Name:		Primary Consultant Company Name:		Consultant Phone No:

**VI. TANKS SCHEDULED FOR CLOSURE OR CHANGE-IN-SERVICE**

Tank ID No.	Size in Gallons	Last Contents	Proposed Activity		
			Closure		Change-In-Service
			Removal	Abandonment in Place *	New Contents Stored
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	

\* Prior written approval to abandon a tank in place must be received from a DWM Regional Office.

**VII. OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE**

I understand that I can be held responsible for environmental damage resulting from the improper disposal of my USTs.

Print name and official title:

Signature	Date Signed	SCHEDULED REMOVAL DATE	<b>Notify your DWM Regional Office 48 hours before this date if scheduled removal date changes</b>
-----------	-------------	------------------------	--

**3 24-Hour Release and UST Leak Reporting Form (UST 61 Form)**  
**(next two pages)**

# UST-61

# 24-Hour Release and UST Leak Reporting Form

For Releases  
in NC

This form should be completed and submitted to the UST Section's regional office following a known or suspected release from an underground storage tank (UST) system. This form is required to be submitted **within 24 hours of discovery** of a known or suspected release

(DWM USE ONLY)  
Incident # \_\_\_\_\_ Risk (H,I,L,U) \_\_\_\_\_  
Received On \_\_\_\_\_ Received By \_\_\_\_\_  
Region \_\_\_\_\_  
Reported by (*circle one*): Phone, Email or Report

Suspected Contamination? (Y/N) \_\_\_\_\_  
Confirmed GW Contamination? (Y/N) \_\_\_\_\_  
Confirmed Soil Contamination? (Y/N) \_\_\_\_\_  
Samples Taken? (Y/N) \_\_\_\_\_  
NAPL? (Y/N) \_\_\_\_\_  
If Yes, State Greatest Thickness \_\_\_\_\_

Facility ID # \_\_\_\_\_  
Date Leak Discovered \_\_\_\_\_  
Comm/Non-Commercial? \_\_\_\_\_  
Reg/Non-regulated? \_\_\_\_\_

## INCIDENT DESCRIPTION

Incident Name:

Address:

County:

City/Town:

Zip Code:

Regional Office (*circle one*): Asheville, Fayetteville, Mooresville, Raleigh, Washington, Wilmington, Winston-Salem

Latitude (decimal degrees):

Longitude (decimal degrees):

Location Obtained by:

Briefly describe suspected or confirmed release: (*including but not limited to: nature of release, date of release, amount of release, amount of NAPL present and recovery efforts, initial responses conducted, impacts to receptors*)

- GPS
- Topographic map
- GIS Address matching
- Other
- Unknown

Describe location:

## HOW RELEASE WAS DISCOVERED (Release Code)

(Check one)

- Release Detection Equipment or Methods
- During UST Closure/Removal
- Property Transfer

- Visual/Odor
- Water in Tank
- Water Supply Well Contamination

- Groundwater Contamination
- Surface Water Contamination
- Other (specify) \_\_\_\_\_

## SOURCE OF CONTAMINATION

### Source of Release

(Check one to indicate primary source)

- Tank
- Piping
- Dispenser
- Submersible Turbine Pump
- Delivery Problem
- Other (specify) \_\_\_\_\_
- Unknown

Definitions printed on reverse

### Cause of Release

(Check one to indicate primary cause)

- Spill
- Overfill
- Corrosion
- Physical/Mechanical Damage
- Install Problem
- Other (specify) \_\_\_\_\_
- Unknown

Definitions printed on reverse

### Type of Release

(Check one)

- Petroleum
- Non-Petroleum
- Both

### Location

(Check one)

- Facility
- Residence
- Other \_\_\_\_\_

### Product Type Released

(Check one to indicate primary product type released)

- Gasoline/Diesel/Kerosene
- Heating Oil
- Other Petroleum Products
- Metals
- Other Inorganics
- Other Organics
- Diesel/Veg. Oil Blend
- Veg. Oil 100%
- E10 – E20
- E21 – E84
- E85 – E99
- Ethanol 100%
- E1 – E9

### Ownership

- 1. Municipal
- 2. Military
- 3. Unknown
- 4. Private
- 5. Federal
- 6. County
- 7. State

### Operation Type

- 1. Public Service
- 2. Agricultural
- 3. Residential
- 4. Education/Relig
- 5. Industrial
- 6. Commercial
- 7. Mining

## IMPACT ON DRINKING WATER SUPPLIES

Water Supply Wells Affected?    1. Yes            |    2. No               3. Unknown

Number of Water Supply Wells Affected: \_\_\_\_\_

Water Supply Wells Contaminated: *(Include Users' Names, Addresses, and Phone Numbers. Attach additional sheet if necessary.)*

- 1.
- 2.
- 3.

### UST SYSTEM OWNER

UST Owner / Company:

Point of Contact:		Address:	
City:	State:	Zip Code:	Telephone Number:

### UST SYSTEM OPERATOR

UST Owner / Company:

Point of Contact:		Address:	
City:	State:	Zip Code:	Telephone Number:

### LANDOWNER AT LOCATION OF UST INCIDENT

UST Owner / Company:

Point of Contact:		Address:	
City:	State:	Zip Code:	Telephone Number:

### Draw Sketch of Area (showing two major road intersections) or Attach Map

Person Reporting Incident	Company	Telephone Number
Title	Address	Telephone Number

**Definitions of Sources:**

- Tank: means the tank that stores the product and is part of the underground storage tank system
- Piping: means the piping and connectors running from the tank or submersible turbine pump to the dispenser or other end-use equipment (Vent, vapor recovery, or fill lines are excluded.)
- Dispenser: includes the dispenser and the equipment used to connect the dispenser to the piping (e.g., a release from a suction pump or from components located above the shear valve)
- Submersible Turbine Pump (STP): Area includes the submersible turbine pump head (typically located in the tank sump), the line leak detector, and the piping that connects the submersible turbine pump to the tank
- Delivery Problem: identifies releases that occurred during product delivery to the tank. (Typical causes associated with this source are spills and overfills.)
- Other: serves as the option to use when the release source is known but does not fit into one of the preceding categories (e.g., for releases from vent lines, vapor recovery lines, and fill lines)
- Unknown: identifies releases for which the source has not been determined

**Definitions of Causes:**

- Spill: use this cause when a spill occurs (e.g., when the delivery hose is disconnected from the tank fill pipe or when the nozzle is removed from the dispenser)
- Overflow: use when an overflow occurs (e.g., overfills may occur from the fill pipe at the tank or when the nozzle fails to shut off at the dispenser)
- Corrosion: use when a metal tank, piping, or other component has a release due to corrosion (e.g., for steel, corrosion takes the form of rust)
- Physical or Mechanical Damage: use for all types of physical or mechanical damage, except corrosion (e.g., puncture of tank or piping, loose fittings, broken components, and components that have changed dimension)
- Installation Problem: use when the problem is determined to have occurred specifically because the UST system was not installed properly
- Other: use this option when the cause is known but does not fit into one of the preceding categories (e.g., putting regulated substances into monitoring wells)
- Unknown: use when the cause has not been determined

## 4 20-Day Report

**Within 20 days** after release confirmation, the responsible party **must** submit a **20-Day Report** to the appropriate UST Section regional office summarizing the initial response and abatement steps taken within the first 20 days and any data or information available within that time period. Please note that this status report should not be submitted at the same time as a completed **Initial Abatement Action Report**. Failure to properly submit this report on schedule may affect any applicable reimbursement for these costs.

Complete the minimum elements of the **20-Day Report** format as presented in Sections A-I.

### A. Site Information

#### 1. Site Identification

- ☐ Date of Report: \_\_\_\_\_ Site Risk: \_\_\_\_\_
- ☐ Facility I.D.: \_\_\_\_\_ UST Incident Number (if known): \_\_\_\_\_
- ☐ Site Name: \_\_\_\_\_
- ☐ Street Address: \_\_\_\_\_
- ☐ City/Town: \_\_\_\_\_ Zip Code: \_\_\_\_\_ County: \_\_\_\_\_
- ☐ Description of Geographical Data Point (e.g., diesel fill port): \_\_\_\_\_
- ☐ Location Method (GPS, topographical map, other): \_\_\_\_\_
- ☐ Latitude (*decimal degrees*): \_\_\_\_\_ Longitude (*decimal degrees*): \_\_\_\_\_

#### 2. Information about Contacts Associated with the Leaking UST System

(Addresses must include street, city, state, zip code and mailing address, if different)

- ☐ UST/AST Owner: \_\_\_\_\_ Tel: \_\_\_\_\_  
Address: \_\_\_\_\_
- ☐ UST/AST Operator: \_\_\_\_\_ Tel: \_\_\_\_\_  
Address: \_\_\_\_\_
- ☐ Property Owner: \_\_\_\_\_ Tel: \_\_\_\_\_  
Address: \_\_\_\_\_
- ☐ Property Occupant: \_\_\_\_\_ Tel: \_\_\_\_\_  
Address: \_\_\_\_\_
- ☐ Consultant/Contractor: \_\_\_\_\_ Tel: \_\_\_\_\_  
Address: \_\_\_\_\_
- ☐ Analytical Laboratory: \_\_\_\_\_ State Certification No: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_

#### 3. Information about the Release

- ☐ Date Discovered: \_\_\_\_\_
- ☐ Estimated Quantity of Release: \_\_\_\_\_
- ☐ Cause of Release: \_\_\_\_\_
- ☐ Source of Release (e.g., Dispenser/Piping/UST): \_\_\_\_\_
- ☐ Sizes and Contents of Tanks or Other Containment from which the Release Occurred: \_\_\_\_\_

#### 4. Certification (*The title page must display the seal and signature of the certifying P.E. or L.G., and the name and certification number of the company or corporation, if applicable [See 15A NCAC 2L .0103(e)].*)

I, \_\_\_\_\_, a Professional Engineer/Licensed Geologist (*circle one*) for \_\_\_\_\_ (*company of employment*), do certify that the information contained in this report is correct and accurate to the best of my knowledge.

(Please Affix Seal and Signature)

\_\_\_\_\_  
(Name of company) is licensed to practice geology/engineering (*circle one or both*) in North Carolina. The certification number of the company or corporation is: \_\_\_\_\_.

**B. Executive Summary**

(Provide Executive Summary here.)

**C. Table of Contents**

(Create Table of Contents here.)

**D. Site History and Characterization**

Present information relevant to site history and characterization, using the following outline:

1. Provide information for UST/AST owners/operators and other responsible parties.
  - ⇒ List the names, addresses, telephone numbers, and dates of ownership/operation of all previous UST/AST owners, UST/AST operators, and other responsible parties. Present in table form in Section H (Use Reporting Table B-2, Site History, UST/AST Owner/Operator and Other Responsible Party Information, from *Guidelines*, Appendix B.).
2. Provide UST information (inclusive of all USTs, currently and historically in place at facility). For each UST, provide the following information in table form in Section H (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.):
  - ⇒ Tank identification number (keyed to a site map showing the locations of all UST systems);
  - ⇒ Last contents of tank;
  - ⇒ Previous contents of tank (if any);
  - ⇒ Capacity of tank in gallons;
  - ⇒ Construction (material and structure);
  - ⇒ Tank dimensions;
  - ⇒ Installation date;
  - ⇒ Description of piping and pump(s) associated with each UST;
  - ⇒ Status of UST (in use or not in use, closed in place, closed by removal; date of last use, date of closure); and
  - ⇒ Indication of a release.

Provide a discussion (to supplement Table B-1 and the UST location map) of the spatial and historical relationships among tanks and between tanks and piping and dispensers and a brief description of all historical compliance issues and releases (indicate incident number).

3. Provide information about petroleum AST systems, petroleum spills, and other non-UST petroleum releases (inclusive of all ASTs, currently and historically in place at site and all spills at site), as indicated:
  - ⇒ List, describe, and indicate location of ASTs and associated piping and pump(s) currently and historically in place at facility) and describe historical releases (indicate incident number). For each AST, present the information in table form in Section H (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.); and
  - ⇒ List, describe, and indicate location and date of spills that have occurred at site). For each spill, present the information in table form in Section H (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.).
4. Provide a comprehensive description of the release, including date discovered, cause and source (including tank identification number and contents), and the relationship of historical UST releases, non-UST releases, and off-site releases (indicate incident number) to contamination from current release.
5. Provide a brief description of site characteristics (including status of facility (active or inactive), land use of site and surrounding area, water supply, topography, vegetation, surface water, wells, buildings, surface cover, soil type, depth to and nature of bedrock, depth to groundwater, direction of groundwater flow, etc.)
6. Summarize initial abatement actions, assessment activities, and corrective actions performed to date.

**E. Initial Response and Abatement Activities**

Discuss the following items:

1. Removal of regulated substance from UST;
2. Source control actions;
3. Contaminant migration control measures (sorbants, berms, etc.);
4. Measures taken to mitigate fire/safety hazards;
5. Measures taken to identify and mitigate pollution hazards (survey to determine potential receptors, sampling of potential receptors, provision of alternate water)
6. Contaminated soil storage, treatment, and/or disposal; and
7. Status of NAPL investigation and associated removal (if applicable).
  - ⇒ If NAPL is, or has been, present at the site, describe its current and historical status (product distribution, thickness, recovery activities). Refer to tables in Section H: Table B-7, Monitoring and Remediation Well Construction Information; and Table B-8A, NAPL Recovery Information; Table B-8B, Cumulative Volume

of NAPL Recovered from Site; and Table B-9, Current and Historical Groundwater Elevations and NAPL Thickness. Also refer to map(s) showing extent of NAPL.

- ⇒ Identify any on-site or off-site effluent discharges, treatment used, effluent quality, permitting actions taken, and location of such discharges and identify the disposition of recovered NAPL (refer to attached product disposal manifests);
- ⇒ Document the performance, total cost, and cost per gallon to date of each method of NAPL recovery used at site. Justify why the technology is or was used; and
- ⇒ Provide conclusions and recommendations concerning historical, current, and future recovery activities, including:
  - Any proposal to change the current method of NAPL recovery to a better or more cost-effective technology;
  - A justification for continued product recovery, if planned; and
  - Any determination that NAPL has been eliminated from the site with a recommendation to reclassify the risk posed by the release, if applicable.

## F. Source Investigation

1. Describe the investigation performed to date to determine the source of the release. Reference maps, tables, and appendices provided in Sections G-I. Discuss the rationale for the assessment performed. To the extent information is available, describe soil sampling performed to confirm the presence and determine the source of the release, including:
  - ⇒ Location of soil samples;
  - ⇒ Type of soil samples (from excavation, borehole, direct push, etc.);
  - ⇒ Date of sampling
  - ⇒ Phase of sampling (site check, UST closure, etc.);
  - ⇒ Soil sample collection procedures (split spoon, grab, hand auger, etc.);
  - ⇒ Depth of soil samples below land surface;
  - ⇒ Soil sample identification;
  - ⇒ Soil sample analytical methods; and
  - ⇒ Soil sample analytical results (Refer to table in Section H using the Table B-3 format, *Guidelines*, Appendix B, and list all parameters required for method.).
2. Describe any groundwater sampling performed to date to confirm the presence and source of the release including:
  - ⇒ Location of groundwater samples/monitoring wells/water supply wells;
  - ⇒ Date of sampling;
  - ⇒ Groundwater sample collection procedures (bailer, pump, etc.);
  - ⇒ Groundwater sample identification;
  - ⇒ Groundwater sample analyses;
  - ⇒ Groundwater sample analytical results (Refer to table in Section H using the Table B-4 format, *Guidelines*, Appendix B, and list all parameters required for method.).

## G. Figures

Provide the following:

1. A topographic map illustrating the area within 1500-foot radius of the source of the UST/AST system or spill, showing:
  - ⇒ Topographic contours;
  - ⇒ Site location;
  - ⇒ Buildings;
  - ⇒ Adjacent streets, roads, highways (identified by street names and numbers);
  - ⇒ Surface water bodies;
  - ⇒ Groundwater flow direction (if determined); and
  - ⇒ North arrow and scale.
2. A site map\* and cross-sections illustrating the UST/AST system or spill, drawn to scale, showing:
  - ⇒ Buildings and property boundaries;
  - ⇒ Underground utilities, such as sewer lines and other conduits; basements; and vaults;
  - ⇒ Water supply wells, surface water bodies;
  - ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc. (current and former); spills;
  - ⇒ Length, diameter and volume of current and former UST(s)/AST(s);
  - ⇒ Type of material(s) stored in UST(s)/AST(s) (currently and formerly);

- ⇒ Soil sample identification (unique letter and/or numerical code), location, and depth;
  - ⇒ Groundwater monitoring locations, if applicable;
  - ⇒ Groundwater flow direction, if determined;
  - ⇒ Final limits of any excavation on site; and
  - ⇒ North arrow and scale
3. Map(s)\* and geological cross-sections, drawn to scale, depicting any soil analytical results obtained to date, including:
    - ⇒ Description of soil and bedrock lithology (as determined by investigation to date);
    - ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc. (current and former); spills;
    - ⇒ Soil sample identification (unique letter and/or numerical code), location, and depth;
    - ⇒ Soil sample analytical results; and
    - ⇒ North arrow and scale.
  4. Map(s)\* and geological cross-sections, drawn to scale, depicting any groundwater and surface water analytical results,\*\* to include:
    - ⇒ Location and orientation of UST(s), pumps, piping, sumps, etc. (current and former);
    - ⇒ Groundwater sample identification (unique letter and/or numerical code referencing monitoring or water supply well) and location;
    - ⇒ Surface water sample identification (unique letter and/or numerical code) and location; and
    - ⇒ Groundwater and surface water sample analytical results.
  5. A NAPL map\* showing thickness (in feet) and extent of NAPL\*\* using contour lines.
  6. A potential receptor map that clearly identifies water supply wells (municipal or public/private wells,

\* **Note:** Use a single base map to prepare site plans using a map scale of 1 in. = 40 ft.; use a smaller scale for large sites. Maps and figures should include conventional symbols, notations, labeling, legends, scales, and north arrows and should conform to accepted practices of map presentation described in the USGS Geological Survey publication "Topographic Map Symbols", <http://store.usgs.gov>. Scale should be expressed as a graphic scale and a verbal statement (e.g., 1 in. = 40 ft) or ratio. Refer to <http://geokov.com/Education/map-scale.aspx>.

\*\* If applicable

## H. Tables

Provide the following:

1. Site History (Complete Tables B-1 and B-2, *Guidelines*, Appendix B);
2. Public and Private Water Supply Well and Other Receptor Information (Complete Table B-5, *Guidelines*, Appendix B);
3. Field Screening Results
4. Summary of Soil Sampling Results (Complete Table B-3, *Guidelines*, Appendix B);
5. Summary of Groundwater and Surface Water Sampling Results\* (Complete Table B-4, *Guidelines*, Appendix B);
6. Monitoring and Remediation Well Construction Information (Complete Table B-7, *Guidelines*, Appendix B)\*;
7. NAPL Recovery Information (Complete Table B-8A, *Guidelines*, Appendix B)\*;
8. Cumulative Volume of NAPL Recovered from Site (Complete Table B-8B, *Guidelines*, Appendix B)\*;
9. Current and Historical Groundwater Elevations and NAPL Thickness (Complete Table B-9, *Guidelines*, Appendix B)\*.

\*If applicable

## I Appendices

Provide the following:

Appendix A	Site Specific Health and Safety Plan (HASP) (if not provided for site check or closure)
Appendix B	Groundwater field measurements (pH, dissolved oxygen, specific conductivity, temperature)*
Appendix C	Standard procedures (sampling, field equipment decontamination, field screening, etc.)
Appendix D	Soil, water, NAPL, and sludge disposal manifests and soil treatment permits*
Appendix E	Complete chain-of-custody records*
Appendix F	Copy of all laboratory analytical records
Appendix G	Photographs (optional)
Appendix H	Geologic logs for excavation(s)/borings
Appendix I	Copy of deed

\*If applicable



## 5 UST Closure Report (*following UST-12 format*) and Site Investigation Report for Permanent Closure or Change-in-Service of UST (UST-2 Form)

A **UST Closure Report** (following the **UST-12** format outlined below) must be submitted to the appropriate regional office of the UST Section **within thirty (30) days** following completion of closure, if the results of the UST closure investigation indicate that **no soil contamination remains equal to or exceeding the action levels at 50 mg/kg TPH GRO and 100 mg/kg TPH DRO, or exceeding any applicable MSCCs (where sampled), and no groundwater contamination was detected in exceedance of 2L or with NAPL present.** (*If contamination in exceedance of these limits is present, then initial response and abatement actions, followed by an Initial Abatement Action Report (Appendix A, p. 89) which incorporates the information required by the UST Closure Report format, are required within 90 days of release discovery.*)

Complete the minimum elements of the **UST Closure Report** format as presented in Sections A-J.

### A. Site Information

#### 1. Site Identification

- Date of Report: \_\_\_\_\_ Site Risk: \_\_\_\_\_
- Facility I.D.: \_\_\_\_\_ UST Incident Number (if known): \_\_\_\_\_
- Site Name: \_\_\_\_\_
- Street Address: \_\_\_\_\_
- City/Town: \_\_\_\_\_ Zip Code: \_\_\_\_\_ County: \_\_\_\_\_
- Description of Geographical Data Point (e.g., diesel fill port): \_\_\_\_\_
- Location Method (GPS, topographical map, other): \_\_\_\_\_
- Latitude (*decimal degrees*): \_\_\_\_\_ Longitude (*decimal degrees*): \_\_\_\_\_

#### 2. Information about Contacts Associated with the Leaking UST System

(Addresses must include street, city, state, zip code and mailing address, if different)

- UST/AST Owner: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- UST/AST Operator: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- Property Owner: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- Property Occupant: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- Consultant/Contractor: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- Analytical Laboratory: \_\_\_\_\_ State Certification No: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_

#### 3. Information about the Release

- Date Discovered: \_\_\_\_\_
- Estimated Quantity of Release: \_\_\_\_\_
- Cause of Release: \_\_\_\_\_
- Source of Release (e.g., Dispenser/Piping/UST): \_\_\_\_\_
- Sizes and Contents of Tanks or Other Containment from which the Release Occurred: \_\_\_\_\_

**B. Executive Summary**

(Provide Executive Summary here.)

**C. Table of Contents**

(Create Table of Contents here.)

**D. Site History and Characterization**

Present information relevant to site history and characterization, using the following outline:

1. Provide information for UST/AST owners/operators and other responsible parties.
  - ⇒ List the names, addresses, telephone numbers, and dates of ownership/operation of all previous UST/AST owners, UST/AST operators, and other responsible parties. Present in table form in Section I (Use Reporting Table B-2, Site History, UST/AST Owner/Operator and Other Responsible Party Information, from *Guidelines*, Appendix B.).
2. Provide UST information (inclusive of all USTs, currently and historically in place at facility). For each UST, provide the following information in table form in Section I (Use Reporting Table B-1, Site History-UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.):
  - ⇒ Tank identification number (keyed to a site map showing the locations of all UST systems);
  - ⇒ Last contents of tank;
  - ⇒ Previous contents of tank (if any);
  - ⇒ Capacity of tank in gallons;
  - ⇒ Construction (material and structure);
  - ⇒ Tank dimensions;
  - ⇒ Installation date;
  - ⇒ Description of piping and pump(s) associated with each UST;
  - ⇒ Status of UST (in use or not in use, closed in place, closed by removal; date of last use, date of closure); and
  - ⇒ Indication of a release (Indicate which UST, piping, and/or pump leaked.).

Provide a discussion (to supplement Table B-1 and the UST location map) of the spatial and historical relationships among tanks and between tanks and piping and dispensers and a brief description of all historical compliance issues and releases (indicate incident number).
3. Provide information about petroleum AST systems, petroleum spills, and other non-UST petroleum releases (inclusive of all ASTs, currently and historically in place at site and all spills at site), as indicated:
  - ⇒ List, describe, and indicate location of ASTs and associated piping and pump(s) currently and historically in place at facility) and describe historical releases (indicate incident number). For each AST, present the information in table form in Section I (Use Reporting Table B-1, Site History-UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.); and
  - ⇒ List, describe, and indicate location and date of spills that have occurred at site). For each spill, present the information in table form in Section I (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.).
4. Provide a comprehensive description of the release, including date discovered, cause and source (including tank identification number and contents), and the relationship of historical UST releases, non-UST releases, and off-site releases (indicate incident number) to contamination from current release.
5. Provide a brief description of site characteristics (including status of facility (active or inactive), land use of site and surrounding area, water supply, topography, vegetation, surface water, wells, buildings, surface cover, soil type, depth to and nature of bedrock, depth to groundwater, direction of groundwater flow, etc.)
6. Summarize initial abatement actions, assessment activities, and corrective actions performed to date and list all reports previously submitted.

**E. Closure Procedure**

1. Describe preparations for closure including steps taken to notify authorities, permits obtained, and steps taken to clean and purge the tanks.
2. Describe the closure procedure (For guidance, see the *Guidelines*, Section 5.0.), referencing site and sampling location maps and cross-sections presented in Section H of this report. Clearly state how the selection of sample types and locations was influenced by the nature of the stored substance, any initial alarm or cause for suspicion, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence and source of a release. Describe the condition of the UST system (pitting, holes, etc.) where it could be observed. If it was necessary to install and sample monitoring well(s), explain.

- i. Note the amount of residual material pumped from the tank and describe the storage, sampling and disposal of the residual material and the disposal of the tank, pumps and piping (Refer to appendices with disposal manifests and certificate of tank disposal in Section J.).
4. Document any soil excavation activities.
  - ⇒ Describe excavation procedures noting the condition of the soil encountered and the dimensions of the excavation in relation to the tanks, piping, and/or pumps;
  - ⇒ Note the depth from the land surface to the top and to the base of the tank and to the piping;
  - ⇒ Note the volume of soil excavated;
  - ⇒ Describe the soil type(s) encountered;
  - ⇒ Describe the type and source of backfill used;
  - ⇒ Note if groundwater, NAPL, or bedrock was encountered during the excavation process; and
  - ⇒ Describe the method of temporary storage, sampling, and treatment/disposal of soil.

## **F. Site Investigation**

1. Describe field screening, including:
  - ⇒ Physical characteristics of the soil samples, as observed during collection;
  - ⇒ Field instrumentation used to screen soils;
  - ⇒ Field instrument calibration procedures; and
  - ⇒ Screening results (Refer to table provided in Section I.).
2. Document soil sampling information (Refer to tables and appendices provided in Sections I and J.), including:
  - ⇒ Lithological descriptions from logs for borings, excavations;
  - ⇒ Type of samples (from excavation, borehole, direct push boring, stockpiled soil, etc.);
  - ⇒ Sample collection procedures (grab, split spoon, hand auger, etc.);
  - ⇒ Location of soil samples;
  - ⇒ Depth of soil samples (feet below land surface);
  - ⇒ Time/date collected;
  - ⇒ Sample identification; and
  - ⇒ Method(s) of soil sample analysis.
3. Document groundwater and surface water sampling information (Refer to tables and appendices provided in Sections I and J.), including:
  - ⇒ Location of water samples (e.g., of monitoring well, water supply well, stream sampling point);
  - ⇒ Field measurements (e.g., pH, dissolved oxygen, specific conductivity, temperature)
  - ⇒ Sample collection procedures (grab, bailer, etc.);
  - ⇒ Time/date collected.
  - ⇒ Sample identification; and
  - ⇒ Method(s) of water sample analysis.
4. Document quality-control measure information (Refer to tables and appendices provided in Sections I and J.), including:
  - ⇒ Sample handling procedures including sample preservation techniques and sample transport procedures;
  - ⇒ Decontamination procedures;
  - ⇒ Time and date samples were submitted to lab; and
  - ⇒ Collection of samples for quality control purposes (e.g., duplicates, field blanks, trip blanks).
5. Describe soil and groundwater investigation results, including:
  - ⇒ Presentation of analytical results for soil and groundwater samples (Refer to table(s) provided in Section I. and to appendix with laboratory analytical results provided in Section J.) and discussion of the results in relation to the cleanup levels or action levels, as appropriate; and
  - ⇒ Discussion pertaining to the effect of quality control sample results on the interpretation of soil, groundwater, or surface water analytical results.

## **G. Conclusions and Recommendation**

1. Present conclusions, referencing maps, tables, and appendices in Sections H-J, as follows:
  - ⇒ Indicate that soil contaminant levels are below the action level;
  - ⇒ Indicate that NAPL is not present;
  - ⇒ Indicate if groundwater or bedrock was encountered during investigation and, if so, at what depth below land surface;

- ⇒ Indicate if groundwater assessment was necessary due to the proximity of the UST system to groundwater or bedrock (or to the presence of a slab or tank for which removal was determined to be economically or technologically unfeasible), thereby preventing the reliable determination of a release by soil assessment alone;
2. If soil contaminant levels in the system closure soil samples were below the applicable TPH action limits, and, where sampled, groundwater contamination was not found to exceed the applicable 2L standards and NAPL was not encountered in the excavation(s), monitoring well(s), or on nearby surface water bodies, then no further action should be requested.

## H. Figures

Provide the following:

1. A topographic map illustrating the area within 1500-foot radius of the UST system, showing:
  - ⇒ Topographic contours;
  - ⇒ Site location;
  - ⇒ Buildings;
  - ⇒ Adjacent streets, roads, highways (identified by street names and numbers);
  - ⇒ Surface water bodies;
  - ⇒ Groundwater flow direction (if determined); and
  - ⇒ North arrow and scale.
2. A site map and cross-sections illustrating the UST/AST system(s), drawn to scale, showing:
  - ⇒ Buildings and property boundaries;
  - ⇒ Underground utilities, such as sewer lines and other conduits; basements; and vaults;
  - ⇒ Water supply wells, surface water bodies;
  - ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc. (current and former); spills;
  - ⇒ Length, diameter and volume of current and former UST(s)/AST(s)
  - ⇒ Type of material(s) stored in UST(s)/AST(s) (currently and formerly);
  - ⇒ Soil sample identification (unique letter and/or numerical code), location, and depth;
  - ⇒ Groundwater monitoring locations, if applicable;
  - ⇒ Groundwater flow direction, if determined;
  - ⇒ Final limits of each stage of excavation for each excavation on site; and
  - ⇒ North arrow and scale.
3. Map(s)\* and geological cross-sections, drawn to scale, depicting all soil analytical results obtained to date and final confirmatory sample results, to include:
  - ⇒ Description of soil and bedrock lithology (as determined by investigation to date);
  - ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc. (current and former); spills;
  - ⇒ Soil sample identification (unique letter and/or numerical code), location, and depth;
  - ⇒ Soil sample analytical results;
  - ⇒ Final limits of UST pits, piping trenches, etc. after system removal; and
  - ⇒ North arrow and scale.
4. Map(s)\* and geological cross-sections, drawn to scale, depicting the groundwater and surface water analytical results,\*\* to include:
  - ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc. (current and former); spills;
  - ⇒ Groundwater sample identification (unique letter and/or numerical code referencing monitoring or water supply well) and location;
  - ⇒ Surface water sample identification (unique letter and/or numerical code) and location; and
  - ⇒ Groundwater and surface water sample analytical results.
5. A potential receptor map that clearly identifies water supply wells (municipal or public/private wells, etc.) and other potential receptors (surface water bodies, basements, utilities, etc.) which are at risk.

*\*Note: Use a single base map to prepare site plans using a map scale of 1 in. = 40 ft.; use a smaller scale for large sites. Maps and figures should include conventional symbols, notations, labeling, legends, scales, and north arrows and should conform to accepted practices of map presentation described in the USGS Geological Survey publication "Topographic Map Symbols", <http://store.usgs.gov>. Scale should be expressed as a graphic scale and a verbal statement (e.g., 1 in. = 40 ft) or ratio. Refer to <http://geokov.com/Education/map-scale.aspx>.  
\*\* If applicable*

## I. Tables

Provide the following:

1. Site History (Complete Tables B-1 and B-2 from *Guidelines*, Appendix B);

2. Public and Private Water Supply Well and Other Receptor Information (Complete Table B-5 from *Guidelines*, Appendix B);
3. Field Screening Results;
4. Soil Sample Identification, Location, Depth, Analytical Methods;
5. Summary of Soil Sampling Results (Complete Table B-3 from *Guidelines*, Appendix B);
6. Summary of Groundwater and Surface Water Sampling Results (Complete Table B-4 from *Guidelines*, Appendix B)\*; and
7. Monitoring and Remediation Well Construction Information (Complete Table B-7 from *Guidelines*, Appendix B)\*;

*\*If applicable*

#### **J. Appendices**

Provide the following:

Appendix A	Tightness testing results and supporting documentation*
Appendix B	Notification of Intent: UST Permanent Closure or Change-in-Service (UST-3 Form)
Appendix C	Site Investigation Report for Permanent Closure or Change-in-Service of UST (UST-2 Form)
Appendix D	Site Specific Health and Safety Plan (HASP)
Appendix E	Certificate of UST disposal
Appendix F	Groundwater field measurements (pH, dissolved oxygen, specific conductivity, temperature)*
Appendix G	Standard procedures (sampling, field equipment decontamination, field screening, etc.)
Appendix H	Soil, water, and sludge disposal manifests and soil treatment permits*
Appendix I	Complete chain-of-custody records
Appendix J	Copy of all laboratory analytical records
Appendix K	Photographs of closure activities (optional)
Appendix L	Geologic logs for excavation(s)/borings

*\*If applicable*

**Site Investigation Report for Permanent Closure  
or Change-in-Service of UST**  
**(UST-2A (Registered Tanks) or UST-2B (Unregistered Tanks) Form)**  
*(example next page)*

(Official version of UST-2A and UST-2B forms are available at:  
<http://deq.nc.gov/about/divisions/waste-management/underground-storage-tanks-section/forms>)

# UST-2A

## Site Investigation Report for Permanent Closure or Change-in-Service of REGISTERED UST



Return completed form to: <b>NC DEQ / DWM / UST SECTION</b> <b>1646 MAIL SERVICE CENTER</b> <b>RALEIGH, NC 27699-1646</b> <b>ATTN: REGISTRATION &amp; PERMITTING</b>  phone (919) 707-8171 fax (919) 715-1117 <a href="http://www.wastenotnc.org/">http://www.wastenotnc.org/</a>	STATE USE ONLY: Facility ID # I  Date Received
---	--

### INSTRUCTIONS (READ THIS FIRST)

- UST permanent closure or change in service must be completed in accordance with the latest version of the *Guidelines for Site Checks, Tank Closure and Initial Response and Abatement*. The guidelines can be obtained at <http://deq.nc.gov/about/divisions/waste-management/waste-management-permit-guidance/underground-storage-tanks-section>.
- Permanent closure:** Complete all sections of this form.
- Change-in-service:** Where a UST system will be converted from storing a regulated substance to a non-regulated substance, complete sections I, II, III, IV, and VI
- For more than 5 registered UST systems, attach additional forms as needed
- Tank Fee Refund:** An annual tank fee may be refunded for a tank for which a tank fee was not required. An owner or operator must submit a written request and include: (1) contact information, (2) federal identification # or SSN, and (3) a copy of UST-2 form. The annual tank fee will be prorated based on the date of permanent closure.
- UNREGISTERED USTs use Form UST-2B

I. OWNERSHIP OF TANKS		II. LOCATION OF TANKS	
Owner Name (Corporation, Individual, Public Agency, or Other Entity)		Facility Name or Company	
Street Address		Facility ID # (If known)	
City	County	Street Address	
State	Zip Code	City	County Zip Code
Phone Number		Phone Number	

### III. CONTACT PERSONNEL

Contact for Facility:	Job Title:	Phone #:
Closure Contractor Name:	Closure Contractor Company:	Address: Phone #
Primary Consultant Name:	Primary Consultant Company:	Address: Phone #

IV. UST INFORMATION FOR REGISTERED UST SYSTEMS UNREGISTERED USTs use Form UST-2B							V. EXCAVATION CONDITION					
Tank ID No.	Size in Gallons	Last Contents	Last Use Date	Permanent Close Date	Method of Permanent Closure: Indicate REMOVED or enter fill material, such as foam/ concrete/ sand	Change-in-Service Date	Water in excavation		Free product		Notable odor or visible soil contamination	
							Yes	No	Yes	No	Yes	No
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### VI. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true accurate and complete.

Print name and official title of owner or owner's authorized representative

Signature	Date Signed
-----------	-------------

## 6 Initial Abatement Action (*Site Check, UST Closure with UST-2 Form, Excavation, Post-Excavation Soil Contamination Assessment*) Report

In addition to reporting initial response and abatement actions and assessment actions, and presenting an initial site characterization, when a release has been discovered, this newly-created **Initial Abatement Action Report** must fulfill the requirements for the following individual reports: **Site Check Report** (Section E), **UST Closure Report (UST-12) with UST-2 Form** (Section F), **Post-Excavation Soil Contamination Assessment Report** (Section J), and **Free Product Recovery Report** (Section G). If needed, check with your regional office to determine which report format is required.

Complete Sections A-N, as required, including the sections specifically designated for the reports you have indicated. The **Initial Abatement Action Report** must be submitted to the appropriate regional office **within 90 days** following discovery of release.

### A. Site Information

#### 1. Site Identification

- Date of Report: \_\_\_\_\_ Site Risk: \_\_\_\_\_
- Facility I.D.: \_\_\_\_\_ UST Incident Number (if known): \_\_\_\_\_
- Site Name: \_\_\_\_\_
- Street Address: \_\_\_\_\_
- City/Town: \_\_\_\_\_ Zip Code: \_\_\_\_\_ County: \_\_\_\_\_
- Description of Geographical Data Point (e.g., diesel fill port): \_\_\_\_\_
- Location Method (GPS, topographical map, other): \_\_\_\_\_
- Latitude (*decimal degrees*): \_\_\_\_\_ Longitude (*decimal degrees*): \_\_\_\_\_

#### 2. Information about Contacts Associated with the Leaking UST System

(Addresses must include street, city, state, zip code and mailing address, if different)

- UST/AST Owner: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- UST/AST Operator: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- Property Owner: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- Property Occupant: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- Consultant/Contractor: \_\_\_\_\_ Email: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_
- Analytical Laboratory: \_\_\_\_\_ State Certification No: \_\_\_\_\_  
Address: \_\_\_\_\_ Tel: \_\_\_\_\_

#### 3. Information about the Release

- Date Discovered: \_\_\_\_\_
- Estimated Quantity of Release: \_\_\_\_\_
- Cause of Release: \_\_\_\_\_
- Source of Release (e.g., Dispenser/Piping/UST): \_\_\_\_\_
- Sizes and Contents of Tanks or Other Containment from which the Release Occurred: \_\_\_\_\_

#### 4. Certification (*The title page must display the seal and signature of the certifying P.E. or L.G., and the name and certification number of the company or corporation, if applicable [See 15A NCAC 2L .0103(e)].*)

I, \_\_\_\_\_, a Professional Engineer/Licensed Geologist (*circle one*) for \_\_\_\_\_ (*company of employment*), do certify that the information contained in this report is correct and accurate to the best of my knowledge.

(Please Affix Seal and Signature)

\_\_\_\_\_ (*Name of company*) is licensed to practice geology/engineering (*circle one or both*) in North Carolina. The certification number of the company or corporation is: \_\_\_\_\_.



**B. Executive Summary**

Present a brief summary of the most pertinent information about the site and the release, using the following outline:

1. Describe the source, date of discovery, and quantity and type(s) of contaminant released;
2. Summarize initial abatement actions, including closure, soil removal, NAPL recovery, and provision of alternate water;
3. Describe the results of the hydrogeological investigation;
4. Summarize the results of soil, groundwater, and surface water assessment and NAPL measurement, indicating the nature and extent of contamination, the estimated rate of migration, and potential for impacting receptors;
5. Indicate the risk classification and the criteria for that determination (if known); and
6. Indicate the soil, groundwater, and surface water concentration levels to which contamination must be remediated.

**C. Table of Contents**

Provide a table of contents, as follows:

1. List sections, indicating page numbers;
2. List figures, identifying each by number;
3. List tables; identifying each by number; and
4. List appendices, identifying each by letter.

**D. Site History and Characterization**

Present information relevant to site history and characterization, using the following outline:

1. Provide information for UST/AST owners/operators and other responsible parties.
  - ⇒ List the names, addresses, telephone numbers, and dates of ownership/operation of all previous UST/AST owners, UST/AST operators, and other responsible parties. Present in table form in Section M (Use Reporting Table B-2, Site History, UST/AST Owner/Operator and Other Responsible Party Information, from *Guidelines*, Appendix B.).
2. Provide UST information (inclusive of all USTs, currently and historically in place at facility). For each UST, provide the following information in table form in Section M (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.):
  - ⇒ Tank identification number (keyed to a site map showing the locations of all UST systems);
  - ⇒ Last contents of tank;
  - ⇒ Previous contents of tank (if any);
  - ⇒ Capacity of tank in gallons;
  - ⇒ Construction (material and structure);
  - ⇒ Tank dimensions;
  - ⇒ Installation date;
  - ⇒ Description of piping and pump(s) associated with each UST;
  - ⇒ Status of UST (in use or not in use, closed in place, closed by removal; date of last use, date of closure); and
  - ⇒ Indication of a release (Indicate which UST, piping, and/or pump leaked.).

Provide a discussion (to supplement Table B-1 and the UST location map) of the spatial and historical relationships among tanks and between tanks and piping and dispensers and a brief description of all historical compliance issues and releases (indicate incident number).

3. Provide information about petroleum AST systems, petroleum spills, and other non-UST petroleum releases (inclusive of all ASTs, currently and historically in place at site and all spills at site), as indicated:
  - ⇒ List, describe, and indicate location of ASTs and associated piping and pump(s) currently and historically in place at facility) and describe historical releases (indicate incident number). For each AST, present the information in table form in Section M (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.); and
  - ⇒ List, describe, and indicate location and date of spills that have occurred at site). For each spill, present the information in table form in Section M (Use Reporting Table B-1, Site History- UST/AST System and Other Release Information, from the *Guidelines*, Appendix B.).
4. Provide a comprehensive description of the release, including date discovered, cause and source (including tank identification number and contents), and the relationship of historical UST releases, non-UST releases, and off-site releases (indicate incident number) to contamination from current release.
5. Provide a brief description of site characteristics (including status of facility (active or inactive), land use of site and surrounding area, water supply, topography, vegetation, surface water, wells, buildings, surface cover, soil type, depth to and nature of bedrock, depth to groundwater, direction of groundwater flow, etc.)
6. Summarize initial abatement actions, assessment activities, and corrective actions performed to date and list all reports previously submitted.

**E. Site Check Report** (if applicable)

Incorporate the minimum requirements of a *Site Check Report*, as outlined in the *Guidelines*, Appendix A, p. 68 if a site check revealed a release and initiated the initial response and abatement action.

1. Present and summarize the results of tank and line tightness testing (Refer to Section N, Appendix A, Tightness testing results and supporting documentation). If these tightness testing results did not indicate a release, and if, instead, environmental contamination was the basis for suspecting a release, describe the environmental contamination.
2. Describe the site check procedure. (For guidance refer to the *Guidelines*, Section 4.3, Site Check Requirements). Reference site and sample location maps provided in Section L, Figures, and summaries of soil and groundwater analytical results provided in Section M, Tables. Explain how the selection of sample types and locations was influenced by the nature of the stored substance, the type of initial alarm or cause for suspicion, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence and source of a release. Describe the condition of the UST system (i.e., pitting, holes, etc.) where it can be observed.
3. If a release is determined, document initial response actions (submittal of **24-Hour Release and Report Form**; repair, replacement, or upgrading of system to prevent further release; mitigation of hazards) and initial abatement actions (NAPL removal; submittal of **20-Day Report**) performed in Section I, Initial Response and Abatement Actions;
4. Document any soil excavation activities in Section J, Excavation of Contaminated Soil.
5. Document site investigation.
  - ≡ Describe field screening, including:
    - Physical characteristics of the soil samples, as observed during collection;
    - Field instrumentation used to screen soils;
    - Field instrument calibration procedures; and
    - Screening results (Refer to table provided in Section M.).
  - ≡ Document soil sampling information (Refer to figures, tables, and appendices provided in Sections L, M, and N.), including:
    - Lithological descriptions from logs for borings, excavations;
    - Type of samples (from excavation, borehole, direct push boring, stockpiled soil, etc.);
    - Sample collection procedures (grab, split spoon, hand auger, etc.);
    - Location of soil samples;
    - Depth of soil samples (feet below land surface);
    - Time/date collected;
    - Sample identification; and
    - Method(s) of soil sample analysis.
  - ≡ Document groundwater and surface water sampling information (Refer to figures, tables, and appendices provided in Sections L, M, and N.), including:
    - Location of water samples (e.g., of monitoring well, water supply well, stream sampling point);
    - Field measurements (e.g., pH, dissolved oxygen, specific conductivity, temperature)
    - Sample collection procedures (grab, bailer, etc.);
    - Time/date collected.
    - Sample identification; and
    - Method(s) of water sample analysis.
  - ≡ Document quality-control measures information (Refer to tables and appendices provided in Sections M and N.), including:
    - Sample handling procedures including sample preservation techniques and sample transport procedures;
    - Decontamination procedures;
    - Time and date samples were submitted to lab; and
    - Collection of samples for quality control purposes (e.g., duplicates, field blanks, trip blanks).
  - ≡ Describe soil and groundwater investigation results, including:
    - Presentation of analytical results for soil and groundwater samples (Refer to table(s) provided in Section M and to appendix with laboratory analytical results provided in Section N.) and discussion of the results in relation to the cleanup levels or action levels, as appropriate; and
    - Discussion pertaining to the effect of quality control sample results on the interpretation of soil, groundwater, or surface water analytical results.
6. Present conclusions and recommendations, referencing maps and cross-sections in Section L, as follows:
  - ≡ Describe source and estimated or pre-screened extent of soil contamination (If there are multiple sources of release, then describe the extent of contamination from each source);

- ⇒ Indicate if groundwater or bedrock was encountered during investigation and at what depth below land surface;
- ⇒ Indicate if groundwater assessment was necessary due to the proximity of the UST system to groundwater or bedrock (or to the presence of a slab or tank for which removal was determined to be economically or technologically unfeasible), thereby preventing the reliable determination of a release by soil assessment alone;
- ⇒ Describe source(s) and estimated extent of any groundwater or surface water contamination;
- ⇒ Describe source(s) and estimated thickness and extent of any NAPL;
- ⇒ Indicate what initial response and abatement actions are required; and
- ⇒ Discuss the need for further investigation or remediation.

**F. UST Closure Report following UST-12 Format) and Site Investigation Report for Permanent Closure or Change-in-Service of UST (UST-2 Form) (if applicable).**

Incorporate the minimum requirements of a *UST Closure Report* and complete the *UST-2A or UST-2B Form*, as outlined in Appendix A, p.82 of the *Guidelines*), if UST closure indicated a release and initiated the initial response and abatement action.

1. Describe preparations for closure including steps taken to notify authorities, permits obtained, and steps taken to clean and purge the tanks.
  2. Describe the closure procedure (For guidance, refer to the *Guidelines*, Section 5.), referencing site and sampling location maps and cross-sections presented in Section L of this report. Clearly state how the selection of sample types and locations was influenced by the nature of the stored substance, the type of initial alarm or cause for suspicion, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence and source of a release. If presence of groundwater or bedrock require the installation and sampling of monitoring well(s), describe the process.
1. Note the amount of residual material pumped from the tank and describe the storage, sampling and disposal of the residual material and the disposal of the tank, pumps and piping (Refer to appendices with disposal manifests and certificate of tank disposal in Section N.).
  2. If a release is determined, document initial response actions (submittal of *24-Hour Release and Report Form*; repair, replacement, or upgrading of system to prevent further release; mitigation of hazards) and initial abatement actions (NAPL removal; submittal of *20-Day Report*) performed in Section I, Initial Response and Abatement Actions.
  3. Document any soil excavation activities in Section J, Excavation of Contaminated Soil.
  4. Document site investigation.
    - ⇒ Describe field screening, including:
      - Physical characteristics of the soil samples, as observed during collection;
      - Field instrumentation used to screen soils;
      - Field instrument calibration procedures; and
      - Screening results (Refer to table provided in Section M.).
    - ⇒ Document soil sampling information (Refer to figures, tables, and appendices provided in Sections L, M and N.), including:
      - Lithological descriptions from logs for borings, excavations;
      - Type of samples (from excavation, borehole, direct push boring, stockpiled soil, etc.);
      - Sample collection procedures (grab, split spoon, hand auger, etc.);
      - Location of soil samples;
      - Depth of soil samples (feet below land surface);
      - Time/date collected;
      - Sample identification; and
      - Method(s) of soil sample analysis.
    - ⇒ Document groundwater and surface water sampling information (Refer to figures, tables, and appendices provided in Sections L, M, and N.), including:
      - Location of water samples (e.g., of monitoring well, water supply well, stream sampling point);
      - Field measurements (e.g., pH, dissolved oxygen, specific conductivity, temperature)
      - Sample collection procedures (grab, bailer, etc.);
      - Time/date collected.
      - Sample identification; and
      - Method(s) of water sample analysis.
    - ⇒ Document quality-control measures information (Refer to tables and appendices provided in Sections M and N, including:
    - ⇒ Sample handling procedures including sample preservation techniques and sample transport procedures;
    - ⇒ Decontamination procedures;

- ⇒ Time and date samples were submitted to lab; and
  - ⇒ Collection of samples for quality control purposes (e.g., duplicates, field blanks, trip blanks).
  - ⇒ Describe soil and groundwater investigation results, including:
    - Presentation of analytical results for soil and groundwater samples (Refer to table(s) provided in Section M and to appendix with laboratory analytical results provided in Section N.) and discussion of the results in relation to the cleanup levels or action levels, as appropriate; and
    - Discussion pertaining to the effect of quality control sample results on the interpretation of soil, groundwater, or surface water analytical results.
5. Present conclusions and recommendations, referencing maps and cross-sections in Section L as follows:
- ⇒ Describe source and estimated extent of soil contamination, referencing maps and cross-sections in Section L (If there are multiple sources of release, then describe the extent of contamination from each source.);
  - ⇒ Indicate if groundwater or bedrock was encountered during investigation and at what depth below land surface;
  - ⇒ Indicate if groundwater assessment was necessary due to the proximity of the UST system to groundwater or bedrock (or to the presence of a slab or tank for which removal was determined to be economically or technologically unfeasible), thereby preventing the reliable determination of a release by soil assessment alone;
  - ⇒ Describe source(s) and estimated extent of any groundwater or surface water contamination;
  - ⇒ Describe source(s) and estimated thickness and extent of any NAPL;
  - ⇒ Indicate what initial response and abatement actions are required; and
  - ⇒ Discuss the need for further investigation or remediation.

#### G. NAPL Investigation and Free Product Recovery Report (if applicable)

Discuss the status of NAPL at the site, as follows:

1. If NAPL is, or has been, present at the site, describe its current and historical status (product distribution, thickness, recovery activities). Refer to tables in Section M: Table B-7, Monitoring and Remediation Well Construction Information; and Table B-8A, NAPL Recovery Information; Table B-8B, Cumulative Volume of NAPL Recovered from Site; and Table B-9, Current and Historical Groundwater Elevations and NAPL Thickness. Also refer to map(s) showing extent of NAPL in Section L;
2. Identify any on-site or off-site effluent discharges, treatment used, effluent quality, permitting actions taken, and location of such discharges and identify the disposition of recovered NAPL (refer to attached product disposal manifests);
3. Document the performance, total cost, and cost per gallon to date of each method of NAPL recovery used at site. Justify why the technology is or was used; and
4. Provide conclusions and recommendations concerning historical, current, and future recovery activities, including:
  - ⇒ Any proposal to change the current method of NAPL recovery to a better or more cost-effective technology;
  - ⇒ A justification for continued product recovery, if planned; and
  - ⇒ Any determination that NAPL has been eliminated from the site with a recommendation to reclassify the risk posed by the release, if applicable.

#### H. Groundwater and Surface Water Investigation (if applicable)

1. If groundwater or bedrock was encountered in pits, trenches or shallow boring during site check, UST system closure, or initial abatement investigation, if monitoring or water supply wells were found to be contaminated, or if at-risk surface water is present nearby, then indicate actions taken to investigate suspected contamination from a release (e.g., installation of monitoring wells, groundwater or surface sampling and analysis, etc.).
2. Document groundwater and surface water investigations (or, if applicable, refer to groundwater investigations under Section E, *Site Check Report*, or Section F, *UST Closure Report*), as follows:
  - ⇒ Present groundwater and surface water sampling information (Refer to tables and appendices provided in Sections M and N.), including:
    - Location of water samples (e.g., of monitoring well, water supply well, stream sampling point);
    - Field measurements (e.g., pH, dissolved oxygen, specific conductivity, temperature)
    - Sample collection procedures (grab, bailer, etc.);
    - Time/date collected.
    - Sample identification; and
    - Method(s) of water sample analysis.
  - ⇒ Document quality-control measure information (Refer to tables and appendices provided in Sections M and N), including:
    - Sample handling procedures including sample preservation techniques and sample transport procedures;
    - Decontamination procedures;
    - Time and date samples were submitted to lab; and

- Collection of samples for quality control purposes (e.g., duplicates, field blanks, trip blanks).
- ⇒ Describe groundwater or surface water investigation results, including:
  - Presentation of analytical results (Refer to table(s) provided in Section M and to appendix with laboratory analytical results provided in Section N.) and discussion of the results in relation to the cleanup levels (groundwater quality or surface water quality standards); and
  - Discussion of the effect of quality control sample results on the interpretation of groundwater or surface water analytical results.

### I. Initial Response and Abatement Action

1. Describe initial response actions performed within 24 hours of discovery of the release, including:
  - ⇒ Submittal of **24-Hour Release Report and UST Leak Reporting Form (UST-61)**;
  - ⇒ Action to prevent further release and to determine source of the release;
  - ⇒ Identification and mitigation of hazards due to exposure to pollutants (e.g. Responsible party must identify and sample water supply wells at risk of impact by the release and provide supply of alternate water, if wells are impacted.); and
  - ⇒ Identification and mitigation of hazards due to fire, explosion, and vapor hazards.
2. Describe initial abatement actions performed, including:
  - ⇒ Completion of investigation to confirm presence and determine source of the release;
  - ⇒ Investigation and recovery of NAPL;
  - ⇒ Continued mitigation and monitoring of fire, explosion, and vapor hazards;
  - ⇒ Remediation of hazards posed by exposed contaminated soil;
  - ⇒ Submittal of **20-Day Report** summarizing the progress of the initial actions performed within the 20-day period following discovery of the release; and
  - ⇒ Soil excavation activities (Document in Section J, Excavation of Contaminated Soil.).

### J. Excavation of Contaminated Soil

1. Describe source and estimated extent of soil contamination determined in initial investigations (e.g., site check, UST system closure, pre-screening events), referencing maps and cross-sections in Section L and tables presenting soil sampling or screening information and results in Section M (If there are multiple sources of release, then describe the extent of contamination from each source.), including:
  - ⇒ Sampling or pre-screening location and depths; locations of tanks, piping dispensers, sumps, areas of staining (indicate if above or below tank); utility lines; potential receptors; buildings; relationship of area(s) of contaminated soil to groundwater and bedrock; and
  - ⇒ If part or all of UST system was removed, indicate dimensions of resulting pits and trenches.
2. Describe excavation process, referencing maps and cross-sections in Section L, tables presenting soil screening and sampling information and results in section M and disposal manifests and geological logs in Section N, as follows:
  - ⇒ Describe type of equipment used (e.g., back hoe, track hoe, dump truck);
  - ⇒ Describe field screening, if used to determine limits of excavation, including:
    - Physical characteristics of the soil samples, as observed during collection;
    - Field instrumentation or mobile laboratory systems used to screen soils;
    - Field instrument or mobile laboratory system calibration procedures;
    - Screening results (Refer to table provided in Section M.);
  - ⇒ Indicate the final dimensions of the excavation(s);
  - ⇒ Indicate the volume (in cubic yards) and weight (in tons) of soil excavated from each excavation (show calculations), including documentation where, based on mobile lab screening, an additional volume was approved in excess of the initial abatement limit if Trust Fund reimbursement is anticipated;
  - ⇒ Describe the relationship of the final excavation pit to the former UST system, to groundwater, to bedrock, and to structures; and
  - ⇒ Indicate if the excavation operation ceased on encountering clean soil, groundwater, bedrock, or an obstruction or other condition that rendered further excavation infeasible or impracticable (including the allowable excavation volume being reached at site seeking State Trust Fund eligibility.)
3. Describe post-excavation confirmation soil sampling, referencing maps and cross-sections in Section L, tables presenting soil sampling information and results in Section M, and geological logs in Section N as follows:
  - ⇒ Describe sample location and depth, and methods of collection and analysis for each excavation;
  - ⇒ Note if multiple excavations were performed sequentially in an area of contaminated soil, (i.e., if confirmatory sampling following primary excavation indicated that contaminated soil remained,) so that further excavation was performed and a second set of confirmatory samples was collected and analyzed; and

- ⇒ If contaminated soil was allowed to remain after final excavation, indicate precisely the location and depth of the residual contamination and explain why it was not removed, (i.e., why it was not economically and/or technologically feasible to excavate it?)
4. Document Soil Investigation.
- ⇒ Provide soil sampling information for all samples collected for field screening prior to or during the excavation (where applicable) and for confirmation following excavation, and for any samples collected during previous investigations. Refer to table provided in Section M: Table B-3, Summary of Soil Sampling Results; to figures, in Section L; and to appendices, in Section N. Information should include:
    - Lithological descriptions from logs for borings, excavations;
    - Type of samples (from excavation, borehole, direct push boring, stockpiled soil, etc.);
    - Sample collection procedures (grab, split spoon, hand auger, etc.);
    - Location of soil samples;
    - Depth of soil samples (feet below land surface);
    - Time/date collected;
    - Sample identification;
    - Indication of phase of sampling, site check; closure, IAA, etc.; and
    - Method(s) of soil sample analysis.
  - ⇒ Document quality-control measures information (Refer to tables and appendices provided in Sections M and N.), including:
    - Sample handling procedures including sample preservation techniques and sample transport procedures;
    - Decontamination procedures;
    - Time and date samples were submitted to lab; and
    - Collection of samples for quality control purposes (e.g., duplicates, field blanks, trip blanks).
  - ⇒ Describe soil investigation results, including:
  - ⇒ Presentation of analytical results for soil samples (Refer to table provided in Section M and to appendix with laboratory analytical results provided in Section N.);
  - ⇒ Discussion of the results in relation to the appropriate cleanup levels, identifying the samples that exceed the lower of:
    - (a) the residential MSCCs or
    - (b) the soil-to-groundwater MSCCs.
  - ⇒ Discussion of effect of quality control sample results on the interpretation of soil analytical results.
5. Describe disposal of contaminated soil, referencing tables presenting soil sampling information and results in Section M and disposal manifests in Section N as follows:
- ⇒ Indicate volume and weight of contaminated soil removed from each excavation at site;
  - ⇒ Describe construction of any stockpile of contaminated soil, describe collection and analysis of any stockpile samples, and, where applicable, any samples collected from soils hauled offsite for disposal;
  - ⇒ Indicate if soil was treated onsite (Reference permit in Section N.);
  - ⇒ Indicate if soil was transported offsite for disposal and, if so, by whom and to what destination; and
  - ⇒ Confirm that excavation was back-filled with clean soil.
6. Present conclusions, as follows;
- ⇒ Briefly summarize excavation process;
  - ⇒ Describe extent of final excavation(s) and collection of confirmatory samples;
  - ⇒ Indicate if excavation ceased on encountering groundwater, bedrock, or an obstruction that hindered further reasonable access; and
  - ⇒ Indicate whether soil contaminant levels in exceedance of the lowest MSCCs remain in the excavation(s), further excavation being determined infeasible by the UST Section, or soil contaminant levels in final excavation confirmatory soil samples were equal to below the lowest MSCCs.

## K. Conclusions

1. If soil contaminant levels in exceedance of the lowest MSCCs remain in the excavation(s) (with further excavation being determined infeasible by the UST Section), if groundwater contamination in exceedance of the applicable 2L standards or surface water contamination in exceedance of the applicable 2B standards has been encountered, or if NAPL is present, it should be concluded that a **Limited Site Assessment** must be performed and a report submitted **within 120 days** of discovery of the release; However,
2. If soil contaminant levels in final excavation confirmatory soil samples were equal to or below the lowest MSCCs and if groundwater contamination is not found to exceed the applicable 2L standards and surface water is not found to exceed the applicable 2B standards, and if NAPL was not encountered in the excavation(s), monitoring well(s), or on nearby surface water bodies, then no further action should be requested.

**L. Figures**

Provide the following:

1. A topographic map illustrating the area within 1500-foot radius of the source of the release, showing:
  - ⇒ Topographic contours;
  - ⇒ Site location;
  - ⇒ Buildings;
  - ⇒ Adjacent streets, roads, highways (identified by street names and numbers);
  - ⇒ Surface water bodies;
  - ⇒ Groundwater flow direction (if determined); and
  - ⇒ North arrow and scale.
2. A site map\* and cross-sections illustrating the UST system(s)/excavation area(s), drawn to scale, showing:
  - ⇒ Buildings and property boundaries;
  - ⇒ Underground utilities, such as sewer lines and other conduits; basements; and vaults;
  - ⇒ Water supply wells, surface water bodies;
  - ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc. (current and former); spills;
  - ⇒ Length, diameter and volume of current and former UST(s)/AST(s);
  - ⇒ Type of material(s) stored in UST(s)/AST(s) (currently and formerly);
  - ⇒ Names or descriptions of properties adjacent to the site; and
  - ⇒ North arrow and scale.
3. Map(s)\* and geological cross-sections, drawn to scale, depicting all soil analytical results obtained to date and final confirmatory sample results, to include:
  - ⇒ Description of soil and bedrock lithology (as determined by investigation to date);
  - ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc. (current and former); spills;
  - ⇒ Soil sample identification (unique letter and/or numerical code), location, and depth;
  - ⇒ Soil sample analytical results;
  - ⇒ Final limits of each stage of excavation for each excavation on site\*\*; and
  - ⇒ Two geological cross-sections, drawn across the contaminated area and intersecting at right angles, showing the vertical distribution of the contaminants in the unsaturated zone. (Indicate vertical and horizontal scale, orientation of each section, location of water table, soil types and lithology, all borings and sample locations represented by the sections, and soil analytical results for each represented sample, and show sections as labeled lines on the map.)
4. Map(s)\* and geological cross-sections, drawn to scale, depicting the groundwater and surface water analytical results,\*\* to include:
  - ⇒ Location and orientation of UST(s)/AST(s), pumps, piping, sumps, etc. (current and former); spills;
  - ⇒ Groundwater sample identification (unique letter and/or numerical code referencing monitoring or water supply well) and location;
  - ⇒ Surface water sample identification (unique letter and/or numerical code) and location; and
  - ⇒ Groundwater and surface water sample analytical results.
5. A NAPL map\* showing thickness (in feet) and extent of NAPL\*\* using contour lines; and
6. A potential receptor map that clearly identifies water supply wells (municipal or public/private wells, etc.) and other potential receptors (surface water bodies, basements, utilities, etc.) which are at risk.

*\*Note: Use a single base map to prepare site plans using a map scale of 1 in. = 40 ft.; use a smaller scale for large sites. Maps and figures should include conventional symbols, notations, labeling, legends, scales, and north arrows and should conform to accepted practices of map presentation described in the USGS Geological Survey publication "Topographic Map Symbols", <http://store.usgs.gov>. Scale should be expressed as a graphic scale and a verbal statement (e.g., 1 in. = 40 ft) or ratio. Refer to <http://geokov.com/Education/map-scale.aspx>.*

*\*\* If applicable*

**M. Tables**

Provide the following:

1. Site History (Complete Tables B-1 and B-2 from *Guidelines*, Appendix B);
2. Public and Private Water Supply Well and Other Receptor Information (Complete Table B-5 from *Guidelines*, Appendix B);
3. Field Screening Results;
4. Summary of Soil Sampling Results (Complete Table B-3 from *Guidelines*, Appendix B);
5. Summary of Groundwater and Surface Water Sampling Results\* (Complete Table B-4 from *Guidelines*, Appendix B)\*;
6. Monitoring and Remediation Well Construction Information (Complete Table B-7 from *Guidelines*, Appendix B)\*;
7. NAPL Recovery Information (Complete Table B-8A from *Guidelines*, Appendix B)\*;

8. Cumulative Volume of NAPL Recovered from Site (Complete Table B-8B from *Guidelines*, Appendix B)\*;
9. Current and Historical Groundwater Elevations and NAPL Thickness (Complete Table B-9 from *Guidelines*, Appendix B)\*.

\* *If applicable*

## N. Appendices

Provide the following:\*

- Appendix A Tightness testing results and supporting documentation\*
- Appendix B Notification of Intent: UST Permanent Closure or Change-in-Service (UST-3 Form) \*
- Appendix C Site Investigation Report for Permanent Closure or Change-in-Service of UST (UST-2 Form)\*
- Appendix D Site Specific Health and Safety Plan (HASP)
- Appendix E Certificate of UST disposal\*
- Appendix F Groundwater field measurements (pH, dissolved oxygen, specific conductivity, temperature)\*
- Appendix G Standard procedures (sampling, field equipment decontamination, field screening, etc.)
- Appendix H Soil, water, NAPL, and sludge disposal manifests and soil treatment permits\*
- Appendix I Complete chain-of-custody records
- Appendix J Copy of all laboratory analytical records, including (if applicable) any mobile laboratory analytical records
- Appendix K Photographs of site check, closure, and excavation activities (optional)
- Appendix L Geologic logs for excavation(s)/borings (related to IAA investigation only)
- Appendix M Monitoring Well Construction Forms (for all wells constructed to date)

\* *If applicable*



**Appendix B – Reporting Tables**

1. Table B-1 Site History- UST/AST System and Other Release Information
2. Table B-2 Site History – UST/AST Owner/Operator and Other Responsible Party Information
3. Table B-3 Summary of Soil Sampling Results
4. Table B-4 Summary of Groundwater and Surface Water Sampling Results
5. Table B-5 Public and Private Water Supply Well and Other Receptor Information
6. Table B-6 Property Owners/ Occupants
7. Table B-7 Monitoring and Remediation Well Construction Information
8. Table B-8A NAPL Recovery Information
9. Table B-8B Cumulative Volume of NAPL Recovered from Site
10. Table 9 Current and Historical Groundwater Elevations and NAPL Thickness

**Table B-1: Site History – UST/AST System and Other Release Information**

Revision Date: \_\_\_\_\_ Incident Number and Name: \_\_\_\_\_

UST ID Number	Current / Most-Recent Contents*	Previous Contents*	Capacity (in gallons)	Construction Details**	Tank Dimensions	Description of Piping and Pumps	Date Tank Installed	Status of UST***	Release associated with this UST System?

*Add additional records as necessary*

AST ID Number	Current / Most-Recent Contents*	Previous Contents*	Capacity (in gallons)	Construction Details**	Tank Dimensions	Description of Piping and Pumps	Date Tank Installed	Status of AST***	Release associated with this AST System?

*Add additional records as necessary*

Incident Number	Material Released	Date of Release	Description of Release

*Add additional records as necessary*

- \* Gasoline (unleaded or leaded), diesel, used oil, waste oil, aviation fuel, etc., or pesticides, non-halogenated or halogenated solvents, etc.
- \*\* Fiberglass (single- or double-walled), steel (single- or double-walled), steel with FRP (single- or double-walled), steel with liner, other, unknown.
- \*\*\* Currently operational, not in use or temporarily closed (specify date), permanently closed in place (specify date), permanently closed by removal (specify date)

**Table B-2: Site History - UST/AST Owner/Operator and Other Responsible Party Information**

Revision Date: \_\_\_\_\_ Incident Number and Name: \_\_\_\_\_

UST ID Number		Facility ID Number	
Owner Name (and Contact)		Dates of Operation (mm/dd/yy to mm/dd/yy)	
North East Oil Company			
Street Address			
City	State	Zip	Telephone Number
Operator Name (and Contact)		Dates of Operation (mm/dd/yy to mm/dd/yy)	
Street Address			
City	State	Zip	Telephone Number
<b>Other Incidents Onsite or Commingled/In Close Proximity</b>			
Incident Number		Date Incident Occurred	
Name of Responsible Party for Other Incident		Date Incident Reported	
		Date Incident Closed (i/a)	
Street Address			
City	State	Zip	Telephone Number

*Add additional records for all owners, operators and responsible parties as necessary.*

**Table B-3: Summary of Soil Sampling Results**

Revision Date: \_\_\_\_\_ Incident Number and Name: \_\_\_\_\_ Facility ID#: \_\_\_\_\_

Analytical Method (e.g., VOC by EPA 8260) →														
Contaminant of Concern →														
Sample ID	Date Collected (mm/dd/yy)	Source Area (e.g., Tank Pit 1)	Sample Depth (ft BGS)	Incident Phase (IAA, LSA, etc.)										
Minimum Reporting Limit (mg/kg)														
Soil to Groundwater MSCC (mg/kg)														
Residential MSCC (mg/kg)														
Industrial/Commercial MSCC (mg/kg)														

Indicate detection limit for contaminants when analyzed, but not detected (e.g., < 1, 10, 42)  
 Include in the table all of the target analytes listed for the method in Apx. B of the *Guidelines for Sampling*, current version.  
 MSCC = maximum soil contaminant concentration  
 ft. BGS = feet below ground surface  
 Results must be reported in mg/kg.  
 mg/kg =milligrams per kilogram

**Table B-4: Summary of Groundwater and Surface Water Sampling Results**

Revision Date: \_\_\_\_\_ Incident Number and Name: \_\_\_\_\_ Facility ID#: \_\_\_\_\_

Analytical Method (e.g., VOC by SM6000B) → or Field Measurement (FM)													
Contaminant of Concern/Field Measurement →													
Well or SW ID	Date Collected (mm/dd/yy)	Sample ID	Incident Phase (IAA LSA, etc.)										
Minimum Reporting Limit (ug/l)													
2L Standard (ug/l)													
GCL (ug/l)													
NC 2B Standard or EPA National Criteria (ug/l)													

Field measurement parameters include temperature, pH, dissolved oxygen, specific conductivity, Eh, and alkalinity.  
 Indicate detection limit for contaminants when analyzed, but not detected (e.g., < 1, 10, 42)  
 Include in the table all of the target analytes listed for the method in Apx. B of the *Guidelines for Sampling*, current version.  
 Results must be reported in ug/l  
 ug/l =micrograms per liter      GCL = gross contamination level

**Table B-5: Public and Private Water Supply Well and Other Receptor Information**

Revision Date: \_\_\_\_\_ Incident Number and Name: \_\_\_\_\_ Facility ID#: \_\_\_\_\_

**Water Supply Well and Other Receptor Information**

Well # / Receptor ID	Type *	Contact Name	Own/ User/ Both	Contact Phone #	Street Address for Receptor	Receptor Description and Location Details**	Latitude / Longitude** (DECIMAL DEGREES)	Source Status & Use ***	Dist. from Source (ft)	Up- or Down-Gradient (if known)

\* Ex: WSW = Water Supply Well, SWB = Surface Water Body, Resvr = Reservoir, PWS = Public Water Supply, PW = Public Well, SW = Supply Well, WPA = Wellhead Protection Areas, RA = Recharge Areas (for deep aquifers), Sub = Subsurface Structures, Con = Conduits, Other: \_\_\_\_\_

\*\* The location and/or latitude/longitude (IN DECIMAL DEGREES) must be sufficiently accurate and precise to allow easy location of wells (or recovery if buried/paved/covered-over, lost, or otherwise damaged) and for the location / replication of sampling points for any other receptor.

\*\*\* Status: A = Active or IA = Inactive ***\*and\**** Use: P = Potable or NP = Non-Potable Use. (Describe further in Additional Information for Water Supply Wells table below.)

**Additional Information for Water Supply Wells (and Other Receptors, if applicable)**

Well # \ ID (same as above)	Public Water: Connected / Available / Not Available	Well Status			Well Construction Details			
		Well Currently Used for:	Active / Inactive / Abandoned	Private / Public / Semi-Public	Construction Method and Well Type	Total Depth (ft BGS)	Casing Depth (ft BGS)	Screened Interval (x to y ft BGS)

Ft BGS = Feet below ground surface



**Table B-7: Monitoring and Remediation Well Construction Information**

Revision Date: \_\_\_\_\_ Incident Number and Name: \_\_\_\_\_ Facility ID#: \_\_\_\_\_

Well ID	Latitude/Longitude* (IN DECIMAL DEGREES)	Well Construction Details						Date Water Level Measured (mm/dd/yy)	Depth to Water from Top of Casing (ft.)	NAPL Thickness *** (ft.)	Ground-water Elevation ***(AMSL)
		Date Installed (mm/dd/yy)	Well Diameter (in.)	Casing Depth (ft. BGS)	Screened Interval (x to y ft. BGS)	Total Depth (ft. BGS)	Top of Casing Elevation ** (ft.)				

ft BGS = feet below ground surface

AMSL = Above Mean Sea Level

\* The location must be sufficiently accurate and precise to allow easy recovery of lost or damaged wells.

\*\* Reference Point for Elevation Measurements \_\_\_\_\_, Assumed Elevation: \_\_\_\_\_ ft.

\*\*\* If NAPL is present in a well, groundwater elevation is calculated by: [Top of Casing Elevation - Depth to Water] + [NAPL thickness x 0.8581]



**Table B-8A: NAPL Recovery Information**

Revision Date: \_\_\_\_\_ Incident Number and Name: \_\_\_\_\_ Facility ID#: \_\_\_\_\_

Date (m/dd/yy)	Well ID #	Product Type (gas, diesel, etc.)	NAPL Recovery Method*	Product Thickness before Recovery (feet)	Product Thickness after Recovery (feet)	Amount of Vaporized Product (gallons)	Amount of Liquid (Water + Product) (gallons)	Amount of Liquid Product (gallons)	Total Amount of Product Recovered (gallons)

(Present all calculations in an attachment)

\* Bailing, Skimming, Aggressive Fluid Vapor Recovery, Mobile Multiphase Extraction, etc,

**Table B-8B: Cumulative Volume of NAPL Recovered from Site**

Date of Recovery Event (m/dd/yy)	Total Volume Recovered from Site During Current Recovery Event (gallons)	Cumulative Total of Volume Recovered to Date from All Recovery Events (gallons)

**Table B-9: Current and Historical Groundwater Elevations and NAPL Thickness**

Revision Date: \_\_\_\_\_ Incident Number and Name: \_\_\_\_\_ Facility ID#: \_\_\_\_\_

<b>Well ID #</b>	<b>Top of Casing Elevation (AMSL)</b>	<b>Screened Interval (top of screen, bottom of screen)</b>	<b>Date Measured (mm/dd/yy)</b>	<b>Depth to Water* (Uncorrected) (feet)</b>	<b>NAPL Thickness (feet)</b>	<b>Depth to Water* (Corrected for NAPL Thickness) (feet)</b>	<b>Groundwater Surface Elevation** (AMSL)</b>

\* Depth to Water is measured from Top of Casing

\*\* If NAPL is present in a well, groundwater elevation is calculated by: [Top of Casing Elevation - Depth to Water] + [NAPL thickness x 0.8581]

**Appendix C- UST Systems: Regulated or Not Regulated under 15A NCAC 2N**

*(A partial listing of types of UST systems according to regulatory status per 15A NCAC 2N<sup>a</sup>)*

UST System Type	Regulatory Status per 15A NCAC 2N <sup>b</sup>	
	Regulated under 2N	Not Regulated under 2N
Petroleum or Petroleum Product		
Motor Fuels, Jet Fuels, Waste Oil, Kerosene, Residual or Distillate Fuel Oils, Lubricants, Petroleum Solvents	X	
Heating Oil (includes Diesel and Kerosene if used for heating)	X (if used for resale or if not used on premises where stored)	X
Farm or Residential (motor fuels)	X (if size is greater than 1,100 gal. or fuel is used for commercial purposes)	X
Hydraulic Lift Fluid		X (if used for operating purposes in equipment or machinery)
Oil-Water Separator <sup>c</sup> (not covered by CWA)	X (requirements are limited to release response and corrective actions)	
Oil-Water Separator <sup>c</sup> (covered by CWA)		X
Emergency Generator <sup>d</sup>	X	X (if containing heating oil or fuel oil invoiced as heating oil)
Varsol	X	
Automatic Transmission Fluid	X	
Mineral Spirits or "Naptha"	X	
Stoddard Solvent	X	
Gasoline-Ethanol Blend (intended for use as motor fuel)	X	
Diesel-Vegetable Oil Blend (intended for use as motor fuel)	X	
<b>Non-Petroleum</b>	<b>Regulated under 2N</b>	<b>Not Regulated under 2N</b>
Hazardous Substance <sup>e</sup>	X	
Hazardous Waste <sup>f</sup>		X
Any mixture of Petroleum or Petroleum Product containing >de minimus concentrations of Hazardous Substance or Hazardous Waste		X
Ethanol		X
Vegetable Oil		X
Propylene Glycol		X

- a This table contains only a partial list of UST systems. For a determination of whether a tank system contains petroleum or a hazardous substance or whether a tank system is regulated or non-regulated, please contact the UST Section. Substances contained in USTs which are not regulated under 15A NCAC 2N are regulated under 15A NCAC 2L (unless naturally occurring and not in exceedance of

the naturally-occurring standard) and other state rules and under federal rules and laws. Please refer to the *Guidelines*, Section 3.0, for a discussion of non-regulated USTs.

- b A tank is regulated under 2N if the capacity of the tank is greater than 110 gallons.
- c Oil-water separator tanks regulated by Sections 402 (NPDES program) or 307(b) (pretreatment program) of the Clean Water Act (CWA), as they discharge effluent to a permitted location, are not regulated by 40 CFR 280 or by Title 15A NCAC 2N (2N). Oil-water separator tanks which are not regulated by the CWA as they do not discharge effluent to a permitted location and which have a capacity of greater than 110 gallons are regulated under 40 CFR 280 and 2N. Only Subparts A and F of 40 CFR 280, adopted by reference in 2N .0201 (applicability) and 2N .0700 (release response and initial abatement action), respectively, apply.  
However, NC General Statute 143-215.94A(2) defines all oil-water separator tanks as “commercial USTs”. Therefore,
  - (1) both “regulated” and “non-regulated” oil-water separator tanks must register as “commercial USTs”;
  - (2) both “regulated” and “non-regulated” oil-water separator tanks must pay tank fees (except on military bases in NC, which are exempt from tank fees); and
  - (3) both “regulated” and “non-regulated” oil-water separator tanks, on evidence of a release, must comply with the cleanup and reporting requirements of Title 15A NCAC 2L .0400 (the risk-based rules governing petroleum UST releases), which in turn requires that the rules in 2N apply to all oil-water separators following discovery of a release. So if a release has been discovered from any oil-water separator tank which is located 10% or more below ground, 2N .0700 and 2L .0400 apply.If the oil-water separator (“regulated” or “non-regulated”) utilizes a separate UST to collect oil, that waste oil UST is considered fully regulated under all of 2N and thus, unlike oil-water separator tanks, must comply with requirements for leak detection and tank closure.
- d Release detection requirements for tanks installed after November 1, 2007, will be applied to all emergency generators tanks as of October 1, 2018.
- e Hazardous substance is defined in CERCLA section 101(14) [42 USC 103, I, Section 9601(14)] by reference to definitions in other laws. However, a list of over 600 CERCLA hazardous substances is provided in 40 CFR 302.4; the list includes acetone, allyl alcohol, 1-butanol, ethylene dibromide, ethylene glycol, formaldehyde, hexane, isobutyl alcohol, methanol, naphthalene, PCBs, phosphoric acid, sulfuric acid, tetrachloroethylene, toluene, and trichloroethylene. The list is not all inclusive.
- f The authority for USTs containing hazardous waste or mixtures of petroleum with > de minimus concentrations of hazardous waste is NC DEQ, DWM, Hazardous Waste Section.

ATSDR = Agency for Toxic Substances and Disease Registry  
CWA = Section 402 or 307(b) of the Clean Water Act.  
N/A = Not Applicable.



## **Appendix D - Collecting Soil Samples**

Detailed information on collecting and preserving soil samples can be found in the *Guidelines for Sampling*, current version. An electronic copy may be downloaded from the UST Section's web site at <http://deq.nc.gov/about/divisions/waste-management/waste-management-permit-guidance/underground-storage-tanks-section>. If proper sampling and quality assurance/quality control (QA/QC) protocols are not followed, the DWM may consider the laboratory results invalid.

Table 7, Sample Containers and Preservatives for Soil Analyses, and Table 8, Sample Containers and Preservatives for Groundwater Analyses, which are included this report, provide summaries of sample collection information.

## **Appendix E - Disposal of Contaminated Soil and Groundwater**

### **1. Disposal of Contaminated Soil**

As of January 1, 2018, 15A NCAC 2T .1502(4), defines soil as contaminated with petroleum if analytical results from samples collected during the assessment or from the stockpile show the presence of contaminants at concentrations above the soil-to-groundwater or residential MSCCs, whichever is lower. Once contaminated soil is excavated, it is considered a waste and must be properly disposed of, even if the contaminant concentrations are below applicable risk-based cleanup levels. NC General Statute 143-215.1 requires that the storage, disposal and/or *ex situ* treatment of contaminated soil be permitted by the Department of Environment and Natural Resources. If the responsible party intends that excavated petroleum contaminated soil is to be treated on site, they must apply to the DWM for a soil permit. If soil is to be hauled offsite for treatment/disposal, then disposal manifests are required. Comprehensive guidance on the disposal of contaminated soil is presented in the *Guidelines for Ex Situ Petroleum Contaminated Soil Remediation*, current version.

Soil excavations must be filled with clean compacted fill that is similar to the native soil removed from the excavation. If gravel or some other permeable material is to be used, then a low-permeability fill material must be used to cap the excavation. Excavations cannot be back-filled with contaminated soil. Segregated overburden, benching, or other marginal excavated soils that, when properly screened, are not indicative of 'petroleum-contaminated soils' as defined in 15A NCAC 02T .1504, and are not hazardous wastes as defined in 15A NCAC 13A, may be re-used as fill in the excavation from which that soil was removed.

#### **1.A Temporary Storage or Limited Land Application of Petroleum Contaminated Soil**

On-site temporary storage must be for a period less than 45 days. Authorization for **off-site** temporary storage requires the approval (through issuance of a "Certificate of Approval for Disposal" (UST-71)) of the appropriate regional office. Approval will not be given by the Department, unless:

- a) There is a health-based emergency, fire or explosion hazard, or
- b) The responsible party has an approved soil permit prior to excavating the soil.

Unauthorized storage of soil or storage in excess of 45 days may be considered a violation of GS 143-215.1.

For temporary storage, contaminated soil must be placed on 10 mils thick plastic sheeting and bermed. The contaminated soil must be covered by 10 mils-thick (at a minimum) plastic sheeting to prevent runoff and the generation of leachate. Any surface water runoff and/or leachate from the contaminated soil storage area must be collected and properly disposed to prevent leachate migration.

Alternatively, under 15A NCAC 2T, subject to approval (through issuance of a "Certificate of Approval for Disposal" (UST-71)) by the regional office, the land application of less than or equal to 50 cubic yards of petroleum contaminated soils or 50 to 100 cubic yards of petroleum contaminated soils at a minimum rate application is deemed permitted in accordance with NC General Statute 143-215.1(b), and no individual Division permit is required.

**NOTE:** *Applications for soil permits for petroleum contaminated soil originating from UST releases should be submitted to the UST Section regional office.*

### **1.B Disposal of Drill Cuttings and Mud**

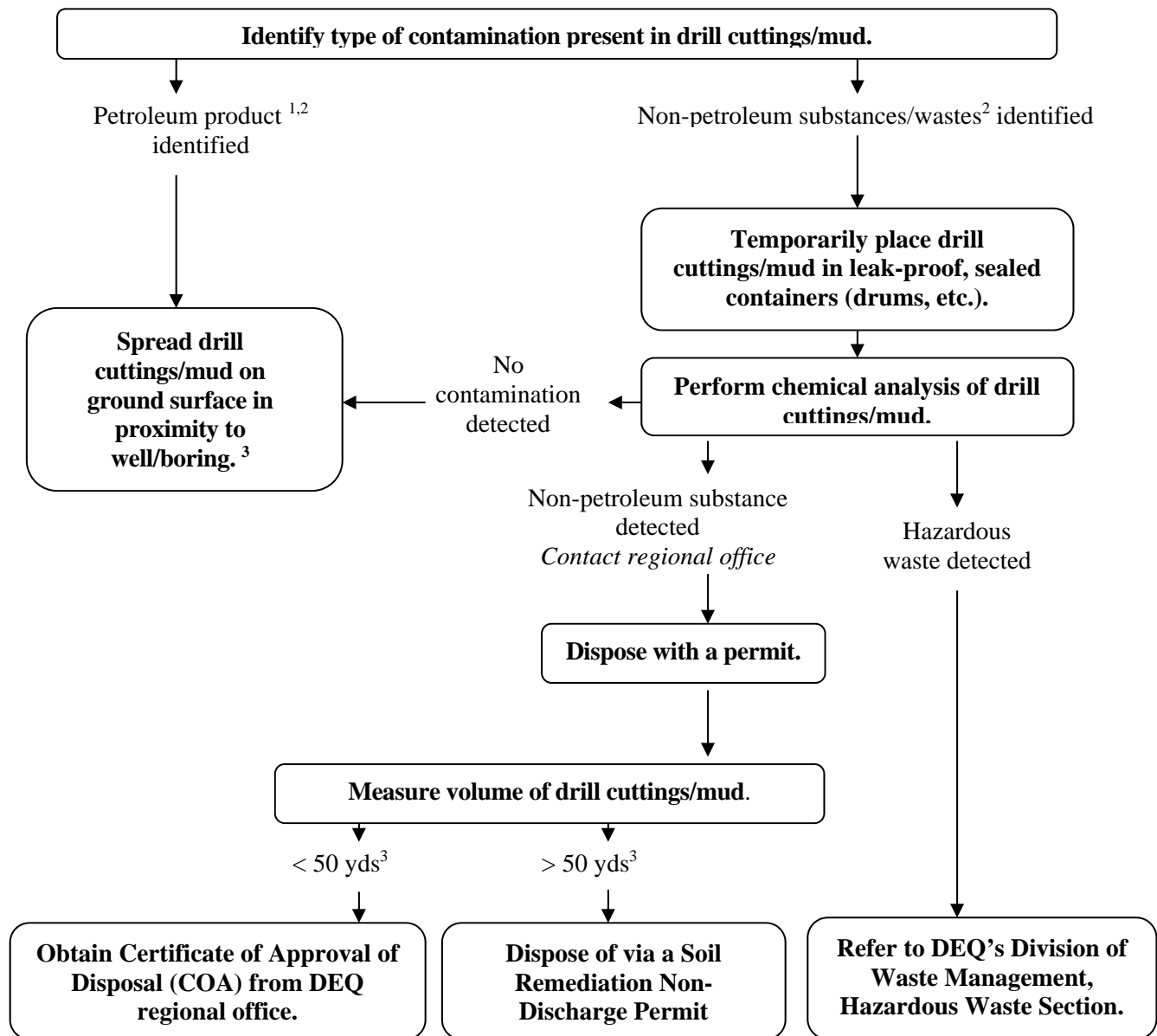
Drill cuttings and mud produced during field environmental investigation activities such as borehole and well construction are deemed permitted under 15A NCAC 2T .0113 [Waste Not Discharged to Surface Waters - Permitting by Regulation], in accordance with NC General Statute 143-215.1(b). Thus, no individual or general permit must be issued by DWM for the construction or operation of disposal systems for drill cuttings or mud, provided that the system does not result in violations of groundwater or surface water standards, there is no direct discharge to surface waters, and all criteria required for the specific system are met.

However, if the drill cuttings/mud has been contaminated by hazardous waste constituents, the DWM, Hazardous Waste Section) must be contacted, at (919) 707-8200, to determine the regulatory status of the contaminated material.

The flow diagram in Figure E-1 presents detailed guidance for the proper disposal of drill cuttings and mud.



**Figure E-1  
Disposal of Drill Cuttings and Mud  
Resulting from Environmental Investigations**



<sup>1</sup> “Petroleum product” means all petroleum products as defined by G.S. 143-215.94A(7) and includes motor gasoline, aviation gasoline, gasohol, jet fuels, kerosene, diesel fuel, fuel oils (#1-#6), and motor oils (new and used).

<sup>2</sup> If the soil contaminants include both petroleum products and non-petroleum products/hazardous substances, then the disposal guidance for non-petroleum products/hazardous substances should be followed.

<sup>3</sup> If the well/boring is located in a paved area (asphalt, concrete, etc.); spread drill cuttings/mud on the nearest open ground surface within site property boundaries.

## 2. Disposal of Groundwater

If groundwater is withdrawn from the ground, it must be disposed of according to 15A NCAC 2T and NCGS 143-215.1. Contaminated or treated groundwater is considered wastewater and must be disposed of with the appropriate permits, which are issued by NCDEQ, DWR. However, some types of waste groundwater (purge water, well water from development/construction, condensate/water withdrawn by vapor extraction systems, or water withdrawn during aquifer tests) are deemed permitted.

### 2.A. Remediation Treatment System Water

Remediation treatment system water (including any waters produced that have contact with any contaminated materials) is considered a wastewater and must be disposed of or treated under a permit. The permit may be an on-site or off-site permit.

The kinds of state permits required for the most commonly used types of groundwater remediation methods are described in the *Guidelines for Assessment and Corrective Action* (current version), Appendix C, Required Permits. (Descriptions of the major types of groundwater treatment methods and the permits and/or authorizations required for each treatment method are presented in Appendix C, Table C-1.)

The disposal by pumping and hauling of condensate and groundwater drawn from the ground by the operation of vapor extraction systems is deemed permitted by regulation under 15A NCAC 2T .0203, Disposal of Industrial Wastewater, as discussed in Section 2.C below.

### 2.B. Purge Water and Well Water from Construction Activities

Disposal of purge water from groundwater monitoring wells and of wastewater from the development of wells or from other construction activities including directional boring is deemed permitted under 15A NCAC 2T .0113 [Waste Not Discharged to Surface Waters - Permitting by Regulation], in accordance with NC General Statute 143-215.1(b). Thus, no individual or general permit must be issued by NC DEQ, DWR, for the construction or operation of disposal systems for purge water or well construction water, provided that the system does not result in violations of groundwater or surface water standards, there is no direct discharge to surface waters, and all criteria required for the specific system are met. The water may be discharged onto the ground in proximity to the well in a manner that will preclude runoff if the aquifer is contaminated with equal or higher concentrations than the wastewater; if the aquifer is less contaminated than the wastewater, then the waste water must be containerized and transported to permissible disposal facility.

However, if the purged well water may be contaminated by hazardous waste constituents, the contaminated water should be stored on the site in sealed containers, analyzed to confirm that hazardous waste constituents exceed the groundwater quality standards in 15A NCAC 2L .0202, and, if exceedances are confirmed, the DWM, Hazardous Waste Section, contacted at (919)-707-8200 to determine the regulatory status of the contaminated material and the protocol for disposal.

The flow diagram in Figure E-2, Disposal of Groundwater, presents detailed guidance for the proper disposal of groundwater from well purging or well construction.

## 2.C. Aquifer Test Water and Vapor Extraction System Water

Disposal by pumping and hauling of groundwater withdrawn from the ground during aquifer pump tests and condensate/water withdrawn by vapor extraction systems, which may be considered industrial wastewater, is deemed permitted under 15A NCAC 2T .0203 [Waste Not Discharged to Surface Waters - Wastewater Pump and Haul Systems - Permitting by Regulation], in accordance with NC General Statute 143-215.1(b). Thus, no individual permit must be issued by NC DEQ, DWR, for the operation of “pump and haul” disposal systems for aquifer test water and vapor extraction water, provided that:

- a. the system does not result in violations of groundwater or surface water standards,
- b. that there is no direct discharge to surface waters,
- c. that all criteria required for the specific system are met,
- d. that the appropriate regional office of the DWR is notified, and
- e. that the other criteria of Paragraph .0203 are met.

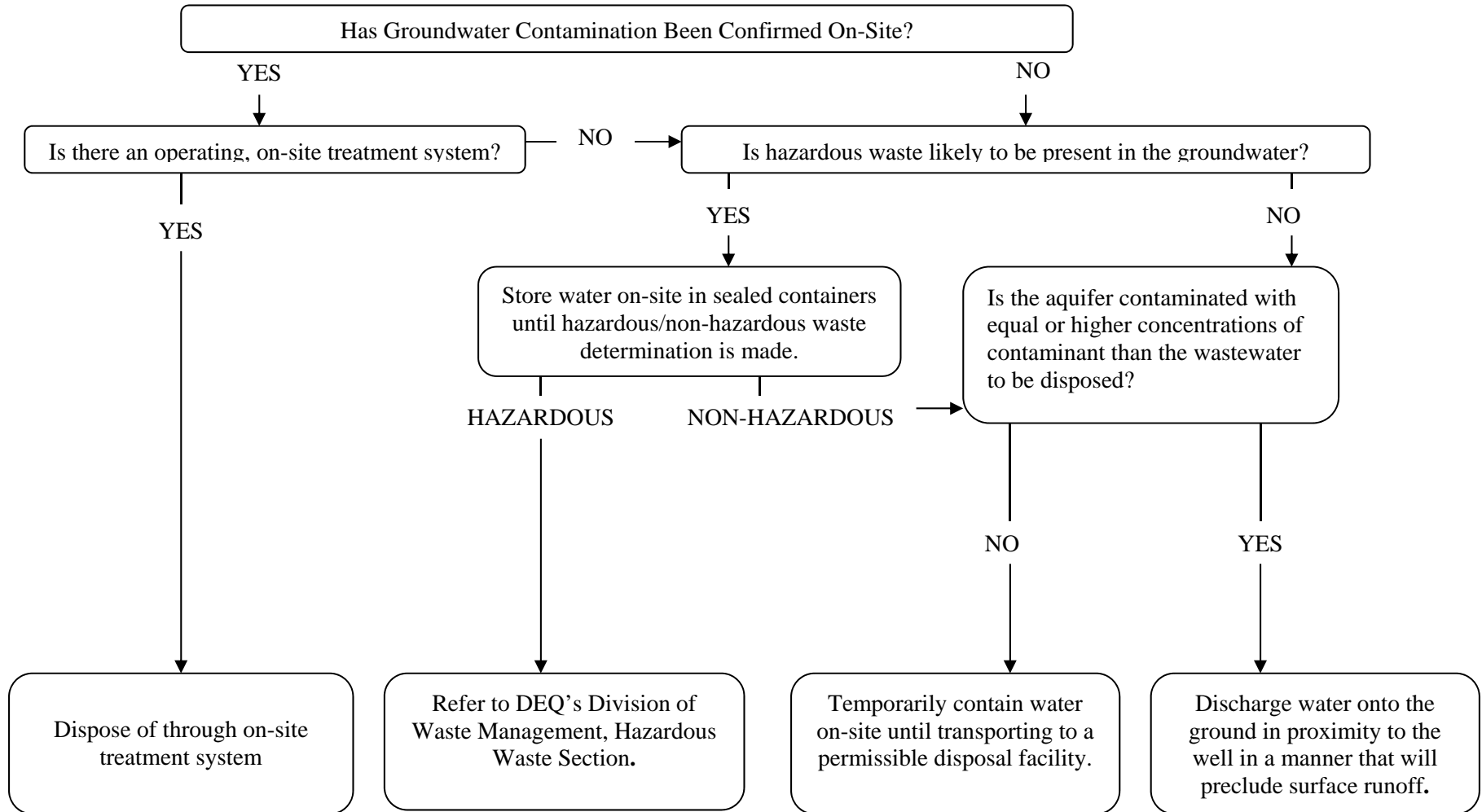
This wastewater must be containerized and transported to permissible disposal facility.

However, if any recovered water may be contaminated by hazardous waste constituents, the contaminated water should be stored on the site in sealed containers, analyzed to confirm that hazardous waste constituents exceed the groundwater quality standards in 15A NCAC 2L .0202. If any exceedances are confirmed, the DWM, Hazardous Waste Section, must be contacted at (919)-707-8200 to determine the regulatory status of the contaminated material and the protocol for disposal.

## 2.D. Tank Pit or Excavation Water

If a tank pit or an excavation at a contaminated site requires de-watering, the contaminated water must be properly treated to meet discharge levels allowed in a POTW or NPDES permit or must be properly disposed of at a permitted facility.

**Figure E-2**  
**Disposal of Groundwater**  
 Permitted and Deemed-Permitted Wastewater Disposal Activities  
*(Exclusive of Aquifer Test Water and Vapor Extraction System Water)*



## **Appendix F - Guidance Pertaining To Releases from Contaminant Sources Other than USTs**

### **1. Petroleum ASTs and Petroleum Surface spills:**

The UST Section of the Division of Waste Management (DWM) must be contacted if a release from a petroleum above ground storage tank or a petroleum surface spill has been detected. (See the *Guidelines for Initial Response and Abatement, Assessment, and Corrective action for Non-UST Releases of Petroleum.*)

NCDEQ Division of Waste Management, UST Section  
1637 Mail Service Center  
Raleigh, NC 27699-1637  
The telephone number is (919) 707-8171.

### **2. Contamination Related to Naturally Occurring Conditions, Permitted Facilities, and Agricultural Activities:**

The Division of Water Resources (DWR) must be contacted for response and management of:

- Releases associated wastewater discharge or non-discharge facilities subject to permitting under *Control of sources of water pollution* (G.S. 143-215.1);
- Releases associated well construction activities subject to the *NC Well Construction Act* (G.S. 87-88);
- Releases associated agricultural operations including application of agricultural chemicals, but not including spills or disposal of such chemicals;
- Naturally occurring contamination;
- Any spill that seems likely to immediately reach surface waters; and
- Contamination complaints associated with water supply wells unless it is clear the complaint is directly related to a source for which DWM is responsible.

NCDEQ Division of Water Resources  
1617 Mail Service Center  
Raleigh, NC 27699-1617  
The telephone number is (919) 707-9000.

### **3. Hazardous Waste:**

The Division of Waste Management, Hazardous Waste Section must be contacted if a release from a hazardous waste transport, storage or disposal facility, including a facility with hazardous waste USTs, has been detected.

NCDEQ Division of Waste Management, Hazardous Waste Section  
1646 Mail Service Center  
Raleigh, NC 27699-1646  
The telephone number is (919) 707-8200.

**4. Superfund:**

The Division of Waste Management, Superfund Section must be contacted for reporting requirements of Superfund (CERCLA) and inactive waste site regulations.

NCDEQ Division of Waste Management, Superfund Section  
1646 Mail Service Center  
Raleigh, NC 27699-1646  
The telephone number is (919) 707-8200.

**5. Pesticide Contamination:**

The North Carolina Department of Agriculture & Consumer Services (NCDA&CS), Structural Pest Control and Pesticide Division, Pesticide Section, must be contacted when pesticide contamination of soil or groundwater at any concentration is known or suspected. If soil or groundwater contamination is suspected, but it is unknown whether the contaminant is a pesticide, the Division of Water Resources (DWR, See #2 above) must also be notified.

NCDA&CS, Structural Pest Control and Pesticide Division, Pesticides Section  
1090 Mail Service Center,  
Raleigh, NC 27699-1090  
The telephone number is (919) 733-4100

**6. Dry Cleaning Facilities:**

The DWM, Superfund Section must be contacted when contamination of soil or groundwater is known or suspected to be caused by dry cleaning facilities. The appropriate regional office must also be notified. (See map, Figure 6)

NCDEQ DWM, Superfund Section, Special Remediation Branch  
1646 Mail Service Center  
Raleigh, NC 27699-1646  
The telephone number is (919) 707-8200.

**7. Non-petroleum Releases not described by Above Items:**

The DWM, Superfund Section, Inactive Hazardous Sites Branch, must be contacted for non-petroleum releases not described by items 1-6. The appropriate regional office must also be contacted. (See map, Figure 6).

NCDEQ Division of Waste Management, Superfund Section  
1646 Mail Service Center  
Raleigh, NC 27699-1646  
The telephone number is (919) 707-8200.