UNDERGROUND STORAGE TANK (UST) / LEAKING UNDERGROUND STORAGE TANK (LUST)

QUALITY ASSURANCE PROJECT PLAN (QAPP)

Louisiana Department of Environmental Quality
Office of Environmental Assessment
USTD Division

Revision 13

A PROJECT MANANGEMENT

A.2 TITLE AND APPROVAL PAGE

UST / LUST Quality Assurance Project Plan

Louisiana Department of Environmental Quality
Office of Environmental Assessment (OEA)
Underground Storage Tank Division
P.O. Box 4312
Baton Rouge, LA 70821-4312

Quality Assurance Project Plan for Underground Storage Tanks / Leaking Underground Storage Tanks
concurrence:
Revision 13

Name: **Chris Means**

Title: Geologist Supervisor– UST Group 1- Underground Storage Tank Division
Office of Environmental Assessment

Signature: Christopher Means Date: 5/2/2025

Name: **Erin Folse**

Title: Project Quality Assurance Representative – Underground Storage Tank Division
Office of Environmental Assessment

Signature: Erin R. Folse Date: 5/1/2025

U.S. Environmental Protection Agency Region 6 (EPA)

Name: **Tameka McCaskill**

Title: LUST Project Officer

Signature: Tameka McCaskill Date: 6/3/25

Document Review and Revision Record
Note: Actions older than 5 yrs. may be removed from this record

Approval Date	Revision No.	Record of Activity
8/5/2014	3	Changed Administrator from Thomas F. Harris to Gary Fulton throughout the document.
8/10/2015	4	Changed responsibilities of Technical Team Leaders in Section A.4.1.5. Changed responsibilities to Quality Assurance Representative in Section A.4.2.3 and to Quality Assurance Coordinator in Section A.4.2.4. Changed number of UST's located nationwide in Sections A.5.1 and A.5.2. Changed number of UST's and facilities located in Louisiana in Sections A.6.1 & A.6.2. Various other minor corrections throughout the document. Changed Approval page from Gary Fulton USTRD Administrator to Kyle Blanchard ES Manager UST Group 2.
9/7/2016	5	Changed number of UST's located nationwide in Sections A.5.1 and A.5.2. Changed number of UST's and facilities located in Louisiana in Sections A.6.1 & A.6.2. Various other minor corrections throughout the document
8/18/2017	6	Changed number of UST's located nationwide in Sections A.5.1 and A.5.2. Changed number of UST's and facilities located in Louisiana in Sections A.6.1 & A.6.2. Various other minor corrections throughout the document
8/16/2018	7	Changed Project Quality Assurance Coordinator from Carla Morin to Clinton Twilley. Updated Regional Map (Figure 3), LUST Project Organization (Figure 4), and UST Remediation Process (Figure 5).
7/15/2019	8	Minor edits and Updated Organizational chart.
9/28/2021	9	Minor Edits and added in Section A.7.1 Inspectors use a standardized CEI tablet application which is submitted directly to the Environmental Scientist Supervisor.
7/26/2022	10	Minor edits
05/09/2023	11	Replaced Organizational chart to reflect Reorganizational changes, Updated references to Reorganizational changes.
8/20/2024	12	Minor edits as well as Replaced Organizational chart to reflect reorganizational changes, Updated references to reorganizational changes.
	13	Minor edits to a few staff changes and update to some UST statistics

A.4 TABLE OF CONTENTS

A.5 DISTRIBUTION LIST

Louisiana Department of Environmental Quality

The official version of the UST QAPP is posted on the LDEQ Intranet. The Project Quality Assurance Coordinator will notify the following LDEQ personnel via interoffice mail when the latest version is posted.

Office of Environmental Assessment (OEA)
- Executive Section
  - Assistant Secretary

Underground Storage Tank Division (USTD)
- Administrator
- Environmental Scientist Manager
- Environmental Scientist Supervisors
- Geologist Supervisors
- Quality Assurance Representative
- Environmental Scientists and Staff
- Geologist Staff

Office of Management and Finance (OMF)
- Information Services Administrative
- Quality Assurance Manager

Financial Services Division (FSD)
- UST Trust Fund Environmental Scientist Manager

U.S. EPA Region 6 Personnel

LUST Project Officer (receives an original copy)

Response Action Contractors (RACs)

A copy of the QAPP will be supplied to each RAC listed on the current RAC List.

Environmental Consultants

An Environmental Consultant carrying out a response action at a LUST site will be provided a copy of the LUST QAPP.

A.6 PROJECT/TASK ORGANIZATION

The Louisiana Department of Environmental Quality (LDEQ), Office of Environmental Assessment, Underground Storage Tank Division (OEA/USTD) has been assigned the primary responsibility to ensure that all underground storage tanks are operated in accordance with state and federal Underground Storage Tank rules and regulations. The Underground Storage Tank Division organization consists of an Administrator, Environmental Scientist Manager, Environmental Scientist Supervisors, Geologist Supervisors, and Technical Team Leaders. A USTD Division Personnel Organization chart can be found in Figure 1. A brief description of the responsibilities of each position follows.

A.6.1 UST PROGRAM

A.6.1.1 U.S. EPA UST Project Officer, Region VI – Tameka McCaskill

The EPA Region VI UST Project Officer is responsible for coordination of EPA Region VI administrative issues, including processing the UST Grant Work Plan and approving the LDEQ UST Program Quality Assurance Project Plan (QAPP).

A.6.1.2 USTD Administrator – Gary A. Fulton, Jr.

The USTD Administrator is responsible for directing the planning and implementation of the LDEQ UST Program within the USTD. The UST Project Organization chart can be found in Figure 2.

A.6.1.3 Project QA Coordinator – Adrie De Waal

The Project QA Coordinator is responsible for maintaining the official, approved UST QAPP. The project QA coordinator is also responsible for the following:

- Revise and update the UST QAPP to reflect current LDEQ practices
- Send the UST QAPP to EPA for approval
- Sending updated QAPP for posting on the LDEQ intranet
- Notify and provide updated copies of UST QAPP to appropriate personnel

- Conduct periodic assessments and updates of the QAPP

A.6.1.4 USTD Geologist Supervisors, Environmental Scientist Manager, and USTD Environmental Scientist Supervisors

USTD Geologist Supervisors, Environmental Scientist Manager, and USTD Environmental Scientist Supervisors are responsible for overall performance of the UST activities within their assigned geographic regions (Figure 3). The responsibilities include the following:

- Balance the workload between regions and staff, and provide team leader assignments
- Ensure consistent implementation of UST practices among regions
- Oversee the workload and progress of assignments and provide assistance to Technical Team Leaders
- Review and approve work completed by the Technical Team Leaders
- Ensure proper hand-offs are made and received from other departmental processes and divisions

A.6.1.5 Technical Team Leaders

The Technical Team Leaders consist of Environmental Scientists and Geologists from USTD. The Technical Team Leaders are responsible for the following:

- Perform compliance evaluation inspections on UST systems
- Investigate UST-related complaints and reports of releases, spills, and suspected releases
- Perform UST closure oversight inspections and review and approve UST closure packets
- Review and approve UST installation and repair notifications and perform UST installation and repair oversight inspections
- Review laboratory results submitted by the LDEQ UST Certified Worker/Environmental Consultant

- Review UST inspections conducted by contractors and the EPA
- Issue enforcement letters for inspections that have areas of concern
- Track and follow-up on all enforcement letters issued as a result of DEQ UST inspections and DEQ contractor inspections

A.6.2 LUST PROGRAM

A.6.2.1 U.S. EPA UST Project Officer, Region VI – Tameka McCaskill

The EPA Region VI LUST Project Officer is responsible for coordination of EPA Region VI and LDEQ Leaking Underground Storage Tank (LUST) Program administrative issues, including processing the LUST Grant Work Plan and approving the LDEQ LUST Program Quality Assurance Project Plan (QAPP).

A.6.2.2 Underground Storage Tank Division (USTD) Administrator – Gary A. Fulton, Jr.

The USTD Administrator is responsible for overall implementation of the LUST Program and associated remediation process activities as they relate to assessment and corrective actions within USTD. The LUST Project Organization chart can be found in Figure 4.

A.6.2.3 USTD Quality Assurance Representative - Erin Folse

The Quality Assurance Representative (QAR) is responsible for all aspects and functions of the LDEQ LUST Program QA/QC requirements including the following:

- Provide input to the department Quality Management Plan (QMP) and review of QAPP documents
- Orientation of the project staff to the quality assurance needs and requirements of the LUST program
- Send the LUST QAPP to EPA for approval
- Posting the update QAPP on LDEQ's intranet

A.6.2.4 Project QA Coordinator – Adrie De Waal

The Project QA Coordinator is responsible for maintaining the official, approved LUST QAPP. Also responsible for the following:

- Revise and update the LUST QAPP to reflect current LDEQ practices
- Sending updated QAPP for posting on LDEQ's intranet
- Notify and provide updated copies of LUST QAPP to appropriate personnel
- Conduct periodic assessments

A.6.2.5 Operations Group - USTD Administrator, and USTD Geologist Supervisors

The Operations Group is responsible for overall performance of the LUST program within the Remediation process. These tasks include:

- Site classification and release confirmation
- Balance the workload between regions and staff. Provide team leader assignments
- Ensure consistent implementation of remediation processes among regions in accordance with standard operating procedures
- Oversee the workload and progress of assignments and assist Technical Team Leaders
- Ensure proper hand-offs are made and received from other departmental processes and divisions

A.6.2.6 Technical Team Leaders

The Technical Team Leaders consist of Environmental Scientists and Geologists from USTD. Technical Team Leaders are responsible for managing the activities of LUST sites at the facility level. These tasks include:

- Provide oversight for assessment and remediation activities at LUST sites to ensure that they are completed in accordance with approved standard procedures, work plans, and quality assurance requirements

- Review and approve site investigation and monitoring reports
- Maintain and calibrate all field equipment. Additionally, experienced personnel shall provide operator training for field equipment as needed for Technical Team Leaders who require training either due to lack of experience, updates, or refreshers.
- Maintain proper documentation of field sampling activities, and ensure that proper labeling, handling, storage and shipping requirements are met
- Comply with all appropriate chain-of-custody procedures
- Notify the appropriate laboratory if circumstances exist that may adversely affect the quality of data derived from LUST site field activities
- Ensure that release confirmation, site investigation, corrective action, site monitoring, and release closure sub-processes (Figure 5) are performed in accordance with the remediation process standard operating procedures (SOPs) (Reference 1)
- Assist the QARs to create and revise the QAPP and relevant SOPs

A.6.2.7 Response Action Contractors/Environmental Consultants

A response action is any technical services activity or specialized services activity including, but not limited to, assessment, planning, design, engineering, construction, operation of a recovery system, or ancillary services that is carried out in response to any discharge, release or threatened release of motor fuels into the groundwater or subsurface soils. (See Section A5 for an explanation of the Trust Fund.) When emergency conditions exist as a result of a release from a motor fuels UST, this shall include any person performing department-approved emergency response actions during the first 72 hours following the release.

Response actions may be performed by Response Action Contractors (RACs) or Environmental Consultants (ECs). It is required to use a Response Action Contractor (RAC) to complete response actions for LUST sites in Louisiana that are seeking reimbursement from the Louisiana Motor Fuel Underground Storage Tank Trust Dedicated Fund Account (here in after referred to as the “Trust Fund”). A RAC is a person who has been

approved by the department to carry out any response action at a Trust Fund eligible site, excluding a person retained or hired by the RAC to provide services relating to a response action. Sites that are not Trust Fund eligible, those that qualify for federal reimbursement, or sites funded by a private entity are not required to use a RAC to conduct response actions. Instead they may use an Environmental Consultant (EC) to perform response actions. An EC is a person other than a RAC who carries out response action(s) at a non-Trust Fund eligible LUST sites.

RACs and ECs are responsible for performing remediation activities in accordance with the following guidance and regulations:

- LDEQ Risk Evaluation/Corrective Action Program 2003 (RECAP) (Reference 2)
- Guidance Manual for Environmental Boreholes and Monitoring Systems, November 2021, (Reference 3)
- La. Revised Statutes 37:711 (Professional Geoscientist)
- Louisiana Administrative Code (LAC) 46:LXII (Professional and Occupational Standards: Professional Geoscientist)

In this document, the term "RAC/EC" will be used to indicate those persons who perform response actions on Trust Fund eligible sites (RAC) and/or Trust Fund non-eligible sites (EC).

A.6.2.8 Laboratories

Laboratories performing analyses on samples from LUST sites must use department-approved methods. Commercial laboratories must participate in LDEQ's Louisiana Environmental Laboratory Accreditation Program (LELAP) (Reference 4).

Figure 1 – UST Division Personnel Organization

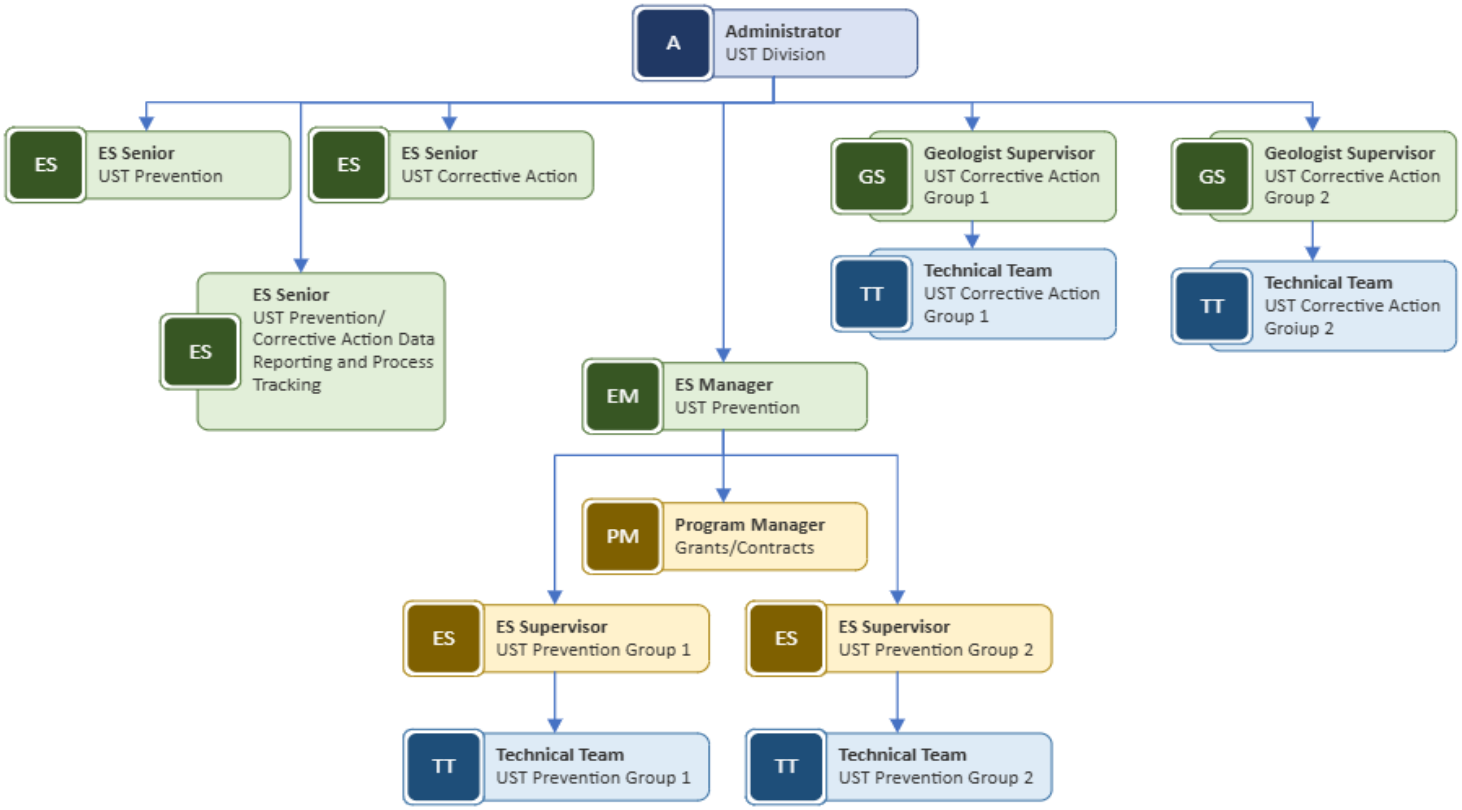


Figure 2 UST Project Organization

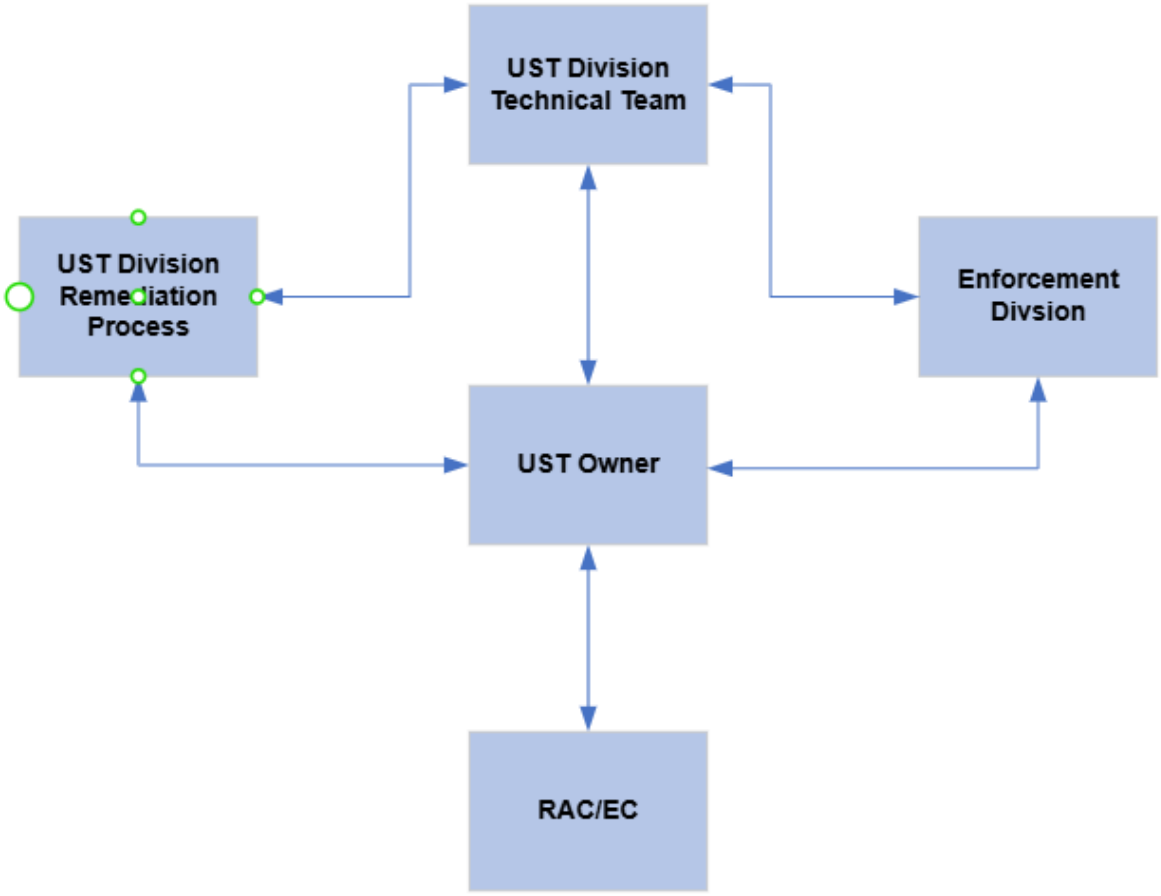


Figure 3 Regional Map

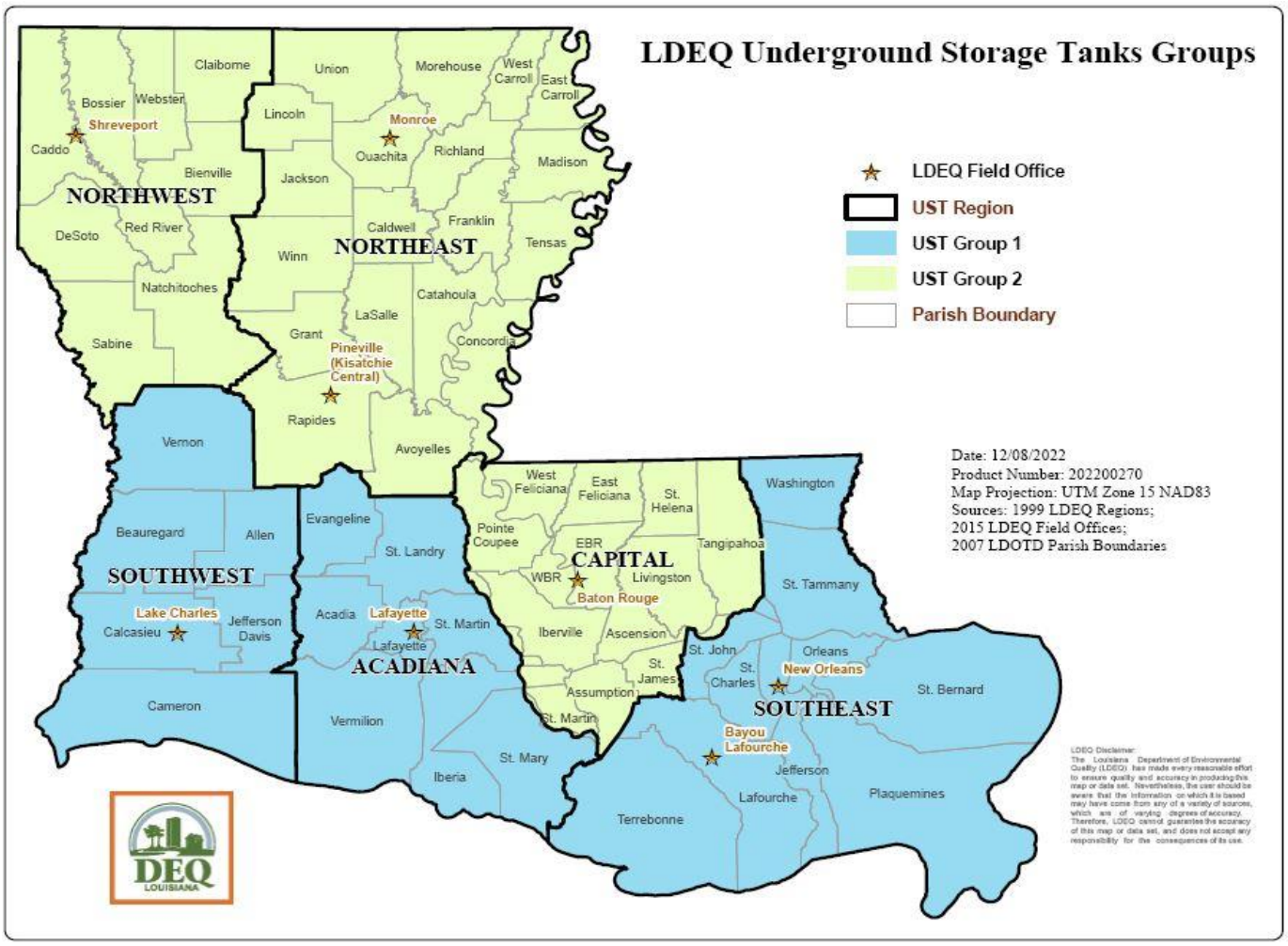


Figure 4 LUST Project Organization

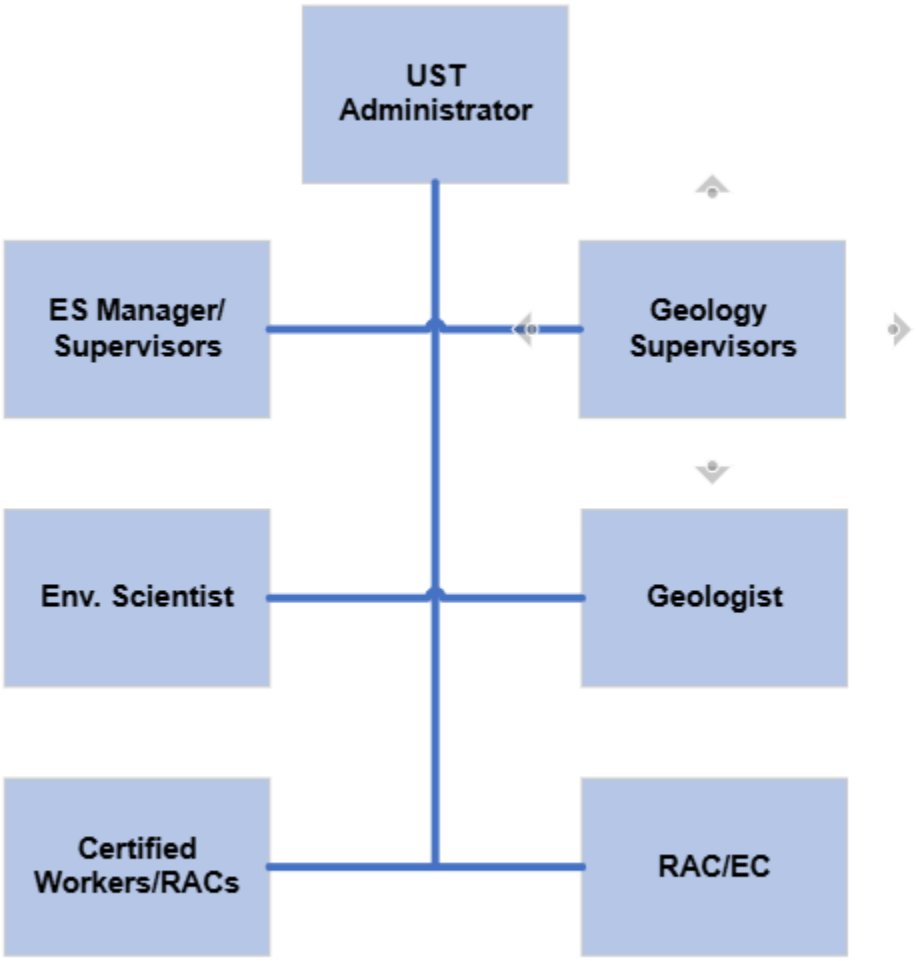
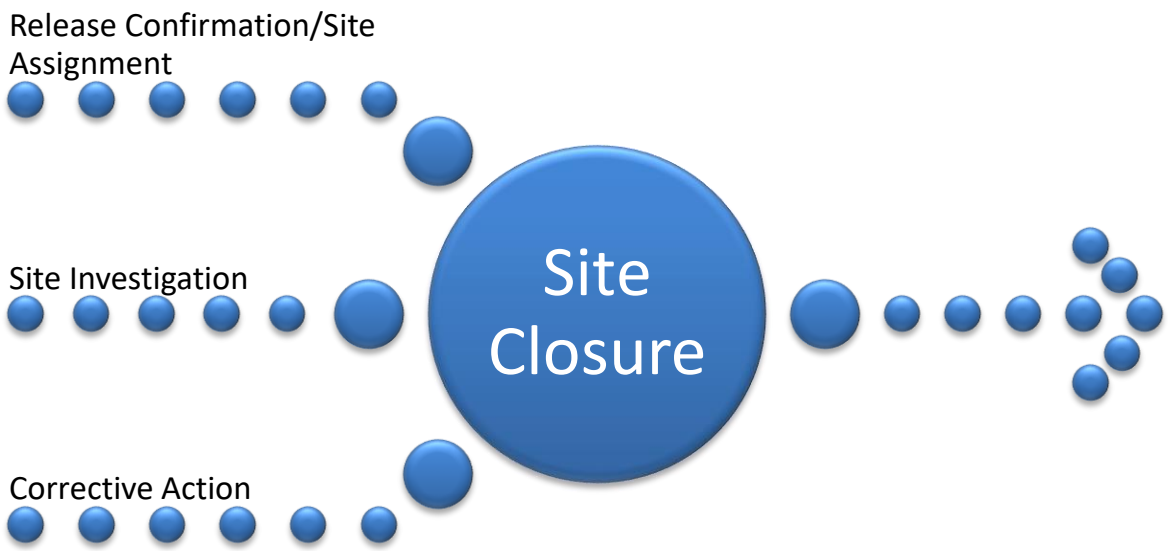


Figure 5 UST Remediation Process



A.7 PROBLEM DEFINITION/BACKGROUND

A.7.1 UST PROGRAM / PROBLEM DEFINITION/BACKGROUND

The U.S. EPA estimates that there are over 542,000 underground storage tanks (USTs) located nationwide that contain petroleum or hazardous substances. USTs have been found to leak for a number of reasons such as corrosion of the system, faulty installation, inadequate or improper maintenance, etc. These leaking UST systems can release their contents into the soil and/or groundwater, and subsequently pose a threat to human health or the environment.

In an effort to protect human health and the environment from the potential hazards of waste disposal, Congress developed the Resource Conservation and Recovery Act (RCRA) of 1976. Subtitle I of RCRA regulates USTs. In 1984 Subtitle I was amended to establish a comprehensive program for the regulation of USTs. At that time, states had to either comply with EPA's regulations or to develop an EPA approved program in lieu of the federal program.

In 2005 Congress enacted the Energy Policy Act of 2005 (Reference 5). Title XV, Subtitle B of this act, known as the UST Compliance Act of 2005, contains amendments to Subtitle I of the Solid Waste Disposal Act (SWDA), the original legislation that created the UST program. Since that time, the USTD has worked to develop and implement procedures so that Louisiana will meet or exceed the milestone requirements set forth in this act.

Louisiana developed a UST program in response to the requirements referenced above and to meet the needs of its citizens. The program received EPA approval in 1992, at which time Louisiana retained the primary responsibility for enforcing the UST program in Louisiana. The UST Quality Assurance Project Plan (QAPP), developed in accordance with EPA regulations (40 CFR Part 31), was created in an effort to provide guidance for all persons involved in the project's organization. The UST / LUST QAPP's have been combined in an effort to make the annual review process more efficient.

A.7.2 LUST PROGRAM - PROBLEM DEFINITION/BACKGROUND

In order to help UST owners meet the financial responsibility requirements of Subtitle I of RCRA, the Louisiana Legislature enacted Act 1767 on July 15, 1988. Act 1767 established the Trust Fund. The Trust Fund was designed to reimburse costs incurred during the rehabilitation and remediation of affected soils, groundwater, and inland

surface waters at eligible motor fuel contaminated UST sites, provided these costs are necessary and appropriate. It was initially financed through a per-tank fee of $100, but the fee structure changed with the adoption of Act 1014 on July 26, 1990. At that time the fee structure changed from a per tank rate to a per gallon delivered rate. On June 16, 1995, Act 336 of the 1995 Regular Session of the Legislature passed. This act increased the fee from $27.00 to $72.00 for each delivery of 9,000 gallons of fuel ($0.008 per gallon) delivered to a UST. This fee is collected by bulk operators and remitted to the Louisiana DEQ on a monthly basis.

The Trust Fund only reimburses allowed costs, which return the site to the use and occupancy in effect at the time the release occurred. The staff involved in processing the reimbursement claims ensure that the integrity of the Trust Fund is not jeopardized by the incorporation of inappropriate and/or excessive expenditures and that claims are processed in a reasonable time.

Through a cooperative agreement with the EPA, LDEQ is responsible for the administration of these funds and for the enactment of LUST program activities in Louisiana. In accordance with EPA regulations (40 CFR Part 31), a quality assurance system must be developed if the program involves environmental measurements and/or data generation. The system must include policies, procedures, specifications, standards, and documentation sufficient to produce data of adequate quality.

The Quality Assurance Project Plan (QAPP), developed pursuant to EPA Requirements for QAPPs, EPA QA/R-5; March 2001 for the LDEQ's LUST program, was created in an effort to provide guidance for LDEQ Technical Team Leaders and RAC/EC who perform the critical procedures noted above. The UST / LUST QAPP's have been combined in an effort to make the annual review process more efficient.

A.8 PROJECT/TASK DESCRIPTION

A.8.1 UST PROGRAM / PROJECT/TASK DESCRIPTION

The OEA/LDEQ is responsible for ensuring that all underground storage tanks are maintained and operated in compliance with all applicable federal and state rules and regulations. Currently, there are approximately 9,990 USTs located at UST facilities throughout Louisiana that have been registered with the LDEQ as of March 2025. Each of these 3797 facilities is unique depending on its components, the type of products stored, the local hydro-geologic conditions and the history of releases. It is the mission of the USTD to ensure that all underground storage tanks are in compliance as mandated by federal and state regulations, and to ensure that all regulated underground storage tanks that are not active are properly closed.

One of the tasks for the USTD is to perform compliance evaluation inspections (CEIs) at each UST facility throughout the state. CEIs are required to be conducted at least every three years. Compliance evaluation inspections are conducted on-site by a

technical team leader, an LDEQ contractor, EPA inspectors, or an EPA contractor, and include a visual inspection of the accessible UST system equipment and a review of the applicable records. The inspector is responsible for reviewing the facility's records. These include but are not limited to:

- The most current registration forms
- Current UST Registration Certificate
- Release detection records
- Corrosion protection records
- Tank, line, leak detector test records
- UST system repair records
- Financial assurance records
- Operator training certificates
- Walkthrough inspection records
- Sumps used for interstitial monitoring and, spill equipment test records, and overfill equipment inspection records
- Release detection equipment operation and maintenance test records

Findings from both the visual inspection and the record review are documented in a report that is added to the facility's file. If areas of concern are noted in the report, the UST Division staff will initiate the required corrective action for the facility. Corrective action can consist of any combination of the following: Notice of Corrected Deficiency letter, Notice of Deficiency letter, Notice of Potential Delivery Prohibition letter, automatic delivery prohibition, or referral to Enforcement Division for escalated action.

Compliance evaluation inspection reports submitted by LDEQ contractors or EPA contractors are reviewed by a designated technical team leader to verify areas of concern noted in the report. Deficient reports are returned to the contractor for correction.

In addition to compliance inspections, the Technical Team Leaders observe and review UST closures to ensure that UST closures comply with state rules and regulations. UST closures must be performed in accordance with LDEQ's Underground Storage Tank Closure/Change in Service Guidance Document (Reference 6).

UST owners or operators must officially notify the appropriate regional office at least 30 days prior to tank closure. The notification form is reviewed for completeness, and subsequently approved by the technical team leader. Once approved by the USTD staff, the UST closure process may be completed. The UST closure process must be completed by a LDEQ certified UST closure worker. To determine if the tank/tank system has leaked, a certain number of soil samples are collected from specified locations during the tank closure (Reference 6). These samples are sent to a LDEQ accredited laboratory for analysis.

UST owners are required to submit the analytical results along with other closure information to the appropriate regional office within 60 days of tank closure. Once received, the closure assessment forms and reports are reviewed by the technical team leaders. Technical team leaders evaluate all sample results in accordance with the LDEQ "Risk Evaluation/Corrective Action Program" (RECAP) (Reference 2). If sample results exceed the appropriate soil screening levels, then these sites are handled by the UST-Remediation Process in accordance with LDEQ's *Underground Storage Tank / Leaking Underground Storage Tank Program Quality Assurance Project Plan* (UST / LUST-QAPP) (Reference 7). If sample results do not exceed soil screening standards, then the closure form is signed and there is no further action at that time.

The UST soil screening standards can be found in Appendix M of the most current revision of LDEQ's "Underground Storage Tank Closure/Change-In-Service Guidance Document" (Reference 6).

The Technical Team Leaders also review and approve UST installation and repair notifications, and perform installation and repair oversight inspections, in order to ensure that all installations and repairs are conducted in accordance with the secondary containment regulations in LAC 33:XI.303 (Reference 8). All installation-critical junctures and repair-critical junctures, as defined in LAC 33:XI.Chapter13 must be completed by a LDEQ certified UST IR worker.

A.8.2 LUST PROGRAM / PROJECT/TASK DESCRIPTION

The responsibilities of the Leaking Underground Storage Tank (LUST) program in Louisiana are shared among two divisions within the LDEQ. The bulk of the work primarily lies within the Underground Storage Tank Division (USTD) where corrective action, including investigation and remediation, is performed. The associated Trust Fund lies within the Financial Services Division, which is responsible for disbursement of funds from the Trust Fund.

At any Louisiana facility where a leak from a UST has occurred (LUST site), the staff of the USTD is responsible for ensuring that all site activities are performed in accordance with accepted quality assurance procedures; however, the USTD Administrator, through the QA Representative and program supervisors, have overall responsibility for the implementation of all quality assurance procedures related to sites managed within the LUST program.

The LDEQ's QAPP for the LUST program, presented in this document, describes the LDEQ's quality assurance plan for Louisiana LUST site activities. The quality assurance plan attempts to ensure that LUST site activities pursued by, for, or under contract to the LDEQ are conducted in a consistent manner and in accordance with the remediation process (Figure 5). Specific objectives of the quality assurance procedures include:

- Ensure that all data generated for or by the LDEQ will be of sufficient or greater quality to withstand scientific and legal challenge

- Ensure that the necessary levels of data quality are attainable by defining the intended use of all data before data collection efforts begin.

- Properly define all sample collections and analyses, these shall be project specific and included in the investigation work plan

- Certify that all data produced by or for the LDEQ will be of known and acceptable precision, accuracy, representativeness, completeness and comparability

- Provide adequate supervision by the USTD staff at LUST projects to ensure quality data are collected

LDEQ recognized that some LUST site activities which generate and/or affect environmental data must follow a specific process to ensure consistency with environmental data generation in order to meet and exceed these objectives. Therefore, in addition to the QAPP, all LUST sites activities shall be conducted in accordance with the following documents:

- Louisiana LDEQ Risk Evaluation/Corrective Action Program 2003 (RECAP) (Reference 2)

- Guidance Manual for Environmental Boreholes and Monitoring Systems, November 2021 (Reference 3)

- Applicable Remediation Process Standard Operation Procedures (SOPs) (Reference 1)

A.9 QUALITY OBJECTIVES AND CRITERIA

A.9.1 UST PROGRAM / QUALITY OBJECTIVES AND CRITERIA

The primary objective of this project is to ensure that all active USTs in the State of Louisiana operate in compliance with all applicable state and federal underground storage tank rules and regulations. In order to meet this objective, Compliance Evaluation Inspections are performed at active facilities by LDEQ inspectors, LDEQ contract inspectors, EPA inspectors, or EPA contract inspectors as described in Section A.6 Project/Task Description.

In order to ensure consistency, LDEQ inspectors and LDEQ contract inspectors use a standardized Compliance Evaluation Inspection (CEI) tablet inspection application which is kept up to date with lists of specific violations for each area of concern.

CEI reports which are submitted by LDEQ inspectors are reviewed by a USTD Environmental Scientist Supervisor or Staff Scientist for consistency, proper documentation of citations, and use of correct citations for each area of concern.

The CEI reports are submitted by the LDEQ contractor inspectors directly to the USTD Environmental Scientist Supervisor or Staff Scientist via the inspection application website to review for consistency, proper documentation of citations, and use of correct citations for each area of concern. Deficient reports are returned for correction.

All CEI reports submitted by either LDEQ inspectors or contract inspectors which indicate Areas of Concern are reviewed by the regional USTD Environmental Scientist Supervisor or Staff Scientist for consistency. Enforcement letters (Notice of Corrected Deficiency, Notice of Deficiency, and Notice of Potential Delivery Prohibition) are generated by the inspection application and are mailed to UST owners by regional USTD Environmental Scientist Supervisor or Staff Scientist. Whenever USTD-issued enforcement letters are not complied with, and whenever other certain violations occur, USTD will refer the site to the Enforcement Division for escalated enforcement (Expedited Penalty, Compliance Order, and Notice of Potential Penalty). All referrals to Enforcement Division are reviewed by the USTD Senior Scientist for consistency in documenting violations and consistency with internal Enforcement Division referral guidelines.

This project is also aimed at ensuring that all regulated USTs that are permanently closed are closed in accordance with the regulations. On-site closure inspections are performed by Technical Team Leaders on an as-needed basis as determined by Environmental Scientist Supervisors and Staff Scientists. Technical Team Leaders track all closure time frames as defined by the most current revision of LDEQ's "Underground Storage Tank Closure/Change-In-Service Guidance Document" (Reference 6) for every UST closure. Technical Team Leaders also review every UST Closure Assessment Report for consistency with the LDEQ "Risk Evaluation/Corrective Action Program" (RECAP) (Reference 2).

A.9.2 LUST PROGRAM / QUALITY OBJECTIVES AND CRITERIA

The LDEQ's primary goal for quality assurance procedures is to produce sufficient environmental data of known quality that will support the objectives of any LUST site investigation. In addition, LDEQ wants to ensure that activities which generate and/or affect environmental data follow a consistent process to ensure accuracy and consistency because this information may be used for the determination of the source, estimation of the magnitude and extent of contamination, determination of the nature of contamination, characterization of site conditions for development of remedial action procedures, and documentation of the effectiveness of remediation. The level of data quality and quantity required to achieve any of these objectives is defined in RECAP (Reference 2).

Data quality procedures and objectives for activities which are common to LUST sites (e.g. groundwater and soil sampling and analysis) are identified in RECAP (Reference 2). Specific quality assurance procedures and data quality objectives (DQOs) for specialized activities at LUST sites are developed during the planning stages for site activities.

Environmental data collection activities which will most commonly be performed during the course of a LUST site project include boring and monitor well installations; groundwater, soil and surface-water screening and sampling; sample preservation and analysis. With respect to potential LUST site activities, some specific data collection techniques, associated analytical level requirements, and site project objectives are summarized in the Louisiana DEQ RECAP Document and the Guidance Manual for Environmental Boreholes and Monitoring Systems (see References 2 and 3 respectively). Generally, the most common data acquisition activities performed at LUST sites will require strict adherence to established quality assurance procedures for both sampling and analytical procedures. The USTD Administrator has overall responsibility for the implementation of all quality assurance procedures related to sites managed within the LUST program, and it is the responsibility of the Technical Team Leader to ensure that these DQO's are met.

A.10 SPECIAL TRAINING/CERTIFICATION

A.10.1UST PROGRAM / SPECIAL TRAINING/CERTIFICATION

Each member of the technical staff has a training plan in LDEQ's Student Center, which lists those courses that are required for that individual. Employees can register online for the required courses.

All LDEQ USTD technical staff must have the following training:

- 40-hour OSHA HAZWOPER
- 8-hour OSHA HAZWOPER annual refresher

USTD technical staff must have knowledge of underground storage tank installation, as well as spill, overfill, release detection, and catholic protection equipment. This is to verify that tank installers have made proper installations. Additionally, compliance training in UST regulations, requirements, and equipment is provided through workshops and classes conducted by EPA and LDEQ. On the job training by experienced USTD staff is also provided to new USTD inspectors. LDEQ will document completion of training requirements for LDEQ USTD technical staff.

A.10.2LUST PROGRAM / SPECIAL TRAINING/CERTIFICATION

Each member of the technical staff has a training plan in LDEQ's Success Factors Portal, which lists those courses that are required for that individual. Employees register online for required classes through the Success Factors Portal.

All LDEQ technical staff involved in the remediation process working on LUST projects must have the following training:

- 40-Hour OSHA HAZWOPER
- 8-Hour OSHA HAZWOPER Annual Refresher

Additionally, the following training is highly recommended:

- LDEQ Geoscience Seminars
- Sampling for Hazardous Materials
- RECAP Training
- Sampling solid materials using EPA SW846 Method 5035

LUST Technical Staff must have knowledge of nationally recognized technical guidance and regulations related to site investigations, monitoring well installations, aquifer testing, and groundwater sampling. This is to verify that the RAC/EC are performing remediation activities in accordance with relevant guidance and regulations. LUST Technical Staff are encouraged to participate in additional remediation training provided through workshops, classes, web-based classrooms (webinars), and industry-sponsored seminars. On the job training by experienced LUST Staff is also provided to new LUST Staff during on-site field activities.

A.11 DOCUMENTATION AND RECORDS

A.11.1UST PROGRAM / DOCUMENTATION AND RECORDS

A.11.1.1 LDEQ

Original CEI reports generated by USTD staff and LDEQ contractors are automatically uploaded into the department's Electronic Document Management System (EDMS). Original non-CEI inspection reports generated by USTD staff are forwarded to the main office for scanning into EDMS. Once the records have been scanned into EDMS, the requirements for LDEQ's record retention policy have been met and it is no longer necessary to maintain a hard copy.

A.11.1.2 UST Owners

The UST owners are required to keep current registration forms, certificate, operator training, and a minimum of thirty-six months of leak detection and

corrosion protection records. Depending upon the type, records such as repairs to the UST system must be kept onsite or at a nearby location for up to five years or the life of the facility. These records must be readily available for the USTD staff at the time of an inspection. The tank owner or operator must also keep a permanent copy of all records pertaining to the UST closure as stated in LAC 33:XI.509 and in the "Underground Storage Tank Closure/Change-in-Service Guidance Document" (Reference 8 and 6 respectively).

Documents and records, such as the Notice of Intent to Close and Closure Assessment Report, received from the UST owner/operators, are forwarded to the main office for scanning into EDMS; thus maintained in accordance with LDEQ's records retention policy.

A.11.2 LUST PROGRAM / DOCUMENTATION AND RECORDS

Original remediation inspection field interview forms generated by USTD staff and reports generated by RACs and ECs are forwarded to the main office for scanning into EDMS. Once the records have been scanned into EDMS, the requirements for LDEQ's record retention policy have been met and it is no longer necessary to maintain a hard copy.

The LUST Project QA Coordinator is responsible for ensuring the appropriate LDEQ project personnel have the most current approved version of the QAPP. Once approved, an official version of the QAPP shall be distributed to the RACs and posted on the LDEQ Intranet (Reference 7).

LUST program records and documents associated with federal grants and cooperative agreements shall be retained in accordance with 2 CFR 200, 2 CFR 1500 and/or 40 CFR Part 33. Original LUST program records and documents generated by or for LDEQ will be scanned at LDEQ into an electronic format in accordance with LDEQ's record retention policies and can be retrieved by LDEQ employees via the Electronic Document Management System (EDMS). After being scanned, records and documents will be stored in an LDEQ archive file room for a minimum of three years. The three-year time period begins from the date of the LDEQ final yearly LUST Grant expenditure report to the EPA.

In accordance with LAC 33:I, Subpart 3, 5315(A), testing laboratories shall retain on record all raw data and observations, calculations and derived data, calibration records, and the final test report for a minimum of ten years or as required by regulatory or legal requirement (Reference 4).

B <u>DATA GENERATION AND ACQUISITION</u>

B.1 SAMPLING PROCESS DESIGN

B.1.1 UST PROGRAM / SAMPLING PROCESS DESIGN

UST closure sample collection shall be performed by a LDEQ certified worker or a RAC in accordance with LAC 33:XI.Chapters 9 and 13 and LDEQ's UST Closure/Change in Service Guidance Document (Reference 8 and 6 respectively). This document provides guidance on the appropriate number of samples, sampling locations, and analyses required for the samples (Figure 6). These closure samples must be analyzed by an LDEQ accredited contract laboratory.

B.1.2 LUST PROGRAM / SAMPLING PROCESS DESIGN

Data collection design for LUST activities in Louisiana includes the types and numbers of samples required, the design of the sampling network, sampling locations and frequencies, sample matrices, measurement parameters of interest, and the rationale for the design shall be conducted in accordance with the following documents:

- LDEQ Risk Evaluation/Corrective Action Program RECAP (Reference 2)

- Guidance Manual for Environmental Boreholes and Monitoring Systems, November 2021 (Reference 3)

B.2 SAMPLING METHODS

B.2.1 UST PROGRAM / SAMPLING METHODS

All UST closure sampling by LDEQ certified workers or RACs shall follow the sampling procedures that are detailed in the LDEQ "Underground Storage Tank Closure/Change-In-Service Guidance Document" (Reference 6). Refer to this document for guidance on the appropriate number of samples, sampling locations, and analyses required for the samples (Figure 6). Samples must be sent to an LDEQ accredited laboratory.

B.2.2 LUST PROGRAM / SAMPLING METHODS

To ensure consistency in representative sampling and in order to produce valid results, sampling procedures implemented during LUST site activities, including investigations and monitoring events, shall be conducted in accordance with the following guidance materials:

- The Louisiana DEQ RECAP Document (Reference 2); Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition (Reference 9); and the Guidance Manual for Environmental Boreholes and Monitoring Systems, November 2021 (Reference 3) shall be used to identify the

EPA-approved sample collection, sample preservation, and field measurement methods.

- The EPA or manufacturers' specifications shall be used for proper calibration of field equipment. Refer to Section B7 of this document for instrument calibration requirements and frequency.

- The Louisiana DEQ RECAP Document (Reference 2) and EPA-approved methodology shall be used to identify proper sample handling, preservation, and integrity verification procedures.

All LDEQ staff and/or RAC/EC involved in LUST site investigations shall be familiar with the sampling procedure requirements above.

LUST site investigations often involve sampling multiple media, most commonly soil and groundwater. Guidance for conducting soil and groundwater sampling activities is provided in the Louisiana DEQ RECAP document, Appendix B, and the Guidance Manual for Environmental Boreholes and Monitoring Systems, November 2021 (References 2 and 3 respectively).

Sample collection and preservation shall be completed according to EPA approved methods. After collection, all samples will be handled as few times as possible. The sampler shall coordinate with the laboratory to ensure that proper sample handoffs occur. All personnel will use extreme care to ensure that the integrity of the samples shall not be compromised from tampering and/or contamination from containers, pumps, tubing, bailers or any other equipment. Samples shall be properly identified, labeled, and transported to an accredited laboratory in accordance with sample custody procedures in Section B3.

B.3 SAMPLE HANDLING AND CUSTODY

B.3.1 UST PROGRAM / SAMPLE HANDLING AND CUSTODY

Sample custody procedures are necessary to maintain and document sample possession and to adequately establish and support the use of sample data in potential enforcement, regulatory, or legislative actions. All sample handling and custody activities will be performed in accordance with Louisiana DEQ's Laboratory Accreditation Program described in LAC 33: I, Subpart 3 (Reference 4). Subpart 3, Section 5501 specifically addresses sample integrity.

The principle of sample custody is to account for the integrity of the sample from the moment the sample is placed in a container until all analytical tests have been completed and any remaining sample is discarded. This means that proper sample custody is a joint effort of the sampling crew, the sample transporter, and the laboratory staff. The proper sampling protocol and chain of custody requirements are referenced

in the LDEQ “Underground Storage Tank Closure/Change-In-Service Guidance Document” (Reference 6).

The documentation of sample custody shall be considered to be incomplete if any of the required information is omitted from the chain-of-custody form. This shall include any sample identification information or any of the required signatures or official change of possession times. In this case, the laboratory custodian should question whether the sample should be accepted or not. If possible the question should be referred to the sampler for consideration.

After the sample has been collected, sample integrity must be protected by preventing the intentional and/or accidental contamination of the sample. The receiving laboratory should reject any sample that is suspect of tampering or contamination. The laboratory must record and document these instances of sample rejection.

The laboratory must follow all holding times for samples as indicated in SW-846. Refer to chapter three, table 3.1 for sample holding times, recommended digestion volumes, and recommended collection volumes for inorganic analysis. Refer to chapter 4, table 4-1 for information regarding proper sample containers, techniques, and holding times for volatile organics. (Reference 9)

B.3.2 LUST PROGRAM - SAMPLE HANDLING AND CUSTODY

Sample custody procedures are necessary to maintain and document sample possession and to adequately establish and support the use of sample data in potential enforcement, regulatory, or legislative actions. All sample handling and custody activities will be performed in accordance with Louisiana DEQ's Laboratory Accreditation Program described in LAC 33: I, Subpart 3 (Reference 4). Subpart 3, Section 5501 specifically addresses sample integrity.

The principle of sample custody is to account for the integrity of the sample from the moment the sample is placed in a container until all analytical tests have been completed and any remaining sample is discarded. This means that proper sample custody is a joint effort of the sampling crew, the sample transporter, and the laboratory staff.

The investigation work plan will provide sample labeling and handling details. Each sample will be labeled with a unique sample number, time, date, preservatives, and analytical parameters. This information should match the sample identification and testing information that is listed on the chain-of-custody form for the sample(s). The chain-of-custody form is the primary documentation that is used to track proper sample custody from the time of sampling to the arrival of the sample at the laboratory. A chain-of-custody form will be completed for every sample event at any LUST site.

The documentation of sample custody shall be considered to be incomplete if any of the required information is omitted from the chain-of-custody form. This shall include any sample identification information or any of the required signatures or official change of possession times. In this case, the laboratory custodian should question whether the sample should be accepted or not. If possible the question should be referred to the sampler for consideration.

After the sample has been collected, sample integrity must be protected by preventing the intentional and/or accidental contamination of the sample. The receiving laboratory should reject any sample that is suspect of tampering or contamination. The laboratory must record and document these instances of sample rejection.

The laboratory must follow all holding times for samples as indicated in SW-846. Refer to chapter three, table 3.1 for sample holding times, recommended digestion volumes, and recommended collection volumes for inorganic analysis. Refer to chapter 4, table 4-1 for information regarding proper sample containers, techniques, and holding times for volatile organics. (Reference 9)

B.4 ANALYTICAL METHODS

B.4.1 UST PROGRAM / ANALYTICAL METHODS

A LDEQ accredited laboratory must be used for the analyses of samples collected at UST sites in Louisiana. Refer to Figure 6 for the appropriate sampling protocol that should be scheduled for each sampling event, including the analyses required and analytical methods. The analytical services are contracted by responsible parties or certified UST workers or RACs. Contracted laboratories will use only EPA approved methods when analyzing UST site samples as specified in the LDEQ “Underground Storage Tank Closure/Change-In-Service Guidance Document” (Reference 6).

Accredited laboratories, as per Title 33, Part I, Subpart 3, 5301 (Reference 4), shall maintain a Quality Assurance/Quality Control (QA/QC) Program using appropriate document control practices. This includes the development and documentation of quality control procedures for each analytical procedure, demonstrating compliance with all quality control procedures, and having procedures in place for feedback and corrective action measures whenever testing discrepancies are detected or when there are departures from documented policies and procedures.

B.4.2 LUST PROGRAM / ANALYTICAL METHODS

Samples collected at LUST sites in Louisiana must be analyzed at an accredited, commercially-contracted laboratory. Contracted laboratories shall only use EPA approved methods when analyzing LDEQ LUST site samples for suspected or known contaminants as specified in Figure 7. For information regarding EPA approved methods, refer to the Louisiana DEQ RECAP Document (Reference 2) and Test

Methods for Evaluating Solid Waste, Manual Physical/Chemical Methods, SW846, Third Edition (Reference 9).

Accredited laboratories as per Title 33, Part I, Subpart 3, 5301, shall maintain a Quality Assurance/Quality Control (QA/QC) Program using appropriate document control practices. This includes the development and documentation of quality control procedures for each analytical procedure, demonstrating compliance with all quality control procedures, and having procedures in place for feedback and corrective action measures whenever testing discrepancies are detected or when there are departures from documented policies and procedures (Reference 4).

B.5 QUALITY CONTROL – UST & LUST PROGRAM

Quality Control (QC) activities performed for each sampling, analysis, or measurement technique must be performed in accordance with Sections 2.4 and 2.5 of RECAP and LAC 33: I, Subpart 3, 5301 (Reference 2 and 4 respectively), LDEQ “Underground Storage Tank Closure/Change-In-Service Guidance Document” and as stated in specific analytical methods.

Figure 6 Closure Sample Analyses for the UST Program

PRODUCT STORED	SAMPLE MEDIA	ANALYSES REQUIRED	EPA SW-846 ANALYTICAL METHODS[1]	HOLDING TIMES
Gasoline	Soil	BTEX	8015, 8021, 8260, 8261	48 hours or 14 days
	Soil	MTBE	8015, 8260, 8261	48 hours or 14 days
	Soil	Lead[2]	6010, 6020, 6200, 6800, 7000, 7010	180 days
	Soil	TPH-GRO (C_6 - C_{10})	8015	48 hours or 14 days
Diesel	Soil	TPH-DRO (C_{10} - C_{28})	8015	14/40 days
	Soil	PAH[3]	8100, 8270, 8275, 8310	14/40 days
Used Oil	Soil	TPH-ORO ($C_{>28}$)	8015	14/40 days
	Soil	Total Metals[5]	6010, 6020, 6200	28/28 days[4]
	Soil	PAH[5]	8100, 8270, 8275, 8310	14/40 days
Kerosene, Jet Fuel	Soil	TPH-GRO (C_6 - C_{10})	8015	48 hours or 14 days
	Soil	TPH-DRO (C_{10} - C_{28})	8015	14/40 days
Hazardous or Other Substances	Soil	Analyze by approved method for the substance stored or primary constituent		
SPLP	Soil	Volatiles	Extraction: 1312, Analysis: 8260	14/14
SPLP	Soil	Semi-Volatiles	Extraction: 1312, Analysis: 8270	14/40
SPLP	Soil	Total Metals	Extraction: 1312, Analysis: 6010	28/28 days[4]

[1]Use most recent EPA SW-846 update of the selected method. The selected method should be capable of detecting the limiting soil standard.
[2]Required if facility dispensed gasoline prior to 1/1/86.
[3]Analyze only on TPH-DRO sample exhibiting highest concentration.
[4] Based on holding time for Mercury (28 days)
[5]Analyze only on TPH-ORO sample exhibiting highest concentration.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes
TPH - Total Petroleum Hydrocarbons (GRO-Gasoline Range Organics, DRO-Diesel Range Organics, ORO-Oil Range Organics)
MTBE - Methyl tert-butyl ether
SPLP - Synthetic Precipitation Leaching Procedure
Total Metals - Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
PAH - Polynuclear Aromatic Hydrocarbons (Acenapthene, Acenaphthylene, Anthracene, Benz(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, 2-Methylnaphthalene, Naphthalene, Phenanthrene, Pyrene)
48 hours or 14 days - Volatile organic compounds have either a 48 hour or 14 day holding time depending on the Method 5035 option selected.
14/14 - Samples extracted within 14 days and extracts analyzed within 14 days following extraction.
14/40 - Samples extracted within 14 days and extracts analyzed within 40 days following extraction.
28/28 - Samples extracted within 28 days and extracts analyzed within 28 days following extraction.

Figure 7 Petroleum Hydrocarbons Sample Analyses and Methods for the LUST Program

Product Stored	Sample Media	Analysis Required	Acceptable SW-846 Preparation Methods	Acceptable SW-846 Analytical Methods
Gasoline	Soil	BTEX[1]	5035	8021B[2], 8260B[14]
	Water	BTEX[1]	5030	8021B[2], 8260B[14]
	Soil	TPH-GRO [3] (C_6-C_{10})	5035	8015B, TCEQ 1005[12]
	Water	TPH-GRO[3] (C_6-C_{10})	5030	8015B
	Soil	Lead[5]	3050B, 3051	6010B, 6020, 7420, 7421
	Water	Lead[5]	3005, 3010A, 3015	6010B, 6020, 7420, 7421
	Soil	MTBE[6]	5035	8260B
	Water	MTBE[6]	5030	8260B
	Soil	MEK, MIBK[11]	5035	8015B
	Water	MEK, MIBK[11]	5030	8015B
Diesel	Soil	TPH-DRO[3] (C_{10}-C_{28})	3540, 3541, 3545, 3550, 3560	8015B, TCEQ 1005[12]
	Water	TPH-DRO[3] (C_{10}-C_{28})	3510, 3520	8015B
	Soil	PAHs[7]	3540, 3541, 3545, 3550, 3560, 3580	8100, 8270C, 8310[8]
	Water	PAHs[7]	3510, 3520	8100, 8370C, 8310[8]
Crude Oil	Soil	TPH-DRO[3] (C_{10}-C_{28})	3540, 3541, 3545, 3550, 3560	8015B, TCEQ 1005[12]
	Water	TPH-DRO[3] (C_{10}-C_{28})	3510, 3520	8015B
	Soil	TPH-GRO [3] (C_6-C_{10})	5035	8015B, TCEQ 1005[12]
	Water	TPH-GRO [3] (C_6-C_{10})	5030	8015B
	Soil	TPH-ORO[3] (>C_{28})	3540, 3541, 3545, 3550, 3560	8015B[4], TCEQ 1005[13]
	Water	TPH-ORO[3] (>C_{28})	3510, 3520	8015B[4]
	Soil	PAHs[7]	3540, 3541, 3545, 3550, 3560, 3580	8100, 8270C, 8310[8]
	Water	PAHs[7]	3510, 3520	8100, 8370C, 8310[8]
Refined Oils	Soil	TPH-DRO[3] (C_{10}-C_{28})	3540, 3541, 3545, 3550, 3560	8015B, TCEQ 1005[12]
	Water	TPH-DRO[3] (C_{10}-C_{28})	3510, 3520	8015B
	Soil	TPH-ORO[3] (>C_{28})	3540, 3541, 3545, 3550, 3560	8015B[4], TCEQ 1005[13]
	Water	TPH-ORO[3] (>C_{28})	3510, 3520	8015B[4]
Used Oil	Soil	TPH-ORO[3] (>C_{28})	3540, 3541, 3545, 3550, 3560	8015B[4], TCEQ 1005[13]
	Water	TPH-ORO[3] (>C_{28})	3510, 3520	8015B[4]
	Soil	Metals[9]	3050B, 3051	6010B, 6020, 7000 series[10]
	Water	Metals[9]	3005, 3010A, 3015	6010B, 6020, 7000 series[10]
	Soil	PAHs[7]	3540, 3541, 3545, 3550, 3560, 3580	8100, 8270C, 8310[8]
	Water	PAHs[7]	3510, 3520	8100, 8270C, 8310[8]
Kerosene & Jet Fuel	Soil	TPH-GRO [3] (C_6-C_{10})	5035	8015B, TCEQ 1005[12]
	Water	TPH-GRO [3] (C_6-C_{10})	5030	8015B
	Soil	TPH-DRO[3] (C_{10}-C_{28})	3540, 3541, 3545, 3550, 3560	8015B, TCEQ 1005[12]
	Water	TPH-DRO[3] (C_{10}-C_{28})	3510, 3520	8015B

[1] BTEX – Benzene, Toluene, Ethyl-benzene, and Xylenes
[2] If detected, 2nd column confirmations required (8000B, Section 7.9, page 29).
[3] TPH-DRO, GRO, ORO – Total Petroleum Hydrocarbons – Diesel Range Organics, Gasoline Range Organics, and Oil Range Organics
[4] Modified for RECAP Reporting Requirements
[5] When suspected to be present. Required for all gasoline USTs operated before 1/1/86.
[6] MTBE – Methyl tert-butyl ether
[7] PAHs – Polynuclear Aromatic Hydrocarbons (Acenapthene, Anthracene, Benzo(a)antracene, Benzo(a)pyrene, Benzo(b)flouranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Floranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphalene, Pyrene)
[8] Use for RECAP screening standards if 8270C does not obtain screening standard.
[9] Metals – Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
[10] Use methods in 7000 series of SW-846 for each metal specified in footnote 9.
[11] MEK – Methyl Ethyl Ketone, MIBK – Methyl Isobutyl Ketone. When suspected to be present.
[12] TCEQ – Texas Commission on Environmental Quality. Use SW846 5035 with modifications listed in section 6.1 of method TCEQ 1005.
[13] TCEQ – Texas Commission on Environmental Quality. Use SW846, Chapter 4, Section 4.1.
[14] Must use 8260B if MTBE analysis is also required to be eligible for trust fund reimbursement for analysis.

B.6 INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

B.6.1 UST PROGRAM / INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

All field equipment and electronic laboratory equipment utilized by certified UST workers or RACs for UST site activities shall be maintained in accordance with the manufacturer's requirements and specifications.

The USTD currently utilizes organic vapor analyzers (OVA) and explosimeters. Preventive maintenance for these instruments includes checking the integrity of the battery prior to each use and calibration of the instruments. Calibration procedures are discussed in section B.7 of this QAPP. The field equipment will be maintained in accordance with the manufacturers' recommended maintenance schedules and will receive preventive maintenance according to that schedule. Equipment in need of repair will be sent to a factory authorized repair facility. A separate logbook will be maintained for each type of equipment whether its field or laboratory. All preventive or corrective maintenance will be recorded in these logbooks and will be performed in accordance with the scheduled use of the equipment.

Equipment maintenance and calibration records for instruments used by certified UST workers or RACs will be reviewed by the USTD staff at the time of a UST inspection.

B.6.2 LUST PROGRAM / INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

All field equipment and electronic laboratory equipment used for LUST site activities shall be maintained in accordance with the manufacturer's requirements and specifications.

Field instruments that are commonly used by the RACs/ECs in association with LUST activities are the organic vapor analyzers (OVA), oil/water level indicators, explosimeters, and Global Positioning System equipment. A separate logbook shall be maintained for each type of equipment whether field or laboratory. All preventive or corrective maintenance will be recorded in these logbooks and should be performed in accordance with the manufacturer’s specifications.

In order to ensure consistently high quality data, general field equipment and/or supplies shall be inspected and determined to be of sufficient quality to provide acceptable quality environmental data prior to use. Technical team members shall perform routine and periodic inspections as well as any necessary preventative maintenance on all equipment. If for any reason equipment is found to be deficient, it should be taken out of operation until repaired. All of these procedures shall be documented in the

equipment logbook, which shall be maintained for the life of the equipment and made available for systems audits.

As per Title 33, Part I, Subpart 3, 5303 all laboratory equipment shall undergo periodic and routine inspections per manufacturer's specifications. If equipment is found to be defective, the equipment shall be removed from service until it has been repaired. All equipment maintenance, both preventative and corrective, must be documented in the equipment logbook (Reference 4).

Permanent records of all equipment maintenance will be kept locally, dated, and reviewed by the appropriate USTD Geologist Supervisor. Logbooks containing maintenance records will be kept with the equipment. When the equipment is de-commissioned, the maintenance logbooks will be stored at the LDEQ headquarters building.

B.7 INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

B.7.1 UST PROGRAM / INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

Field equipment (organic vapor analyzers and explosimeters) currently utilized by certified UST workers or RACs shall be calibrated in accordance with the manufacturer's requirements and specifications. Laboratory analysis equipment will be maintained and calibrated in accordance with the manufacturer's recommendations and must meet the requirements of the LDEQ Laboratory Accreditation Program.

B.7.2 LUST PROGRAM / INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

Field equipment (organic vapor analyzers, oil/water level indicators, explosimeters and Global Positioning System) used by the RACs/ECs shall be calibrated in accordance with the manufacturer's requirements and specifications and the LDEQ SOP for Instrument Use and Calibration. It is the responsibility of the Technical Team Leader to ensure that equipment is properly calibrated prior to use.

The RACs/ECs are responsible for maintaining field equipment that they use. The equipment shall be calibrated according to the manufacturer's requirements and specifications. It is the responsibility of the RAC/EC to ensure that the equipment is properly functioning and calibrated prior to use.

Laboratory equipment shall be maintained and calibrated in accordance with LAC 33: I, Subpart 3, 5303 and 5305 (Reference 4).

B.8 INSPECTION/ACCEPTANCE FOR SUPPLIES AND CONSUMABLES

B.8.1 UST PROGRAM / INSPECTION/ACCEPTANCE FOR SUPPLIES AND CONSUMABLES

All supplies and consumables, including support equipment, reagents, etc. must meet or exceed standards set forth in EPA publication SW846 (Reference 9), LDEQ's Laboratory Accreditation Program (Reference 4), as well as any specifications recommended by the manufacturer. LDEQ Technical Teams are responsible for inspecting and ensuring that all supplies and consumables used to collect environmental data meet acceptance requirements. The certified UST workers or RACs are responsible for the inspection and acceptance of supplies and consumables used to support their operations. All support equipment, reagents, etc. must meet, at a minimum, standards as set forth in EPA publication SW-846 and LDEQ's Laboratory Accreditation Program, as well as, any recommended by the appropriate manufacturers.

B.8.2 LUST PROGRAM / INSPECTION/ACCEPTANCE FOR SUPPLIES AND CONSUMABLES

All supplies and consumables, including support equipment, reagents, etc. must meet or exceed standards set forth in EPA publication SW846 (Reference 9), LDEQ's Laboratory Accreditation Program (Reference 4), as well as any specifications recommended by the manufacturer. LDEQ Technical Teams are responsible for inspecting and ensuring that all supplies and consumables used to collect environmental data meet acceptance requirements. Since most of the environmental data collected for the LUST program is performed by RACs/ECs, the RACs/ECs are responsible for the inspection and acceptance requirements for all supplies and consumables used to support their sampling and analytical operations. All support equipment, reagents, etc. must meet, at a minimum, standards as set forth in EPA publication SW846 and LDEQ's Laboratory Accreditation Program, as well as, any recommended by the appropriate manufacturers. The same applies to any support equipment used by LDEQ staff.

B.9 NON-DIRECT MEASUREMENTS – UST & LUST PROGRAMS

For use in the prioritization of and the planning for work at UST & LUST sites, data from the sources listed below may be used:

- LDEQ files
- Water well maps and files
- Federal, state, and local groundwater resources
- Geological publications

- Studies by academic entities
- U.S. Dept. of Agriculture Soil Conservation Service surveys
- Applicable information from other federal, state or local agencies or authorities

Descriptions of site geology, soil properties, and groundwater classification for use in final reports and calculations must be based on data from field sampling and direct measurements.

B.10 DATA MANAGEMENT

B.10.1 UST PROGRAM / DATA MANAGEMENT

The certified UST worker will submit data to LDEQ using the Underground Storage Tank Closure/Assessment Form (UST-SURV-02). Please refer to the most current revision of the LDEQ "Underground Storage Tank Closure/Change-In-Service Guidance Document" (Reference 6). An Environmental Scientist or Geologist reviews the report and determines if it meets state regulations. If there is no contamination found, the closure form is signed by the LDEQ reviewer and sent to the tank owner. One copy of the form is sent to USTD to remove the USTs from the database. A copy of the form and all other pertinent information are submitted to LDEQ Headquarters and scanned into the Department's Electronic Document Management System (EDMS).

If analysis results are above LDEQ's specified action levels, then the site information is referred to UST-Remediation Process. Inspection information is entered into the agency's database. All facility site data becomes part of the permanent records on the facility and is maintained in accordance with LDEQ's record retention policy.

B.10.2 LUST PROGRAM / DATA MANAGEMENT

Sampling is conducted at LUST sites by LDEQ staff and/or RAC/EC. A chain-of-custody form accompanies the samples to the laboratory. A copy of the chain-of-custody form will also accompany the laboratory personnel sample report. As per Title 33, Subpart 3, 5301, accredited labs are required to have SOPs covering document control, data handling which includes processing, compiling, analyzing, and transmitting accurate and reliable data, data archival and retrieval procedures, and procedures for acceptable hardware and software configurations. The analytical data results are ultimately conveyed to the LDEQ Technical Team.

The investigation reports, interim monitoring reports, and corrective action plans generated by or for LDEQ will be scanned at LDEQ into an electronic format and can be retrieved by LDEQ employees via the Electronic Document Management System (EDMS). After being scanned, records and documents will be stored in an LDEQ archive file room.

C. ASSESSMENT AND OVERSIGHT

C.1 ASSESSMENTS AND RESPONSE ACTIONS

C.1.1 UST PROGRAM/ ASSESSMENTS AND RESPONSE ACTIONS

LDEQ is committed to using approved equipment and methods when conducting a UST investigation.

Before any UST investigation, the LDEQ staff will verify that proper equipment is available for all field personnel. This includes sampling, safety, and field measurement equipment. The USTD Manager is responsible to ensuring that proper equipment in good working condition is available for all field staff and that all personnel involved in field activities have received sufficient training to properly use the equipment including calibration standards and decontamination procedures. Records of training are kept in accordance with LDEQ's training policy. Equipment procurement and inventory records are kept in each regional office as well as LDEQ Headquarters.

To ensure that adequate QA/QC procedures are followed, all laboratories that submit data to the agency must be accredited by the LDEQ Laboratory Accreditation Program.

All field equipment utilized by LDEQ staff for UST inspections must be maintained and inspected in accordance with the applicable operations manual.

Records of maintenance and repairs shall be kept in the calibration logbook for each specific piece of equipment by LDEQ staff assigned this equipment. Environmental supervisors shall verify that logbook records are maintained properly.

C.1.2 LUST PROGRAM / ASSESSMENTS AND RESPONSE ACTIONS

Those performing field or laboratory work must use approved equipment and methods when obtaining environmental samples and when producing field or laboratory measurements. This equipment must undergo periodic verification to ensure that it is performing at a level to produce the required quality. The verification is accomplished by conducting performance and systems audits. The project QA Coordinator shall conduct periodic audits.

Prior to the initiation of field activities, the operating personnel shall verify that proper equipment is available for all field activities. This shall include sampling, safety, and field measurement equipment. The USTD Geologist Supervisors should verify that all personnel involved in field activities have received sufficient training to properly use the equipment. It is the responsibility of the RACs/ECs to ensure that their field personnel have received sufficient training to properly operate the equipment. Training shall include proper operational procedures-including calibration standards and decontamination procedures.

All field equipment used for LUST projects must be inspected and maintained in accordance with the applicable operations manual. Prior to use of any field equipment, a performance audit shall be conducted by the operator to ensure that the operation of the field equipment provides acceptable quality environmental data. If the results of the performance audit conclude that the field equipment produces insufficient data, the field equipment shall be repaired if possible or otherwise replaced. For LDEQ equipment, the Technical Team Leader shall notify the appropriate USTD Geologist Supervisor of the audit results and solutions undertaken to rectify problems discovered during the audit. RACs/ECs are responsible for inspecting and maintaining all field equipment that is owned and/or operated by their personnel.

Records of maintenance and repairs shall be kept in the calibration logbook for the specific piece of equipment. Appropriate USTD Managers shall verify that logbook records are maintained properly.

All laboratories participating in LUST site sampling analyses must perform QA/QC operations in accordance with Sections 2.4 and 2.5 of RECAP and LAC 33: I, Subpart 3, 5301. To assure that quality data is generated at the laboratory, routine performance audits shall be conducted in accordance with LAC 33: I, Subpart 3, 5101 (Reference 4).

C.2 REPORTS TO MANAGEMENT

C.2.1 UST PROGRAM / REPORTS TO MANAGEMENT

The Technical Team member performing the inspection will identify any quality assurance problems encountered in the field and any corrective actions taken. This information shall be documented on a Field Interview Form (FIF), and a copy shall be provided to his/her supervisor. In addition, the QAR shall be informed either informally or by formal memoranda, so that this information can be properly communicated to upper level management for distribution to appropriate staff.

C.2.2 LUST PROGRAM / REPORTS TO MANAGEMENT

The Technical Team Leader who oversees the LUST project shall identify any quality assurance issues in the field. The Technical Team Leader ensures that any problems that are encountered are corrected in the field, and at that time he/she shall document the problems and resolutions on a Field Interview Form (FIF). In addition, the Technical Team Leader shall report the problems verbally to his/her supervisor. A copy of the FIF shall be distributed to the RAC/EC, and a copy of the FIF shall be delivered to the Technical Team Leader's supervisor.

The Technical Team Leaders, supervisors and/or managers are responsible for informing the QAR either informally or by formal memoranda of any quality assurance problems encountered and solutions adopted. A written report, prepared by the

appropriate USTD Geologist Supervisor, outlining any problems and solutions employed discovered during any performance audits shall be submitted to the QAR for review and disbursement to upper Management/EPA as appropriate. The QAR shall ensure that this information is disseminated to upper level management for distribution to appropriate staff.

D. DATA VALIDATION AND USABILITY

D.1 DATA REVIEW, VERIFICATION, AND VALIDATION

D.1.1 UST PROGRAM / DATA REVIEW, VERIFICATION, AND VALIDATION

The Technical Team member reviews UST sample data and associated reports to ensure that all data that is required, such as sampling and testing results, are included in reports along with any other relevant information. If any data is missing, additional information will be requested before a report will be accepted. If all required information has been received and no areas of concern are noted, the closure document is signed by the LDEQ reviewer and forwarded to the tank owner. A copy of the closure form is also placed in the facility's permanent file.

D.1.2 LUST PROGRAM / DATA REVIEW, VERIFICATION, AND VALIDATION

The criteria used to review and validate data in an objective and consistent manner are stated in Section 2.5 of RECAP (Reference 2).

D.2 VERIFICATION AND VALIDATION METHODS

D.2.1 UST PROGRAM / VERIFICATION AND VALIDATION METHODS

The validation and verification method for field screening analysis only requires that the field screening instrument identifies the concentration of petroleum hydrocarbons within the detection range limit of the specific screening instrument. Specific validation and verification methods which include the acceptable analyte identification, minimum/maximum percent recovery of the target analytes and QA/QC compounds are defined in standard methods 8015, 8021(B), and 8260 located in SW-846. In addition, these methods set the performance criteria for instrument calibration, analyte identification, and identification/recovery of the QA/QC compounds.

The validated data compiled by laboratory personnel into a sample report is conveyed to the LDEQ staff. When sample reports are submitted to a certified UST worker they will incorporate this information in their Closure/Assessment Form which is submitted to LDEQ. LDEQ staff is responsible for verifying the sample data. This is achieved by reviewing the relative standard deviation and percent recovery and verifying that the data is within the defined acceptable range. LDEQ can take its own samples or split samples to verify the accuracy of the environmental contractor's samples.

D.2.2 LUST PROGRAM / VERIFICATION AND VALIDATION METHODS

The validation and verification method for field screening analysis requires that those instruments used for field screening must be able to identify the concentration of petroleum hydrocarbons within the detection range limit of the specific screening instrument.

Specific validation and verification methods are defined in the acceptable analytical methods of SW846 listed in Figure 7. These include the acceptable methods for identifying an analyte, minimum/maximum percent recovery of the target analytes and QA/QC compounds. In addition, these methods set the performance criteria for instrument calibration, analyte identification, and identification/recovery of the QA/QC compounds.

Laboratory personnel are required to follow procedures outlined in SW846 or other department approved methods. The assigned LDEQ field staff or RAC/EC is responsible for completing accurate chain-of-custody forms that accompany samples to the laboratory.

D.3 RECONCILIATION WITH USER REQUIREMENTS

D.3.1 UST Program / RECONCILIATION WITH USER REQUIREMENTS

Results from soil sample tests at tank closures are reviewed and compared to screening levels set by the LDEQ “Risk Evaluation/Corrective Action Program” (RECAP) (Reference 2). Whenever a contaminated UST site cannot be closed by following the procedures in the LDEQ “Underground Storage Tank Closure/Change-In-Service Guidance Document” (Reference 6) the site will be referred to the UST-Remediation Process for appropriate action.

D.3.2 LUST PROGRAM / RECONCILIATION WITH USER REQUIREMENTS

When the procedures and guidelines to meet the specified levels of data quality established in this project plan are not successful, corrective action may be required.

Any personnel involved in LUST program activities that has observed or been made aware of any variance from quality assurance protocol may initiate corrective action. Variances from quality assurance protocol which may require corrective action may include, but are not limited to the following:

- Field and/or laboratory equipment problems or failures
- Field and/or laboratory procedural problems or failures
- Exceedance of precision and accuracy control limits

- Sample custody, safety, transportation, holding time, or handling problems or failures
- Preventive maintenance deficiencies
- Documentation of deficiencies or problems

References

NOTE: Available links to the current versions have been provided.

Number	Description
1	Remediation Process Standard Operating Procedures Official versions are available on LDEQ's Intranet at: https://intranet.deq.louisiana.gov/intranetdeq/portals/0/sop/shared/SOP_3066_r02.pdf
2	Risk Evaluation/Corrective Action Program (RECAP) http://deq.louisiana.gov/page/recap
3	Guidance Manual for Environmental Boreholes and Monitoring Systems, November 2021 https://www.deq.louisiana.gov/assets/docs/Land/Guidance_Manual_Final_Revision_Nov_2021.pdf
4	Title 33 LELAP Regulations http://deq.louisiana.gov/assets/docs/Lab_Accreditation/LELAP_REGS.pdf
5	EPA Energy Act http://deq.louisiana.gov/page/energy-policy-act
6	Louisiana UST Closure/Install Guidance Document http://deq.louisiana.gov/resources/category/70
7	Underground Storage Tank/Leaking Underground Storage Tank Quality Assurance Project Plan (QAPP) https://www.deq.louisiana.gov/assets/docs/Forms/QAPP_1027_r12.pdf
8	LAC 33 XI Underground Storage Tanks https://www.deq.louisiana.gov/assets/docs/Legal_Affairs/ERC/33v11UST.docx
9	EPA Publication SW846 https://www.epa.gov/hw-sw846

Footnotes

[1]Management of an AOC/AOI may continue under RECAP 2000 until the current phase/task of the project has been completed and approved by the Department. Further assessment of the AOC/AOI shall be in compliance with RECAP 2003 unless otherwise approved by the Department.