

Mississippi Department of Environmental Quality
Underground Storage Tank Branch

Leaking Underground Storage Tanks

Technical Updates

Mississippi Department of Environmental Quality
Underground Storage Tank Branch

Manual of Standard Operating Procedures (SOP)

For Assessment and Cleanup at
Leaking Underground Storage Tank Sites

DRAFT Dated September 11, 2015

Presented by Martha Martin, Technical Supervisor

Manual of Standard Operating Procedures (SOP)

- ❖ Original dated March 7, 2003
- ❖ Revision #1 dated August 5, 2004
- ❖ Revision #2 DRAFT dated September 11, 2015

Main changes to the SOP are as follows:

❖ Consequences will occur for not following SOP Requirements listed below

- ✓ Samples not analyzed within holding times
- ✓ Groundwater does not intersect screened interval
- ✓ Groundwater samples collected before 75% recovery
- ✓ QA/QC samples greater than non-detect
- ✓ QA/QC samples not collected
- ✓ Duplicate sample has RPD greater than 25%
- ✓ Samples greater than 6°C when received by laboratory
- ✓ Chain-of-custody incomplete

Main changes to the SOP continued:

Section I. Preinvestigation Activities

- ❖ A. Obtaining Site History – Before any drilling begins, discuss boring/monitoring well placement and depth with the MDEQ UST project manager.
 - ✓ Remember to review MDEQ files for the site
- ❖ B. Utility Survey – Contact tank owner/operator for utility layout, and UST system layout.
- ❖ F. Manual of SOP Field Requirements – Have a copy of the MDEQ approved scope of work on site during field activities.

Main changes to the SOP continued:

Section II. Boring Installation and Soil Sampling

❖ A. Equipment –

- ✓ Soil borings should not be placed within 25 feet of each other without prior MDEQ approval.
- ✓ Soil borings shall be pre-drilled to a depth of **4 feet** using hand-held equipment to ensure the boring is clear of any underground utilities.

❖ B. Soil Sampling General Procedures – Sonic drilling needs to be sampled at 5-foot intervals.

Main changes to the SOP continued:

Section II. Boring Installation and Soil Sampling

- ❖ C. Soil Sampling BTEX & MTBE Analysis – Include on the container label the person collecting the sample and the analysis required.
- ❖ Table 2: Soil Analysis –
 - ✓ Cool to less than or equal to 6°C.
 - ✓ BTEX high range may use 4-ounce amber glass jar with no preservative and a maximum holding time of 14 days.

Main changes to the SOP continued:

Section II. Boring Installation and Soil Sampling

❖ F. Boring Termination –

- ✓ Record vapor readings through the termination of the boring.
- ✓ If the PID/FID readings are still high after drilling 10 feet into the water table, then the boring may need to be drilled deeper. Contact UST project manager to discuss.
- ✓ If converting to well, drill to a minimum of 18 feet.

Main changes to the SOP continued:

Section III. Monitoring Well Installation

❖ B. Monitoring Wells –

- ✓ Monitoring well caps shall be watertight and lockable.
- ✓ Write the number of the monitoring well in the concrete pad.
- ✓ Monitoring wells shall have at least 15 feet of screened interval.
- ✓ Added sonic drilling specifications.

Main changes to the SOP continued:

Section IV. Groundwater Sampling

- ❖ The Monitoring Well Sampling Record form shall be used for recording static groundwater data before sampling, well purging data, and well sampling data.
- ❖ B. Purging – The static water level shall be measured to the nearest 0.01 foot to ensure that the well has recovered to at least 75%.

Main changes to the SOP continued:

Section IV. Groundwater Sampling

- ❖ Table 3: Groundwater Analysis –
 - ✓ Cool to less than or equal to 6°C.
 - ✓ BTEX sample shall be preserved with maximum holding time of 14 days.
 - ✓ PAH sampling - added the 8270D (SIM) Method which allows the use of 40-mL amber glass vials.
 - ✓ Added EDB and 1,2-DCA, but only use when specifically requested by MDEQ.

Main changes to the SOP continued:

Section VI. Field Quality Control Checks

❖ C. Duplicate Samples –

- ✓ Shall be collected from a well suspected or known to be contaminated.
- ✓ If duplicate is analyzed for PAH, then a RPD should be calculated based on total PAH not for each individual constituent.

Main changes to the SOP continued:

Section VII. Chain-of-Custody Procedures

- ❖ B. Documentation of Chain-of-Custody (COC) –
 - ✓ The person collecting the samples shall be identified on the COC.
 - ✓ Include the company that the person signing the form represents.
 - ✓ Indicate the time the person relinquishes.
 - ✓ Indicate the shipment method (e.g., USPS, FedEx, UPS, etc.).

Main changes to the SOP continued:

Section VIII. Plugging Monitoring Wells

- ❖ Plug monitoring wells according to Office of Land and Water Resources regulations with the following UST revisions:
 - ✓ Check wells for free product before plugging.
 - ✓ Recovery well vaults shall also be plugged.
 - ✓ Area around well should be as clean after plugging as before.
 - ✓ Submit the forms required by OLWR, and the UST plugging report.

Main changes to the SOP continued:

Section IX. Miscellaneous

- ❖ A. Content of Proposals and Reports –
 - ✓ Must include site map to scale and with a north arrow.
 - ✓ Place reference point for surveying on one of the maps.
 - ✓ Must be signed and stamped by PE or PG.
 - ✓ Field logs shall be included in all reports.
 - ✓ Include documentation such as receipts, copies of Government Bill of Lading, and waste manifests.
 - ✓ Monitoring well sampling form.
 - ✓ Offsite access agreements.

Main changes to the SOP continued:

Section IX. Miscellaneous

❖ B. Submittal of Proposals and Reports –

- ✓ All shall be bound. Less than 50 pages may be stapled. No 3-ring binders (file space is an issue).
- ✓ Print on both sides of paper.
- ✓ Faxed or electronic proposals are acceptable for meeting the due date as long as signed by owner, and signed & stamped by ERAC. Still submit the hardcopy.
- ✓ Faxed or electronic reports are acceptable for meeting the due date as long as signed & stamped by ERAC. Still submit the hardcopy.

Main changes to the SOP continued:

Appendix – Monitoring Well Sampling Record

- ❖ Added the requirement to complete and submit the Monitoring Well Sampling Record form for all groundwater sampling activities.

Final SOP Comments

- ❖ Please submit your comments no later than September, 28, 2015.
- ❖ Once SOP is finalized, the ERAC Update Applications will be sent out requiring ERACs to sign off that the ERAC will follow the new SOP.

Mississippi Department of Environmental Quality
Underground Storage Tank Branch

Additional UST Technical Updates

Presented by Joseph Curro, Technical Supervisor

Additional Technical Updates

- ❖ Turnkey Remedial Action Plans
- ❖ Operation and Maintenance Forms
- ❖ Standardized Hours
- ❖ Chain of Custody Concerns

Turnkey Remedial Action Plans

- ❖ VOCs should be measured and recorded on every O&M visit.
- ❖ Triannual reports should include a map where 25-foot circles are drawn around recovery wells.
- ❖ Triannual reports should include a summary of vapor recovery each month.

Turnkey Remedial Action Plans continued

- ❖ Recovery wells should always be 4 inches in diameter unless otherwise approved by the project manager.
- ❖ Iron and hardness samples of groundwater should be analyzed prior to TRAP preparation.
- ❖ All monitoring wells should be sampled every triannual.
- ❖ 3 clean confirmation samplings will be required for site closure.

Turnkey Remedial Action Plans continued

- ❖ All utilities must be cut off upon system shutdown.
- ❖ Remediation system may be moved after the first sampling if it appears rebound is not occurring.
- ❖ Trust Fund will reimburse for system remobilization if rebound does occur.

Operation and Maintenance (O&M) Forms

- ❖ O&M forms shall be completed with all applicable information.
- ❖ Accurate arrival and departure times shall be recorded.
- ❖ Person performing the site visit shall print their first and last name and their job classification.
- ❖ All pertinent information included in the field notes must be transferred to the O&M form.

Operation and Maintenance (O&M) Forms continued

- ❖ A system maintenance form must be completed for the triannual system cleaning.
- ❖ UST Branch has developed a 5-page O&M form, which may be required for submittal in the future.

Standardized Hours

- ❖ Sonic drilling (0.15 hours per foot – 4-inch well).
- ❖ MDOT ROW permits.
- ❖ Allowing travel time for initial assessment activities.

Chain of Custody Concerns

Sample custody must be traceable and accurate from the time of sample collection until results are reported.

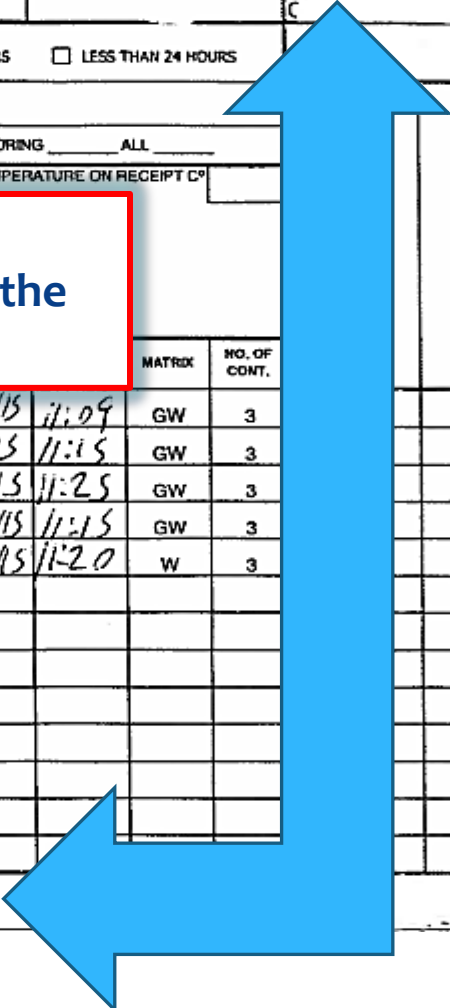
We are finding:

- ❖ Broken chains of custody.
- ❖ Wrong dates in sampling date field.
- ❖ No temperature readings upon sample receipt.
- ❖ Duplicates recorded incorrectly.

Sampler Name and Signature

“Sampler Name” and first name on “Relinquished by” should always be the same

| | | | | | | | |
|---|--|----------------|--|---------------------------|--|-------------------------|--|
| TELEPHONE | | FAX | | E-MAIL | | SAMPLER NAME(S) (Print) | |
| TURNAROUND TIME (BUSINESS DAYS): <input checked="" type="checkbox"/> 10 DAYS <input type="checkbox"/> 7 DAYS <input type="checkbox"/> 72 HOURS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> 24 HOURS <input type="checkbox"/> LESS THAN 24 HOURS | | | | | | | |
| <input type="checkbox"/> LA - RWQCB REPORT FORMAT <input type="checkbox"/> UST AGENCY: | | | | | | | |
| GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____ | | | | | | | |
| SPECIAL INSTRUCTIONS OR NOTES: | | | | TEMPERATURE ON RECEIPT C° | | | |
| | | MATRIX | | NO. OF CONT. | | | |
| MW-1 ✓ | | 01/21/15 11:09 | | GW | | 3 | |
| MW-2 ✓ | | 01/21/15 11:15 | | GW | | 3 | |
| MW-3 ✓ | | 01/21/15 11:25 | | GW | | 3 | |
| MW-4 ✓ | | 01/21/15 11:15 | | GW | | 3 | |
| Trip Blank | | 01/21/15 11:20 | | W | | 3 | |
| Relinquished by: (Signature) | | | | | | | |



Who should sign for drop-offs

Sampler



Relinquished By:

Date/Time:

**Driver if
different
from sampler**



Received By:

Date/Time:

from sampler



Relinquished By:

Date/Time:

Lab recipient



Received at Lab By:

Date/Time:

Who should sign for shipments

| RELINQUISHED BY : | | | | RECEIVED BY : | | | |
|--|----------------|----------------------|---|----------------------|---------------------------------|------------------|---|
| Name : | SAMPLER | Date : | | Name : | LIST SHIPPER | Date : | |
| Company : | | Time : | | Company : | (signature not required) | Time : | |
| Signatory : | | | | Signatory : | | | |
| Name : | | Date : | | Name : | | Date : | |
| Company : | | Time : | | Company : | LAB RECIPIENT | Time : | |
| Signatory : | | | | Signatory : | | | |
| Special Instruction / Comments (billing details, QC Reporting, etc.) : | | | | | | | |
| FOR LAB USE ONLY | | Cooler Seal Intact : | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Cooler Temperature : | °C | Frozen : | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | | | | | Cooling Method : | <input type="checkbox"/> Icepack <input type="checkbox"/> Ice <input type="checkbox"/> None |

List shipment number, if applicable, on the chain of custody AND seal the chain of custody INSIDE the cooler. Cooler should then be sealed with tape and a custody seal.

Who should sign for pick-ups

| RELINQUISHED BY : | | | RECEIVED BY : | | |
|--|----------------|--------|---------------|-----------------------------------|--------|
| Name : | SAMPLER | Date : | Name : | LAB DRIVER OR STAFF DRIVER | Date : |
| Company : | | Time : | Company : | | Time : |
| Signatory : | | | Signatory : | | |
| Name : | | Date : | Name : | | Date : |
| Company : | | Time : | Company : | LAB RECIPIENT | Time : |
| Signatory : | | | Signatory : | | |
| Special Instruction / Comments (billing details, QC Reporting, etc.) : | | | | | |
| FOR LAB USE ONLY Cooler Seal Intact : <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Cooler Temperature : °C Frozen : <input type="checkbox"/> Yes <input type="checkbox"/> No Cooling Method : <input type="checkbox"/> Icepack <input type="checkbox"/> Ice <input type="checkbox"/> None | | | | | |

If more than 3 people handle the samples and space is not available on the COC, list in the comment field the names, dates, and times of any persons involved in sample transfer

Other COC issues

COMPANY: _____

ADDRESS: _____

CITY: _____

TELEPHONE: _____ FAX: _____ E-MAIL: _____

TURNAROUND TIME (BUSINESS DAYS):
 10 DAYS 7 DAYS 72 HOURS 48 HOURS 24 HOURS LESS THAN 24 HOURS

LA - RWQCB REPORT FORMAT UST AGENCY:

GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: _____ TEMPERATURE ON RECEIPT C° _____

PROJECT CONTACT (Report to): _____ PROJECT NAME: _____

SAMPLER NAME(S) (Print): _____ LAB USE ONLY

REQUESTED ANALYSIS

FIELD NO. Container/PID Receptor or Laboratory

No Temperature listed on receipt

Time for equipment blank is identical

Sampling Date does not correspond with field log / O&M form

| LAB USE ONLY | Field Sample Identification | SAMPLING | | MATRIX | NO. OF CONT. | BTEX/MTBE Method 8260 |
|--------------|-----------------------------|----------|-------|--------|--------------|-----------------------|
| | | DATE | TIME | | | |
| | MW-1 ✓ | 01/21/15 | 11:09 | GW | 3 | X |
| | MW-2 ✓ | 01/21/15 | 11:15 | | | |
| | MW-3 ✓ | 01/21/15 | 11:25 | | | |
| | MW-4 ✓ | 01/21/15 | 11:15 | | | |
| | Trip Blank | 01/21/15 | 11:20 | | | |

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QUESTIONS?

