



# Specifications

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## ENV-HMM Contracting Standard Operating Procedures (SOP)

## ***Hazardous Materials Contracting Standard Operating Procedures***

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The following Standard Operating Procedures (SOPs) are designed to be used when initiated by specific contract scopes-of-work administered by the Hazardous Materials Management Branch in the Environmental Affairs Division (ENV) of TxDOT. These SOPs can be used by other contracting entities inside or outside of TxDOT.

## **Table of Contents**

100	Project Deliverables
101	Consultant Invoicing
102	Using ENV Contracted Analytical Laboratory Services
103	Purchase Order Deliverables
104	Purchase Order Invoicing
105	Hazardous Materials NEPA Documentation
106	Purchase Order Daily Reports
120	Single Parcel Phase I ESA
121	Multiple Parcel Initial Site Assessment (ISA)
122	Geophysical Surveys
123	Hazardous Materials Project Impact Evaluation Report
130	Utility Clearance for Investigation or Excavation Activities
131	Temporary Traffic Control Plans
132	Health and Safety Plans
134	Global Positioning System (GPS) Feature Locating
135	Storage Locations
137	Decontamination of Environmental Media Sampling Equipment
138	Field Logbook
139	Investigative Derived Waste (IDW) Handling and Disposal
150	Soil Borings and Sample Collection
170	Temporary Monitoring Well Installation
171	Monitoring Well Installation
178	Groundwater Monitoring and Sampling
185	Aquifer Testing
189	Mold Assessments
190	Asbestos Inspections
191	Asbestos Abatement Plans
192	ACM Abatement – Bridges/Outdoor Structures
193	ACM Abatement – Building Demolition

## *Hazardous Materials Contracting Standard Operating Procedures*

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- 194 ACM Abatement – Building Renovation
  - 195 Lead-in Paint (LBP) Inspections
  - 196 Lead-Containing Paint (LCP) Strip Abatement
  - 197 Mold Remediation Work Plan
  - 198 Lead-Containing Paint (LCP) Abatements – Building Renovation
  - 199 Mold Remediation
  - 200 Underground Storage Tank System Removal
  - 201 Aboveground Storage Tank (AST) Removal
  - 202 Underground Storage Tank (UST) In-Place Closure
  - 203 Underground Storage Tank (UST) Temporary Out of Service
  - 204 Non-Regulated Underground Tank System Removal
  - 210 Plugging and Abandoning Groundwater Monitoring Wells
  - 212 Assessment and Removal of Abandoned Pipelines
  - 250 Asbestos-Cement Pipe (Transite™) Removal and Disposal
  - 221 Soil and Groundwater Management Plan(s)
  - 222 Construction Oversight
  - 223 Biological Waste Removal and Disposal
  - 224 Waste Segregation, Characterization and Disposal
  - 225 Drilling Mud Collection and Disposal
  - 226 Soil or Solid Waste Reuse or Excavation, Transportation, and Disposal
  - 227 Soil Replacement and Compaction
  - 228 Air Monitoring for Construction
  - 229 Groundwater Collection and Disposal
  - 231 Spill Prevention Control and Countermeasures Plans
  - 232 Scrap Tire Collection, Transportation, and Recycling /Disposal
  - 241 Remedial/Corrective Action
  - 250 Mobile Dual Phase Extraction
- Appendix A

## 100 Project Deliverables

**100.1 Description:** This Standard Operating Procedure (SOP) identifies the content, form, and procedures, required for submittal and acceptance by ENV-HMM (Hazardous Materials Management) of deliverable work products (deliverables) from contracted entities, as specified in the Work Authorization (WA) or contract.

**100.2 Procedures:** The following procedures and criteria apply and are applicable for all executed WA(s) and any subsequently executed Supplemental WA(s) administered by ENV-HMM.

**Status Reports** – The Contractor shall prepare either a monthly or a weekly Status Report for each executed WA. The Contractor shall only prepare a weekly Status Report when directed by the Statement of Work (SOW). The Contractor shall utilize the Status Report form, supplied by ENV-HMM, for all progress reporting. The Contractor shall submit all Status Reports via e-mail to the ENV-HMM Project Manager and other individuals designated within the SOW.

**Deliverable(s)** –

**Draft Reports** – The Contractor shall submit all Draft Reports or other draft work products (drawings, plans, flow charts, cost estimates, etc.) by e-mail, Dropbox or similar file transfer protocol site, or in a format specified in the SOW. The Contractor shall submit all Draft Reports technically complete and free of typos and grammatical errors.

**Mid-Project Deliverable(s) (if applicable)** – Upon acceptance of the draft deliverable(s) by TxDOT, the Contractor shall submit the accepted, final, mid-project deliverables via e-mail (as a default), or in a format detailed by the SOW to the ENV-HMM Project Manager and to other individuals designated within the SOW.

**Contractor Final Deliverable Packet (CFDP):** The contractors shall submit to TxDOT a Final Deliverable Packet in a single .pdf with all deliverables related to that Work Authorization. This is considered the Final Deliverable Packet and may be separate from individual deliverables required by the WA. As an example, Monthly Status Reports (MSR) are a deliverable (mid-project deliverable) and will need to be combined with the final deliverable into the final, single .pdf. Submit to the ENV-HMM Project Manager through e-mail or an online document transfer program.

**Regulatory Derived Deliverables** – The Contractor shall prepare the Regulatory Derived Deliverable(s) (e.g. PST program report forms, APAR, etc.) in accordance with the most current format specified by the regulatory agency. In addition, the Contractor shall follow the general procedures outlined above for the different deliverables. Once approved by TxDOT, the Contractor shall prepare the final regulatory copies with the required

information and original signatures, seals and/or licensing proofs and submit it to the ENV-HMM Project Manager for countersignature. The ENV-HMM Project Manager shall submit the Regulatory Derived Deliverable(s) to the appropriate regulatory agency, unless otherwise directed by the SOW.

**Deliverable Schedule** – The Contractor shall submit all deliverables to TxDOT in accordance with the schedule outlined in the SOW.

## 101 Consultant Invoicing

**101.1 Description:** The following procedures outline the requirements for the Environmental Affairs Division of TxDOT (ENV) to accept invoices from contracted entities for payment.

**101.2 Forms:** The Contractor shall submit all forms required by the contract, and as requested by ENV.

**101.3 Procedures:** The following procedures are required for all invoices submitted as a request for payment for work performed in accordance with executed Work Authorizations (WA) and subsequent Supplemental WA(s) administered through ENV.

**Invoice** – The Contractor shall not process invoices without proof of work performed, either through Monthly Status Reports (MSR) or through a project deliverable accepted by the TxDOT project manager.

Each invoice must contain the following:

- Facility or site description or another assigned name designated for the project
- Brief description of work performed
- Contract number
- ERP number (PeopleSoft Number)
- WA number and subsequent Supplemental WA(s) numbers
- Service dates (time periods) for the invoice
- Total amount invoiced
- Detailed breakdown of all charges
- Backup documentation for all charges

**Cost Tracking Sheet** – The Contractor shall include a cost breakdown of the following items for each task outlined in the approved WA/ Supplemental WA(s):

- Total amount of WA, plus Supplemental WA(s)
- Current invoice amount
- Previous invoice amounts (cumulative total)
- Remaining budget

**Labor Rates** – The Contractor shall include a labor summary sheet. The labor summary sheets shall include dates of services (per day, not a lump sum period of time), personnel names, labor category, task, and hours worked per day. The Contractor shall keep timesheets, or another acceptable form of detailed project work records, for proof of work as part of their contractual record keeping. TxDOT can audit the timesheets at any time. The labor summary sheets shall agree with the invoice service dates. The Contractor

shall clearly show total hour(s) worked on the labor summary sheets. To avoid confusion, the Contractor may omit or cross out all other work not related to the invoiced WA.

**Other Unit Costs** – The Contractor shall include itemized receipts or other detailed records acceptable to ENV for all unit cost items included in the invoice. The itemized receipt/record shall clearly indicate the number of units completed or expended for the service dates included on the invoice and to what task the unit cost applies. TxDOT shall reimburse based on units completed and not on partial payments.

**Other Direct Expenses**

The Contractor shall include itemized receipts, or other detailed records acceptable to ENV, for direct expense items included on the invoice. For Fixed Cost items, the itemized receipt/record shall clearly indicate the number of units completed or expended for the service dates included on the invoice and to what task the expense applies. For Maximum Cost items, the receipt shall clearly indicate the number of units and the cost for the units completed or expended for the service dates included on the invoice.

**Lodging /Hotel and Meals** – TxDOT will only reimburse meals with proof of overnight lodging or with an approval from ENV for reimbursement for non-overnight stays. The invoice shall include a lodging/hotel receipt as backup documentation for an overnight stay. The documentation shall include the personnel name(s) and date(s) of the lodging usage. TxDOT shall reimburse meal expenses and overnight lodging rates at actual cost and must not exceed the contract rate. The Contractor shall only submit Itemized meal receipts (credit card receipts are not acceptable) to document usage. Gratuities/tips, non-food items, tobacco, alcohol and alcohol related taxes are not reimbursable.

**Final Invoice** – The Contractor shall mark each Final Invoice for a WA with the words “Final Invoice”. In addition, the Contractor shall submit along with the Final Invoice a WA Decommittment of Funds form completed and signed by the Contractor. After submitting the Final Invoice, the Contractor shall not submit any additional charges to the project.



## 102 Using ENV Contracted Analytical Laboratory Services

**102.1 Description:** This item sets forth the procedures for using ENV-contracted analytical laboratory services.

**102.2 Procedures:** The Contractor in conjunction with the ENV Project Manager (PM) shall determine the number and type of samples of environmental media to be collected to meet the Project Objectives. The Statement of Work prepared for the project shall show the number and type of samples and analytes represented in a table, as shown below in Table 1 (Soil/Solid Seven Day Turn Around Time), Table 2 (Soil/Solid 24 Hour Turn Around Time), Table 3 (Water Seven Day Turn Around Time) and Table 4 (Water 24 Hour Turn Around Time). The Contractor shall attempt to anticipate all contingencies in preparing the Table to prevent emergency lab analysis request.

**102.2.1** The ENV PM may solicit bids from one or more Contract Laboratories to determine the Best Value for the State. The ENV PM shall prepare a Purchase Order (PO) Release Memorandum for approval by the PPA Branch Manager.

**102.2.2** The ENV PM shall deliver the Approved PO Request to ENV Contracts for issuance of a PO Release to the selected Contract Laboratory.

**102.2.3** The ENV Contracts staff shall prepare and transmit the PO Release to the Contract Laboratory and to the ENV PM.

**102.2.4** The ENV PM shall notify the Contractor of the selected Contract Laboratory, contact information, and the PO Release Number for the selected Contract Laboratory.

**102.2.5** The Contractor shall order sample kits from the appropriate Contract Laboratory. Sample kit orders should reference the TxDOT PO Release number to ensure that the correct sample kits are ordered.

**102.2.6** The Contractor shall collect, properly preserve, label, perform Chain-of Custody, and ship/deliver all samples to the Contract Laboratory. The Chain-of Custody documentation will need to reference the TxDOT PO Release number.

**102.3 Communication:** The Contractor shall not order any additional analyses or change the TAT directly with the Contract Laboratory. Communicate to the ENV PM any additional analyses that may be required due to unanticipated field conditions or the need for rushed analytical results. The ENV PM shall solicit costs from the Contract Laboratory and issue a new PO Release for the additional analyses or expedited TAT. In no case will the

Contractor request additional analytical services or change TAT directly with the Contract Laboratory without the approval of the ENV PM.

**102.4 Reporting:** The Contract Laboratory shall send the completed Analytical Laboratory Report to the Contractor and the ENV PM within the specified Turn-Around-Time (TAT). Contact the ENV PM if the Contract Laboratory fails to meet the specified TAT.

**102.5 Billing:** The Contract Laboratory shall send all invoices for Analytical Services to TxDOT for payment. In the event the Contract Laboratory sends an invoice to the Contractor, The Contractor shall immediately notify and transmit the Contract Laboratory invoice to the ENV PM.

Table 1 – Soil/Solid 7 Calendar Day Turnaround Time			
Line Item	Soil Analytical	Estimated Number of Analyses	Special Instructions (Hold, etc.)
1	Metals (one metals) (EPA 3050A/6010B)		
2	Metals (8 RCRA metals) (EPA 3050A/6010B)		
3	Metals (Total 30 metals) (EPA 3050B/6010B)		
4	Metals (TCLP 8 RCRA metals) (EPA 1311/6010B)		
5	Metals (SPLP 8 RCRA metals) (EPA 1312/6010B)		
6	Metals (TCLP one metal) (EPA 1311/6010B)		
7	Metals (SPLP one metal) (EPA 1312/6010B)		
8	Metals (Priority Pollutant (PP-13)) (EPA 200.7/6010B)		
9	Volatiles (Total Volatile Organics) (EPA 5035/8240 or 8260)		
10	Volatiles (BTEX + MTBE) (EPA 5035/8021B)		
11	Volatiles (BTEX + MTBE) (EPA 8260B)		
12	Volatiles (BTEX) (EPA 5035B/602)		
13	Volatiles (Halogenated Volatile Organics) (EPA 5030,5035/8021B)		
14	Volatiles (TCLP) (EPA 1311/8260B)		
15	Volatiles (SPLP) (EPA 1312/8260B)		
16	Semi-volatiles (Total Semi-volatiles) (EPA 3540,3541,3550/8270)		
17	Semi-volatiles (PAH) (EPA 3540,3541,3550/8270C)		
18	Semi-volatiles (PCB) (EPA 3540,3541,3550/8082)		
19	Semi-volatiles (TCLP) (EPA 1311/8270C)		
20	Semi-volatiles (SPLP) (EPA 1312/8270C)		
21	Total Petroleum Hydrocarbons (TNRCC 1006)		
22	Total Petroleum Hydrocarbons (TNRCC 1005)		
23	Total Petroleum Hydrocarbons (EPA 5030,5035/8015B)		
24	Pesticides (8081A)		

25	Herbicides (8151A)		
26	Glycols (8015)		
27	Tentatively-Identified Compounds		
28	Geotechnical Parameters (All)		
29	Dry Bulk Density		
30	Effective Porosity		
31	Fraction Organic Carbon (Watley-Black)		
32	Intrinsic Permeability		
33	Water Content (ASTM D2216)		
34	pH		
	<b>Characteristic Tests</b>		
35	Reactivity, Ignitibility, and Corrosivity (RIC),		
36	Total Organic Halogens (TOX, EOX)		
	<b>Miscellaneous Analyses</b>		
37	Radium Isotopes (EPA 903)		
38	Carbon 14 (EERF C-01)		
39	Cesium 137 (EPA 901.1)		
40	TCLP Extraction (EPA 1311)		
41	TCLP RCRA 11 Metals (SW-846 6020)		
42	Oil and Grease (SW-846 9071)		
43	Cyanide (SW-846 9010/9014A)		
44	Oil and Grease Extraction (SW-846 9071B)		
45	Dioxins/Furans (8290)		
46	Gross Alpha-Beta (EPA 900)		
47	SPLP Extraction (EPA 1312)		
48	SPLP 13 Metals (SW-846 6020/7470)		
49	SPLP TPH (TX1005)		
50	Terracore Samplers		
51	Pesticides (SW-846 8141)		
52	SPLP Pesticides (SW-846 8081)		
53	SPLP Herbicides (SW-846 8151)		
54	ACM by Polarized Light Microscopy (EPA 600/R-93/1165) 7-day TAT		
55	ACM by Point Count Method (NIOSH 74005) 7-day TAT		
	<b>TRRP Report</b>		
56	Laboratory Review Checklist		
<b>Table 2 – Soil/Solid 24-Hour Turnaround Time</b>			
Line Item	Soil Analytical	Estimated Number of Analyses	Special Instructions (Hold, etc.)
57	Metals (one metals) (EPA 3050A/6010B)		

58	Metals (8 RCRA metals) (EPA 3050A/6010B)		
59	Metals (Total 30 metals) (EPA 3050B/6010B)		
60	Metals (TCLP 8 RCRA metals) (EPA 1311/6010B) (Quickest Possible TAT)		
61	Metals (Priority Pollutant (PP-13)) (EPA 200.7/6010B)		
62	Volatiles (Total Volatile Organics) (EPA 5035/8240 or 8260)		
63	Volatiles (Halogenated Volatile Organics) (EPA 5030,5035/8021B)		
64	Volatiles (BTEX + MTBE) (EPA 8260B)		
65	Volatiles (BTEX) (EPA 5035B/602)		
66	Semi-volatiles (Total Semi-volatiles) (EPA 3540,3541,3550/8270)		
67	Semi-volatiles (PAH) (EPA 3540,3541,3550/8270C)		
68	Semi-volatiles (PCB) (EPA 3540,3541,3550/8082)		
69	Total Petroleum Hydrocarbons (TNRCC 1006)		
70	Total Petroleum Hydrocarbons (TNRCC 1005)		
71	Total Petroleum Hydrocarbons (EPA 5030,5035/8015B)		
72	Pesticides (8081A)		
73	Herbicides (8151A)		
74	Glycols (8015)		
75	Tentatively-Identified Compounds		
76	pH		
	<b>Miscellaneous Analyses</b>		
77	ACM by Polarized Light Microscopy (EPA 600/R-93/1165) 24 hr. TAT		
78	ACM by Point Count Method (NIOSH 74005) 24 hr. TAT		
	<b>TRRP Report</b>		
79	Laboratory Review Checklist		
<b>Table 3 – Water 7 Day Turnaround Time</b>			
Line Item	Water Analytical	Estimated Number of Analyses	Special Instructions (Hold, etc.)
80	Metals (one metal) (EPA 3005A,3015,3020A/6010B)		
81	Metals (8 RCRA metals) (EPA 3005A,3015,3020A/6010B)		
82	Metals (Total 30 metals) (EPA 3005,3015/6010B)		
83	Metals (Priority Pollutant (PP-13)) (EPA 200.7/6010B)		
84	Volatiles (BTEX + MTBE) (EPA 5030B/8021B)		
85	Volatiles (BTEX + MTBE) (EPA 8260B)		
86	Volatiles (BTEX) (EPA 5030B/602)		
87	Volatiles (total Volatile Organics) (EPA 5030B,5035/8260B)		
88	Semi-volatiles (total) (EPA 3510C,3520C/8270,8270C)		

89	Semi-volatiles (PAH) (EPA 3510C,3520C/8100,8310)		
90	Semi-volatiles (PCB) (EPA 3510C,3520C3535/8082,8141)		
91	Total Petroleum Hydrocarbons (TNRCC 1006)		
92	Total Petroleum Hydrocarbons (TNRCC 1005)		
93	Total Petroleum Hydrocarbons (EPA 5030B,5035C/8015B)		
94	Pesticides (8081A)		
95	Herbicides (8151A)		
96	Glycols (8015)		
97	Tentatively-Identified Compounds		
98	pH		
99	Conductivity		
100	Total Dissolved Solids		
	<b>Characteristic Tests</b>		
101	Reactivity, Ignitibility, and Corrosivity (RIC),		
102	Total Organic Halogens (TOX, EOX)		
	<b>Miscellaneous Analyses</b>		
103	Radium Isotopes (EPA 903)		
1024	Carbon 14 (EERF C-01)		
1035	Cesium 137 (EPA 901.1)		
1046	Oil and Grease (SW-846 9071)		
1057	Cyanide (SW-846 9010/9014A)		
1068	Oil and Grease Extraction (SW-846 9071B)		
1079	Dioxins/Furans (8290)		
110	Gross Alpha-Beta (EPA 900)		
111	Pesticides (SW-846 8141)		
	<b>TRRP Report</b>		
112	Laboratory Review Checklist		

**Table 4 – Water 24 Hour Turnaround Time**

Line Item	Water Analytical	Estimated Number of Analyses	Special Instructions (Hold, etc.)
113	Metals (one metal) (EPA 3005A,3015,3020A/6010B)		
114	Metals (8 RCRA metals) (EPA 3005A,3015,3020A/6010B)		
115	Metals (Total 30 metals) (EPA 3005,3015/6010B)		
116	Metals (Priority Pollutant (PP-13)) (EPA 200.7/6010B)		
117	Volatiles (BTEX + MTBE) (EPA 5030B/8021B)		
118	Volatiles (BTEX + MTBE) (EPA 8260B)		
119	Volatiles (BTEX) (EPA 5030B/602)		
120	Volatiles (total Volatile Organics) (EPA 5030B,5035/8260B)		
121	Semi-volatiles (total) (EPA 3510C,3520C/8270,8270C)		

122	Semi-volatiles (PAH) (EPA 3510C,3520C/8100,8310)		
123	Semi-volatiles (PCB) (EPA 3510C,3520C3535/8082,8141)		
124	Total Petroleum Hydrocarbons (TNRCC 1006)		
125	Total Petroleum Hydrocarbons (TNRCC 1005)		
126	Total Petroleum Hydrocarbons (EPA 5030B,5035C/8015B)		
127	Pesticides (8081A)		
128	Herbicides (8151A)		
129	Glycols (8015)		
130	Tentatively-Identified Compounds		
131	pH		
132	Conductivity		
133	Total Dissolved Solids		
<b>TRRP Report</b>			
134	Laboratory Review Checklist		
<b>DATA DELIVERABLES</b>			
Line Item	<b>Deliverable</b>	Estimated Number	Special Instructions
135	Electronic Data Deliverable		
136	CD-R Deliverable (including final analytical report and EDD)		
	Miscellaneous Analyses		

## 103 Purchase Order Deliverables

**103.1 Description:** This Standard Operating Procedure (SOP) identifies the content, form, and procedures required for submittal and acceptance of deliverables from contracted entities, as specified in purchase order specifications administered by ENV-HMM.

**103.2 Procedures:** The following procedures and criteria apply and are applicable for all executed purchase order releases through ENV-HMM.

**Draft Reports:** The Contractor shall submit all Draft Reports or other draft work products (drawings, plans, flow charts, cost estimates, etc.) by e-mail, Dropbox or similar file transfer protocol site, or in the format specified by the SOW. The Contractor shall ensure all Draft Reports are technically complete and free of typos and grammatical errors.

**Mid Project Deliverables:** All mid-project deliverables (Health and Safety Plan, Daily Reports, or other mid project deliverables as outlined in the project statement of work) shall follow the purchase order specification and the detailed requirements outlined in the project specific Statement of Work (SOW), if required.

**Contractor Final Deliverable Packet (CFDP):** The contractors shall submit to TxDOT a Final Deliverable Packet in a single .pdf with all deliverables related to that Purchase Order. This is considered the Final Deliverable Packet and may be separate from individual deliverables required by the release.

**Regulatory Derived Deliverables:** The Contractor shall prepare the Regulatory Derived Deliverable(s) (e.g. PST program report forms, TRRP report forms, asbestos notification forms, etc.) in accordance with the most current format specified by the regulatory agency. In addition, the Contractor shall follow the general procedures outlined above for the different deliverables. Once approved by TxDOT, the Contractor shall prepare the final regulatory copies with the required information and original signatures, seals and/or licensing proofs and submit it to the ENV-HMM Project Manager for countersignature. The ENV-HMM Project Manager shall submit the Regulatory Derived Deliverable(s) to the appropriate regulatory agency, unless otherwise directed by the SOW.

## **104 Purchase Order Invoicing**

**104.1 Description:** The following procedures outline the requirements to accept purchase order invoices from contracted entities for payment, for purchase order releases administered by ENV-HMM.

**104.2 Forms:** The Contractor shall submit all forms required by the specification, and as requested by ENV-HMM.

**104.3 Procedures:** The Contractor shall follow the purchase order specification related to invoicing and payment requirements.

**Lodging /Hotel and Meals:** The Contractor shall only submit Itemized meal receipts (credit card receipts are not acceptable) to document usage. Gratuities/tips, non-food items, tobacco, alcohol and alcohol related taxes are not reimbursable.



## 105 Hazardous Materials NEPA Documentation

**105.1 Description:** The Contractor shall utilize the following procedures when preparing the Hazardous Materials section of a National Environmental Policy Act (NEPA) document for ENV-HMM.

**Note:** For NEPA document preparation, the term Hazardous Materials is a generic term used for all types of contamination and solid waste issues.

### 105.2 Procedures:

**Environmental Assessment** – The Contractor shall perform a Phase I Environmental Site Assessment (ESA) per ENV Item 120, or a TxDOT Initial Site Assessment (ISA) per ENV Item 121, and per the relevant SOW.

**Hazardous Materials Section** – The Contractor shall prepare the Hazardous Materials Section of the NEPA document using the following procedures, or as directed by the SOW.

- A concise summary of relevant information gathered during the ESA or ISA, including sufficient information to show that the study area for the transportation activity was adequately investigated for known or potential recognized environmental conditions;
- A concise description of the scope of the hazardous materials ESA or ISA, disclosure of any limitations of the assessment, and a statement indicating who performed the assessment;
- A concise summary of the findings of the assessment for each alternative considered;
- A discussion of any commitments to perform further investigation for suspect areas, and/or justification for postponement of further investigation;
- Disclosure of known or suspected hazardous material contamination that is anticipated to be encountered during construction;
- A discussion of any required special considerations, contingencies or provisions to handle known or suspected hazardous material contamination during right-of-way negotiation and acquisition, property management, design and/or construction;
- A summary of any early coordination or consultation with the regulatory agencies, local entities or property owners; and
- A discussion of any further hazardous materials related coordination with, and approvals or permits required from, the regulatory agencies or other entities.

**105.3 Deliverable:** The Contractor shall prepare and deliver the Hazardous Materials Section for the NEPA document in a Microsoft Word format, or other specified format outlined within the SOW.

The Contractor shall submit a summary report of the work performed under this ITEM for review and acceptance by TxDOT following the procedures outlined in ENV ITEM 100. The summary report shall include, when applicable, full list search reports, copies of agency file information, recommendations, a completed TxDOT Initial Site Assessment (ISA) Report Form, and any other supporting information.

## 106 Purchase Order Daily Reports

**106.1 Description:** This Standard Operating Procedure (SOP) identifies content, form, and procedures required for submittal and acceptance of Daily Field Reports from contracted entities, as specified in purchase order specifications administered by ENV-HMM.

**106.2 Procedures:** In addition to the requirements outlined in the purchase order specification for Daily Field Reports, the Contractor shall include the following information where applicable.

### 106.2.1 General:

- Generally limited to one page (not including photographs).
- Provided in a consistent format throughout the project (Supplied by ENV-HMM)
- Separate from a Field Logbook (per ENV ITEM 138), if applicable
- The file name for electronic daily report shall include the date, abbreviated job name, and the text "Daily Field Report"
- Include Photographs of key activities.

### 106.2.2 Format:

- Project name as specified in the purchase order release.
- Purchase order release number(s), date, including day of the week
- Sequential Daily Field Reports
- Location information: address or nearest cross street, city, and county
- Contractor name
- General weather conditions
- Temperature and wind direction
- List of personnel onsite and company or agency affiliation
- List of equipment and additional materials onsite
- Traffic control requirements, if applicable
- Underground utility notes/issues/clearance

### 106.3.1 Work Performed:

- Tailgate and Health and Safety meeting and attendees
- Narrative of specific work tasks performed including start and stop times.
- Verify Schedule.
- Cost drawdown summary, when requested
- Field screening observations, if applicable
- Summaries of verbal communication, concerning cost and schedule

- Status of investigation derived wastes, if applicable
- Summarize next days planned activities

**106.3.2 Soil/Water Sampling:** The Contractor shall provide the following information, as appropriate, into the Daily Field Report.

- Sample number(s), location description (site sketch) and purpose
- Type of media (soil, groundwater, etc.)
- Type of analyses requested
- Field observations/sample description
- Sample shipment destination, attach Chain of Custody, if practical

**106.3.3 Soil/Groundwater Removal Activities:** The Contractor shall provide the following information, as appropriate, into the Daily Field Report.

- Type of media (soil, groundwater, etc.)
- Approximate cubic yards/gallons of soil/groundwater removed during the day and cumulative volumes
- Approximate cubic yards of back fill delivered and cumulative volumes, if applicable
- A list of the manifest numbers.

**106.3.4 Tank Removal Activities:** The Contractor shall provide the following information, as appropriate, into the Daily Field Report.

- Number, condition, contents and approximate size of tanks
- Tank inerting/cleaning activities including % Lower Explosive Limit (LEL)
- Approximate volume of fluids managed
- Approximate cubic yards of back fill delivered, description of surface completion
- Management of waste tank and/or soil materials

## **120 Single Parcel Phase I ESA**

**120.1 Description:** This Standard Operating Procedure (SOP) identifies procedures for conducting an Environmental Site Assessment (ESA) on a single parcel of property for the purposes of property acquisition, or as directed by the SOW.

**120.2 Procedures:** The Contractor shall conduct the Phase I ESA in accordance with ASTM (American Society for Testing and Materials) E1527 (latest iteration), *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*.

**120.3 Reporting/ Deliverables:** TxDOT shall review the Status Reports and Final Deliverables per ENV ITEM 100. The Final Report (Deliverable) will follow the report format outlined in ASTM E1527 (latest iteration).

## 121 Multiple Parcel Initial Site Assessment (ISA)

**121.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for conducting a multiple parcel Initial Site Assessment (ISA).

**Note:** The Hazardous Materials Initial Site Assessment (ISA) is a screening and data collection form used for the purposes of identifying potential contamination issues related to TxDOT right-of-way (ROW). The ISA consists of a desktop study and visual site survey. The ISA is generally based on the ASTM Phase I ESA E1527 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. Data evaluation is not required beyond what is specifically requested in the form. Analysis and documentation of the collected data shall be included in the Hazardous Materials Project Impact Evaluation Report, to be scoped separately.

### 121.2 Procedures:

**121.2.1** TxDOT shall supply the relevant information concerning the alignment of the project and the requirements related to the physical construction activities such as schematics, cross sections and PS&E when available.

**Note:** The Contractor shall pay attention to property acquisitions and proposed substantial excavations while completing the ISA.

**121.2.2** The Contractor shall obtain and complete relevant sections of the most current ISA Report Form from the Hazardous Materials Toolkit located on the TxDOT internet site.

### 121.3 Reporting

TxDOT shall review the Status Reports and Final Deliverables per ENV ITEM 100.

**121.4 Reference:** The Contractor may utilize the following references in performing the ISA.

- [Hazardous Materials Toolkit](#)
- Chapter 2 – Section 2 – Hazardous Materials in Project Development.

## 122 Geophysical Surveys

**122.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for performing a non-intrusive survey to identify anomalous subsurface features.

**122.2 Procedures:** The Contractor shall use ground-penetrating radar and/or related electromagnetic instrumentation, as appropriate for the site, to identify subsurface anomalies and/or structures.

The Contractor shall conduct geophysical surveys according to established procedures and guidance, to include the following:

- USACE, EM1110-1-1802, Geophysical Exploration for Engineering and Environmental Investigation.
- ASTM D6432-99 (2005) Standard Guide for Using the Surface Ground Penetrating Radar Method for Subsurface Investigations.

**122.3 Reporting / Deliverables:** The Contractor shall submit reports and final deliverables for review and acceptance by TxDOT following the procedures outlined in ENV ITEM 100.

The geophysical final report shall include the following information:

- A description of equipment including type, manufacture, and model used to conduct the survey;
- Equipment calibration frequencies, procedures and results;
- Map(s) illustrating ground penetrating radar and/or geomagnetic/ conductivity data;
- Interpretive text providing a clear and concise summary of survey results; and
- Interpretive map(s) locating identified anomalies and/or structures relative to surface features and a determination as to what the anomaly may be (e.g. underground storage tank).
- Estimate the depth below ground surface of the anomaly
- Tabulation of GPS coordinates for all subsurface anomalies

## 123 Hazardous Materials Project Impact Evaluation Report

**123.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for performing and creating a Hazardous Materials Project Impact Evaluation Report.

**Note:** The Hazardous Materials Project Impact Evaluation Report is utilized to analyze and document hazardous materials issues that may affect a TxDOT project, as identified in the Hazardous Materials Initial Site Assessment (ISA) Report Form or an Environmental Site Assessment (ESA).

### 123.2

**123.2.1 Procedures:** The Contractor shall obtain the completed project ISA Report Form prepared in accordance with ENV ITEM 121 and associated guidance or Phase I ESA prepared in accordance with ENV 120. Additionally, the Contractor shall obtain the proposed project requirements, which may include project PS&E, schematics, and cross-sections.

**123.2.2 Hazardous Materials Project Impact Evaluation:** The Contractor shall review the concerns identified in Section 8.1 of the ISA, or the Recognized Environmental Conditions (RECs) identified in the Phase I ESA, and the requirements of the proposed project to determine any potential hazardous materials issues to the project.

The Contractor shall evaluate each potential hazardous material issues identified within Section 8.1 of the project ISA or the RECs identified in the Phase I ESA. Furthermore, the Contractor shall evaluate each physical location within a concern category (e.g. at each leaking petroleum storage tank along a corridor). The Contractor shall include the reason and/or thought process used to make an impact determination. The evaluation shall place each issue within one of the following categories:

- Low Potential or No Potential for Project Impacts, with rationale
- Additional Information Required – Additional project/construction information or more information related to the contamination is needed
- Impacts Anticipated – Contamination impacts are expected on the project.

Hazardous Materials Project Impact Evaluation Parameters: The report shall conform to the following parameters:

- The Contractor shall include a summary of the ISA Section 8.1 issues or Phase I ESA RECs (detailed backup information will remain with the ISA or the Phase I ESA report and will not be included in the impact evaluation report).



- The Contractor shall only include the Concerns Identified in 8.1 of the ISA that are selected as “Yes” or the RECs determined to have possible project impacts will require an impact evaluation. All Concerns marked as “No” in the ISA, or RECs that are determined not to be an issue in the ESA will not need to be included in the report.
- The Contractor shall evaluate each concern requiring an impact evaluation in a brief written form (e.g. two (2) paragraphs). The Contractor may utilize a tabular format, maps, or cross-sections, when appropriate.

**123.3 Reporting:** The Contractor shall submit deliverables for review and acceptance by TxDOT using the procedures outlined in ENV ITEM 100.

**123.4 Reference:** The Contractor may utilize the following references in performing the Hazardous Materials Project Impact Evaluation.

- ASTM 1527 (current iteration)
- TxDOT Hazardous Materials in Project Development Manual.

## **130 Utility Clearance for Investigation or Excavation Activities**

**130.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for performing utility clearances prior to conducting intrusive investigations or excavation activities.

**130.2 Procedures:** The Contractor shall follow the requirements outlined in Utilities Code Title 5 Chapter 251 Underground Facility Damage Prevention and Safety Act. The Contractor shall identify all utility lines (above and belowground) using reasonable and responsible measures for avoiding impacts to utility lines during intrusive investigations (i.e. drilling, hand auguring, etc.) and excavation operations.

The Contractor shall notify a Notification Center for utility clearance at least 48 hours, but no more than 14 days prior to commencing drilling or excavating activities.

In addition, the Contractor shall verify the existence of all suspected utilities not otherwise identified by the Notification Center (utilities located on private property and those not subscribed to the service). At a minimum, the Contractor shall investigate electrical cables, oil and gas pipelines, water pipelines, communication lines, fiber optic lines, and sanitary sewers. For signal control cables, traffic cameras cables, etc., contact the TxDOT District Traffic Operations.

The Contractor shall document in the Field Notebook the following, the One Call notification, reference number information, and notations about field observations.

## 131 Temporary Traffic Control Plans

**131.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for developing Temporary Traffic Control plans.

**Note:** The primary function of Temporary Traffic Control (TTC) Plans is to provide for the reasonably safe and efficient movement of road users through or around temporary traffic control zones while reasonably protecting workers, responders to traffic incidents, and equipment.

**131.2 Procedures:** In preparing the TTC plan, the Contractor shall follow the requirements outlined in the latest edition of the Texas Manual on Uniform Traffic Control Devices (TMUTCD), and if applicable, TXDOT Traffic Control Plan (TCP) Standards under the Traffic Engineering Standard Plan Sheets.

The Contractor shall prepare the TTC plans with persons knowledgeable about the fundamental principles of developing a TTC and the project work activities. The Contractor shall use engineering judgment in the design, selection and placement of TTC devices for a TTC plan.

The TTC plan may include provisions for coordination with other entities, such as local officials having jurisdiction over adjacent or cross-streets, law enforcement and other emergency units, utilities, and schools to reduce unexpected and unusual roadway delays.

Prior to implementation of a TTC plan, the TXDOT district or other responsible highway official having jurisdiction of the roadway shall approve the plan, unless preapproved by utilizing Traffic Engineering Standard Plan Sheets. Typically, the approval authority is the TxDOT Area Engineer.

**131.3 Reporting/ Deliverables:** The Contractor shall submit the TTC plan in writing and conform to the requirements of the TMUTCD and the TCP Standards. The degree of detail in the TTC plan shall depend on the nature and complexity of the situation. A TTC Plan may reference typical drawings contained in the TMUTCD, include standard approved TxDOT drawings and manuals, or contain specific drawings prepared for the specific project. TxDOT shall specify the level of detail in the project SOW.

## 132 Health and Safety Plans

**132.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for developing Health and Safety Plans (HASPs).

**132.2 Procedures:** The Contractor shall perform the following procedures when developing HASP for areas potentially impacted by contamination.

**HASP Development** – The Contractor shall identify all safety aspects of site operations prior to commencing fieldwork. The site-specific HASP will include a site characterization and job hazard analysis that includes all reasonably anticipated chemical, physical, and/or biological hazards. The HASP may include a site description and scope of work, site control measures (access, work zones, security), PPE requirements, emergency response plan, clear chemical monitoring thresholds for stop-work conditions, training requirements for the HASP, and project team organization and responsibilities. TxDOT will not formally review and/or approve the HASP, but may require submission of the HASP prior to commencement of field actions as part of the project documentation.

### **HAZWOPER**

At a minimum, the Contractor shall develop the HASP following OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) standard 29 CFR 1910.120. The HASP shall include documentation showing that all workers (contractors and subcontractors) conducting site activities have completed the training requirements and medical monitoring under OSHA standard 29 CFR 1910.120 I.

**HASP Implementation** – Prior to beginning field work, the Contractor shall make the HASP available to all TxDOT employees, contractors, and/or subcontractors present at the project site performing activities listed in the HASP or working within the designated area(s) addressed by the HASP. All such individuals shall sign the HASP, indicating they have reviewed the HASP and understand it. Any subsequent visitors to the site that enter a work zone designated in the HASP shall review and sign the HASP. The Contractor shall modify the HASP as needed.

**HASP Documentation** – The Contractor shall include a copy of the HASP with completed signature pages in the Final Deliverable(s) as per ENV ITEM 100.

## **134 Global Positioning System (GPS) Feature Locating**

**134.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for utilizing GPS locating.

**Note:** GPS feature locating techniques are used to measure and record locations of site surface features and/or structures based upon receiving radio signals from a network of orbiting satellites or utilizing commercial coordinate-based maps to interpret location coordinates.

**134.2 Procedures:** The Contractor shall identify the latitude and longitude of target features identified in the Statement-of-Work (SOW). The Contractor may obtain the latitude and longitude of target features by utilizing internet-based coordinate maps (i.e., Google Earth) and/or using hand-held mobile devices in the field. The Contractor shall obtain to an accuracy of +/-15 feet for target features.

**134.3 Deliverable:** The Contractor shall document the latitude and longitude of the target features in the final deliverable.

## 135 Storage Locations

**135.1 Description:** Describes the process and procedures required for storing project-related equipment, materials, products, and wastes/ recyclable materials between work shifts.

**135.2 Procedures:** The following are procedures and/or processes that shall be utilized when storing project-related equipment, materials, products, and wastes/recyclable materials associated with ENV projects.

- Contractor shall secure all permissions required to build and maintain the required storage locations (with assistance from ENV). Only TxDOT managed land shall be utilized for storage locations. *Special permissions and other requirements may be required for storage locations not owned or operated by TxDOT.*
- Contractor shall be responsible for any erosion and sedimentation controls that may be required.
- All equipment shall be stored in a manner that will not impact the public or the environment.
- All work materials and products shall be stored per manufacturer requirements and in a manner compatible with the storage environment. This includes the storage of all fuel and other toxic or hazardous materials.
- Wastes/ recyclable materials shall be stored in a manner that will not contaminate or aggravate the storage location or surrounding environment.
- After all equipment, materials, products, and wastes/recyclables are removed from the storage location the area affected shall be returned to its pre-storage condition or to the condition agreed to by the permission authority.

**135.3 Reporting:** Storage locations shall be recorded in the field logbooks, including the before- and after-storage conditions, and included within the project deliverable(s).

## **137 Decontamination of Environmental Media Sampling Equipment**

**137.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for decontaminating environmental media sampling equipment.

**137.2 Procedures:** The Contractor shall utilize the following procedures for the decontamination of sampling equipment for site investigation activities associated with ENV-HMM projects. TxDOT may detail the method and equipment required for proper decontamination in the Statement of Work (SOW).

**Decontamination Methods:** The Contractor shall determine the appropriate decontamination method based on available project site data. The Contractor shall gain prior approval to use solvents, other than water.

**Testing for Decontamination Effectiveness:** The Contractor shall determine the effectiveness of the decontamination procedures and identify any issues related discoloration, staining, corrosive effects, visible dirt, sheen, or odor, etc. on the decontamination equipment. The Contractor shall collect appropriate rinsate/wipe samples at the rate specified in accordance with applicable regulatory standards, or as directed in the SOW.

**Decontamination Waste Storage and Disposal** – The Contractor shall minimize the length of time decontamination waste is staged at the location of origin. TxDOT maintenance facilities may be a preferable staging location to the right-of-way contingent on approval. The contractor shall dispose, at an authorized disposal facility, all decontaminated wash water, sediment and/or sludge accumulated during the decontamination process, disposable cleaning equipment, and disposable personal protective. The Contractor may add decontamination liquids to soil cuttings prior to characterizing the soil cuttings for disposal. The resulting mixture shall pass the paint test for a solid waste.

## 138 Field Logbook

**138.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for recording data and information in a field logbook for TxDOT ENV projects. Field logbooks may contain detailed records of all field activities, summaries of verbal communications, observations of site conditions, and any deviations from the Statement of Work (SOW).

### 138.2 Materials:

- Field Logbook – bound (not loose-leaf) book with a water-resistant cover and numbered pages.
- Indelible ink pen

**138.3 Procedures:** The Contractor shall use the following information as guidelines.

#### 138.3.1 General:

- Each project requires a separate logbook (i.e. Work Authorization or Master Blanket Purchase Order Release).
- Record all pertinent field activities in the logbook (dark enough to photocopy)
- Multiple logbooks for a project require numbering (i.e. 1 of 3, 2 of 3, etc.).
- Each new day's entries will begin on a new page.
- Fill each page for a specific day completely prior to beginning a new page. Do not skip pages unless necessary for legibility. If a page must be skipped, draw a diagonal line through the entire page (initial and date) to prevent unauthorized entries. Partially filled pages shall have a diagonal line drawn across the blank portion of the page (initial and date).
- Draw a line through any blank pages, if unused.
- Do not remove any pages from the logbook.
- Draw a single line through any entries to be corrected, initial, and date the correction.
- Only record factual and relevant information

#### 138.3.2 Format:

**Record the following on the cover of the logbook:**

- Project Name as assigned by the ENV-HMM Project Manager
- Work Authorization or Master Blanket Purchase Order Release number
- Beginning and ending dates of activities recorded in the logbook.
- Company (Contractor) name

**Record the following information on the first page of the field logbook:**



- Contractor's Project Manager's name and contact information.
- Names and contact information for all field personnel who witness or record entries in the logbook.

**Daily Logbook Entries:** The Contractor shall record the following information at the beginning of each day in the field and throughout the field day

- Date including day of the week. Note: the year date notation for the 2020-decade should include the four-digit year (e.g. 2020, or 2024, etc.)
- Starting time
- General weather conditions
- Specific location
- Personnel onsite including company affiliation.
- Equipment used and calibration results.
- Work tasks and location(s) where performed, including start and stop times.
- Scaled drawings of sampling locations, as appropriate.
- Description of photographs taken including a unique, sequential identifier (e.g., 1, 2, 3, 4...n).
- Sample collection information (See 138.3.3)
- Verbal communication summaries and changes in SOW (initialed by individuals authorizing any changes preferred).
- The recording personnel's initials after the last entry on each page.
- The recording personnel's dated signature following the last entry of each day.
- A diagonal line across any blank space remaining on a page following the last daily entry.
- Note any Health and Safety issues
- Tailgate meeting time and attendance
- IDW log noting container type, contents, and quality
- Underground utility notes/issues/clearances

**138.3.3 Sample Collection** – The Contractor shall enter the following information, as appropriate, when collecting samples.

- Sample location description
- Sampler's name
- Collection time (Military)
- Type of media (soil, groundwater, etc.)
- Designation of sample (composite, grab, etc.)
- Sample specific measurement data/instrument readings (pH, temperature, conductivity, odor, color, etc.)
- Field observations/sample description
- Unique sample ID designation.

## 139 Investigative Derived Waste (IDW) Handling and Disposal

**139.1 Description:** The following procedures detail the proper handling and disposal of commonly generated investigation-derived wastes (IDW) produced as a result of ENV-HMM (Hazardous Materials Management) projects.

**139.2 Procedures:** Unless otherwise directed by the Statement of Work (SOW), the Contractor shall use the following the procedures when handling, characterizing, transporting and disposing of IDW associated with ENV-HMM projects.

**IDW Staging, Containment and Labeling** – When generating IDW on a project, the Contractor shall temporarily stage/containerize/store it on-site or in an area designated by the SOW. The Contractor shall minimize the length of time containerized decontamination waste is staged at the location of origin. TxDOT maintenance facilities may be a preferable staging location to the right-of-way contingent on approval. The Contractor shall take proper safety precautions to ensure the safety of the workers and the public.

The Contractor shall utilize one of the following methods to store (temporarily) IDW at the project location, unless otherwise directed by the SOW.

### **Solids**

- **Plastic sheeting** – The Contractor shall place and cover the IDW with plastic sheeting to prevent the material from contaminating the media below and to prevent surface water erosion and infiltration of the IDW. When necessary, the Contractor shall secure the plastic cover in a manner to prevent removal by wind and penetration by rainwater, and utilize containment berms and/or diversion berms to prevent surface water contact with the IDW.
- **55-gallon drums/Roll-off containers** – Drums and containers used during the investigation(s) shall meet the appropriate U.S. Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA), and U.S. Environmental Protection Agency (EPA) regulations, as applicable, for the wastes they contain. The Contractor shall use covered drums and roll-off containers to prevent wind-blown dusts and rainwater infiltration. The Contractor shall utilize liners if required by the transport or disposal contractor. Additionally, the Contractor shall place drums on pallets whenever possible.

### **Semi-Solids and Liquids**

- **55-gallon drums/frac tanks/tanks** – Drums/frac tanks/tanks used during the investigation(s) shall meet the appropriate U.S. Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA), and U.S. Environmental Protection Agency (EPA) regulations, as applicable, for the wastes

they contain. The Contractor shall cover and seal each container for a secure transportation and to ensure each is leak free.

The Contractor shall label each container as containing non-hazardous IDW, pending on the results of the laboratory characterization. The Contractor shall place the label in a visible location and include, at a minimum, the following, unless directed by the SOW.

- “Non-Hazardous” designation
- Name of generator(s)
- Date generated
- Site address
- Contact person and phone number
- Type of material contained (i.e. liquid, soil, etc.)
- Use weather resistant labels with indelible ink.

**IDW Sampling and Characterization** – The Contractor shall evaluate the analytical data collected for the project and the requirements of the waste’s depository to determine whether the previously collected data is representative, sufficient and acceptable for characterization purposes. If previously collected analytical data is not acceptable or sufficient, prior to transportation and disposal, samples of the IDW shall be collected and submitted for laboratory analyses in accordance with applicable state and federal regulations. The Contractor shall determine the appropriate number of samples to collect and the applicable analytical tests required by the landfill, recycling center, and/or disposal site. The Contractor shall determine the waste classification, disposal/recycling methods, and any additional labeling and manifesting requirements prior to shipment. The Contractor shall include a copy of the analytical report in the project deliverable(s).

**IDW Storage, Manifesting, and Disposal** – The Contractor shall ensure the proper storage, manifesting, transport, and disposal of the IDW. This shall include all manifests, permits and licenses requirements.

**Reporting** – The Contractor shall submit deliverables for review and acceptance by TxDOT using the procedures outlined in ENV ITEM 100.

The Contractor must include copies of the field logbook, analytical testing results, and waste characterization/ waste manifest forms within the project deliverable(s).

## 150 Soil Borings and Sample Collection

**150.1 Description:** The following procedures detail the requirement for the proper installation of soil borings and soil sample collection, handling, and custody procedures for ENV-HMM projects.

**150.2 Licensing/Training Requirements:** The Contractor shall ensure a Texas-licensed Professional Geoscientist supervises all drilling and soil-sampling programs. A Texas Licensed Water Well Driller, with experience in performing environmental work, shall install all soil borings, with the exception of hand auger borings.

**150.3 Procedures:** The Contractor shall use the following procedures when installing soil borings and collecting soil samples associated with ENV-HMM projects. The Professional Geoscientist shall consider geologic conditions at the site as well as the project objectives when deciding on the appropriate drilling and soil sampling methods.

**Soil Borings** – The Contractor shall use direct push methods (hydraulically and hammer-operated rams), and hollow-stem drilling methods, when appropriate. When site conditions do not permit the use of these methods, the Contractor will use rotary drilling methods. The Professional Geoscientist shall determine the appropriate drilling method used on a project-specific basis (pre-approved by the ENV-HMM Project Manager). The introduction of any fluids into the borehole to enhance drilling efforts require pre-approved by the ENV Project Manager. The Contractor shall pre-approve drilling locations by the ENV Project Manager. Any adjustments to the drilling and sampling methods or locations require pre-approval by the ENV Project Manager, as well.

The Contractor shall decontaminate all associated drilling and sampling equipment to remove all oil, grease, mud, etc., prior to mobilizing to the site. Equipment with porous surfaces such as rope, wood, etc. cannot be thoroughly cleaned and not reused. The Contractor shall only handle cleaned equipment with clean gloves, including new latex gloves, new clean cotton gloves, etc., as appropriate.

The Contractor shall inspect soil-boring locations for underground and above ground utilities prior to drilling.

The Contractor shall complete boring logs for each soil boring location. The Contractor shall include the following information on the boring log:

- Project Name
- Drilling Company Name
- Driller Name
- Consulting Company Name
- Logger Name
- Drilling Start/Completion Dates
- Drilling Method
- Soil Sampling Method
- Lithologic Description
- Boring ID
- Borehole Diameter
- Total Depth of Boring
- Soil Sample Depths
- Soil Screening Results
- Depth to Water, if Encountered
- Borehole Plugging Method
- Boring Location (GPS Coordinates and references to common site landmarks)
- Brief Weather Description

**Soil Sample Collection** – Typical soil sampling methods include split-spoon samplers, Shelby tubes, and grab samples. The Professional Geoscientist shall determine the appropriate sampling methods and equipment used on a project-specific basis.

Sampling personnel must don a clean pair of gloves at the onset of sampling activities and at each new sampling interval to prevent cross-contamination. Sampling personnel must keep their hands as clean as practical and replace gloves when soiled while performing sampling activities.

The Contractor shall collect soil samples with pre-cleaned sampling equipment appropriate for the type of samples collected.

The Contractor shall collect a discrete portion of the collected sample for the purposes of laboratory testing for chemical parameters. The Contractor will not collect composite samples for VOC analysis because of volatilization during soil mixing. The Contractor will use the remaining sample volume for headspace screening, physical description of soil characteristics, and laboratory samples for testing of physical properties.

- **Soil Sample Screening** – Soil screening methods shall include visual and olfactory observations made by a qualified environmental professional. The Contractor shall use properly calibrated Photoionization Detectors (PID) and/or Flame Ionization Detectors (FID) with the manufacturer’s recommendations for calibration for the type of contaminants expected at the project. The instruments require calibration at least twice per day (prior to sampling and at the end of the day).

Using a self-sealing polyethylene freezer bag, field personnel shall half-fill the bag with the collected soil sample so that the volume ratio of soil to air is equal, then they shall immediately seal the bag. The Contractor shall then manually break down the sample into smaller soil clumps within the bag.

The Contractor shall develop the headspace for at least 10 minutes. After development, the Contractor shall shake the bag vigorously for 15 seconds at the beginning and end of the headspace development period.

The Contractor shall introduce the instrument sampling probe into a small opening in the bag to a point about one-half of the headspace depth. The Contractor shall record the highest meter response.

- **Soil Sample Handling** – The Contractor shall place in pre-cleaned laboratory-supplied containers all samples collected for chemical analyses. The type and size of the containers and preservation methods used for soil samples varies based on the type of analyses performed. The Contractor may collect Quality Assurance/Quality Control (QA/QC) samples on ENV-HMM projects. The project SOW shall specify the type and collection schedule for QA/QC samples.

The Contractor shall complete sample labels at the time of sample collection, to include the following information:

- Project name
- Unique sample ID number and depth
- Sample collection date and time
- Initial of person collecting sample
- Analyses required
- Preservation method

The Contractor shall initiate in the field and at the time of sampling a chain-of-custody record. A copy shall accompany each set of samples shipped to any laboratory. Each time responsibility for custody of the samples changes, the new and previous custodians must sign the record and note the date and time. The Contractor shall submit the final signed chain-of-custody document with the analytical results in the report for the sampling event. The Contractor shall use indelible ink on the chain-of-custody form.

The Contractor shall use the following parameters when using a secured area for temporary storage:

- Record the time, date, and location of the secured area in the “relinquished by” space of the custody form. Unique sample ID number and depth
- Record the time an individual regains custody in the “received by” space of the custody form.

The Contractor shall use the following parameters when shipping samples:

- The person sealing the shipping container shall enter the time, date and sign the chain-of-custody form.

- Enclose the original chain-of-custody form in the shipping container with a copy for the project manager's file.
- Retain from the shipper a post office receipt, bill of lading, or similar document as part of the permanent chain-of-custody documentation.
- Affix over the opening one or more custody seals over the opening of the shipping container in a manner that precludes opening the container without breaking the seal(s).
- Inscribe the container seal(s) with the signature of the person sealing the container and the date and time sealed.
- The Contractor shall obtain the returned, original chain of custody form the laboratory.
- The Contractor shall properly package and send the samples to the analytical laboratory. The Contractor is responsible for any lost coolers, exceedance of holding times, broken sample containers, mislabeled or missing sample containers and/or chain-of-custody forms, and improperly preserved samples.

**Borehole Plugging** – The Contractor shall properly plug and abandon boreholes in accordance with ENV ITEM 210.

**Reporting** – The Contractor shall record soil-boring activities in the field logbooks (ENV ITEM 138) and/or on company boring log forms.

## 170 Temporary Monitoring Well Installation

**170.1 Description:** The following procedures detail the requirements for the proper installation of temporary groundwater monitoring wells.

**Note:** Temporary monitoring wells are designed and installed to create temporary access for the collection of groundwater samples to assess groundwater quality and the hydrogeologic properties of the aquifer in which contaminants may exist.

The Contractor shall consider hydrogeologic conditions at the site as well as the project objectives when deciding whether a temporary sampling point is appropriate and on the appropriate temporary monitoring well installation method. Typical drilling methods include hollow-stem augers, mud rotary, air rotary, and direct-push methods.

**Licensing/Training Requirements:** A Texas-Licensed Professional Geoscientist or a Professional Engineer in compliance with the Geoscientist Practice Act, Texas Occupations Code, Chapter 1002, shall plan and supervise all drilling and temporary monitoring well installation programs. A drilling contractor (Licensed Water Well Driller) licensed in the State of Texas and experienced in performing environmental investigation work shall install temporary monitoring wells. All personnel involved in the fieldwork must complete the training requirements and medical monitoring under OSHA standard CFR 1910.1201.

**170.2 Equipment and References:** The Contractor shall supply all equipment and tools required to drill and install temporary monitoring wells, to include but not limited to the following.

- Well-logging forms;
- Water level meter or other measuring apparatus for verifying well and hole depths, water levels, and equipment dimensions;
- Appropriate level of Personal Protective Equipment (i.e., a hard hat, steel-toed boots, hearing and eye protection); refer to applicable OSHA and U.S. EPA guidance documents;
- Contaminant-detection equipment appropriate with information derived during the project planning stage and in the site-safety plan;
- Sample-collection containers, plastic Ziploc bags (quart and gallon sizes), or other containers, as appropriate;
- Trowels, knives, hammers, chisels, as appropriate; and
- Description aids (Munsell-color charts, grain-size charts, etc.) as appropriate.



**170.3 Procedures:** The Contractor shall utilize the following procedures when installing temporary monitoring wells on TxDOT ENV-HMM projects.

**170.3.1 Planning:** The planning, selection, and implementation of any temporary monitoring well installation program shall include the following:

- Review of existing data on site geology and hydrogeology, including publications and existing maps;
- Assessment of the site condition to determine potential access issues, utilities locations, water supply sources, decontamination location and equipment storage areas;
- Performance of utilities location notifications;
- Development of a traffic control plan, as necessary;
- Preparation of a site-specific health and safety plan;
- Final selection of drilling, sampling, development, methods and well installation location;
- Determination of the temporary well construction specifications (i.e. casing and screen materials, diameter, length, screened interval, slot size, etc.);
- Determination of drill cuttings, development fluid, and purge water handling, storage, and disposal methods.

**170.3.2 Field Preparation:** The Contractor shall decontaminate all associated equipment prior to mobilization to remove oil, grease, mud, etc. To minimize the risk of cross-contamination, the Contractor shall decontaminate all downhole equipment, including well screen and casing. Do not reuse equipment with porous surfaces such as rope, wood, etc.

The Contractor shall not handle cleaned equipment with soiled gloves and shall use new surgical gloves, new clean cotton gloves, etc., as appropriate. The Contractor shall remove all manufacturers paint from drilling tools and other downhole equipment to prevent the introduction of contaminants.

**170.3.3 Field Data Recording and Logging:** The Contractor shall record on the Boring/Well Log Form the lithologic description, field measurements, and any associated comments. The Boring/Well Log shall include the following, at a minimum.

- Name and location (address) of the site;
- Description of the well location;
- Completion date;
- Driller's log of geologic formations (and description thereof) plus any geophysical logs collected;
- Temporary well depth;
- Depth to water (i.e. top of saturation);
- Size of the drill hole and method of drilling;

- Length, depth, construction material/type, and size of the casing and screen;
- The location of the top and bottom of the screen;
- The screen slot or perforation size;
- Type and placement depths of temporary filter pack, if utilized;
- Top of casing survey and site datum information.
- GPS location of each well.

**170.3.4 Well Construction:** The Contractor shall not screen and case temporary monitoring wells in locations that will interact with or introduce contaminants into groundwater. Do not join any of the well materials with glues or other adhesives. Construct temporary wells to meet the project objectives. Determine screen placement based on the project objectives and actual field conditions.

Generally, the well screen will intersect the uppermost surface of the groundwater with sufficient open screen area above the groundwater interface to allow for the detection of light non-aqueous phase liquids or contaminants with a specific gravity less than water. When applicable, the well screen shall intersect the bottom of the saturated interval for dense non-aqueous phase liquids or contaminants with a specific gravity greater than water.

The Contractor shall use a filter pack when samples are not reasonably free of turbidity.

**170.3.5 Development:** The Contractor shall develop the temporary monitoring wells following installation. This may entail surging, jetting, pumping or any other method that will remove drilling mud or any other material, which will pass through the screen openings, or casing perforations. Development shall continue until the water is clear and reasonably free of drilling mud, silt, and sand. Temporary wells constructed of prepacked well screen may not require development, if the water produced is clear and reasonably free of drilling mud, silt, and sand. If water was introduced into the borehole during drilling, at least five times as much water as was added to the borehole during the drilling process must be removed during the development of the well. Samples collected from the temporary monitor well that will be submitted to the contract laboratory for metals analyses shall have a turbidity < 5 NTUs.

The Contractor shall keep a Well Development Log detailing all aspects of the well development process. The Contractor shall record in the field logbook or on a separate development log, the development method employed, volume of water removed, visual observations, turbidity, estimated drawdown and recovery rates, etc.

## 171 Monitoring Well Installation

**171.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for the proper installation of permanent groundwater monitoring wells.

**Note:** Monitoring wells are designed and installed to create a permanent access for the collection of groundwater samples to assess groundwater quality and the hydrogeologic properties of the aquifer in which contaminants may exist.

The Contractor shall consider hydrogeologic conditions at the site as well as the project objectives when deciding whether the appropriate monitoring well installation method. Typical drilling methods include hollow-stem augers, mud rotary, air rotary, and direct-push methods.

**Licensing/Training Requirements:** A Texas-Licensed Professional Geoscientist or a Professional Engineer in compliance with the Geoscientist Practice Act, Texas Occupations Code, Chapter 1002, shall plan and supervise all drilling and monitoring well installation programs. A drilling contractor (Licensed Water Well Driller) licensed in the State of Texas and experienced in performing environmental investigation work will install monitoring wells. All personnel involved in the fieldwork must complete the training requirements and medical monitoring under OSHA standard CFR 1910.120I.

**171.2 Equipment and References:** The Contractor shall supply all equipment and tools required to drill and install monitoring wells, to include but not limited to the following.

- Well-logging forms
- Water level meter or other measuring apparatus for verifying well and hole depths, water levels, and equipment dimensions.
- Appropriate level of Personal Protective Equipment (i.e., a hard hat, steel-toed boots, hearing and eye protection); refer to applicable OSHA and U.S. EPA guidance documents.
- Contaminant-detection equipment appropriate with information derived during the project planning stage and in the site-safety plan.
- Sample-collection containers, plastic Ziploc bags (quart and gallon sizes), or other containers, as appropriate
- Trowels, knives, hammers, chisels, as appropriate.
- Description aids (Munsell-color charts, grain-size charts, etc.) as appropriate.

**171.3 Procedures:** The Contractor shall utilize the following procedures when installing monitoring wells on TxDOT ENV-HMM projects.

**171.3.1 Planning:** The planning, selection and implementation of any monitoring well installation program shall include the following:

- Review of existing data on site geology and hydrogeology, including publications and existing maps.
- Assessment of the site to determine potential access issues, utilities locations, water supply sources, decontamination location and equipment storage areas.
- Performance of utilities location notifications,
- Development of traffic control plan, as necessary,
- Preparation of the site-specific health and safety plan,
- Final selection of drilling, sampling, development, methods and well installation location.
- Determination of well construction specifications (i.e. casing and screen materials, diameter, length, screened interval, slot size, filter pack specifications, final completion method, etc.)
- Determination of drill cuttings, development fluid, and purge water handling, storage, and disposal methods.

**171.3.2 Field Preparation:** The Contractor shall decontaminate all associated equipment prior to mobilization to remove oil, grease, mud, etc. To minimize the risk of cross-contamination, the Contractor shall decontaminate all downhole equipment, including well screen and casing. Do not reuse equipment with porous surfaces such as rope, wood, etc.

The Contractor shall not handle cleaned equipment with soiled gloves and will use new surgical gloves, new clean cotton gloves, etc., as appropriate. The Contractor shall remove all manufacturers paint from drilling tools and other downhole equipment to prevent the introduction of contaminants.

**171.3.3 Field Data Recording and Logging:** The Contractor shall record on the Boring/Well Log Form the lithologic description, field measurements, and any associated comments. The Boring/Well Log will include the following, at a minimum.

- Name and locations (address) of the site;
- Description of the well location;
- Completion date;
- Driller's log of geologic formations (and description thereof) plus any geophysical logs collected;
- Well depth;
- Depth to static-water level;
- Size of the drill hole and method of drilling;

- Length, depth, construction material/type, and size of the casing; changes in size of the casing and type of casing;
- The amount, type, and location of grout used in the hole.
- The location and type of packers or centralizers used in the hole, if any;
- The length of the screen or casing perforations;
- The location of the top and bottom of the screen;
- The screen slot or perforation size;
- The gravel pack and its volume, type, or size;
- Top of casing survey and site datum information

**171.3.4 Well Construction:** The Contractor shall not screen and case monitoring wells in locations that will interact with or introduce contaminants into groundwater. Do not join any of the well materials with glues or other adhesives. Construct monitoring wells to meet the project objectives. Determine screen placement based on the project objectives and actual field conditions.

Generally, the well screen will intersect the uppermost surface of the groundwater with sufficient open screen area above the groundwater interface to allow for the detection of light non-aqueous phase liquids or contaminants with a specific gravity less than water. When applicable, the well screen shall intersect the bottom of the saturated interval for dense non-aqueous phase liquids or contaminants with a specific gravity greater than water.

The Contractor shall use a filter pack when samples are not reasonably free of turbidity.

**171.3.4.1 Bedrock Wells:** The Contractor shall use air or mud rotary drilling methods, unless otherwise stated in the SOW.

**Note:** When using air rotary methods, the compressed air supply must be filtered to remove entrained oil or other contaminants prior to introduction into the borehole. Bedrock wells may be completed as an open-hole (i.e. no long-string casing) provided the borehole caving or heaving is not an issue. If the open borehole is subject to caving, the well must be completed as a cased, sand-packed well (see 171.3.4.2). Open holes will meet surface completion requirements.

**171.3.4.2 Unconsolidated Sediment Wells:** The Contractor may use any of the drilling methods discussed in this SOP to install monitoring wells in unconsolidated sediments (overburden).

**Note:** Hollow-stem auger methods are generally preferred for shallow (< 100 feet) unconsolidated sediment wells because the well can be constructed inside of the augers.

**171.3.4.3 Construction:**

**Note:** Monitoring-well casing and screen must be of sufficient diameter to achieve the purposes of the well. Normal sampling operations typically require casing which has an inside diameter greater than or equal to 2 inches, though some well-monitoring apparatus or uses may require much larger casing. Additional considerations are drilling method used, well depth (strength requirements), well development requirements (additional development-water disposal), pre-sampling well purging volumes (additional purge-water disposal), rate of recovery, and costs.

The Contractor must determine the screen slot size and length and must meet the project objectives, or as specified by the SOW. Additionally, the Contractor must install the well screen at sufficient intervals to center the screen in the borehole. Additional centralizers may be necessary to ensure that the casing remains centered in the borehole.

The Contractor shall fill the annular space between the well screen and the borehole with a sand pack to serve as a filter media. The sand pack must be clean, chemically inert, and composed primarily of quartz sand. The Contractor must determine the size and gradation of the sand pack to meet the project objectives and to reduce the volume of fine sediment entering the well.

**Note:** For wells deeper than approximately 50 feet, or when required to prevent “bridging” of the sand pack materials, the sand pack must be emplaced using a tremie pipe. The sand pack must be emplaced to a level approximately one to three feet above the top of the screened interval, with allowance for some settling after placement.

The Contractor must install an annular seal on top of the sand pack to prevent the migration of contaminants to the sampling zone from the surface or intermediate zones.

**Note:** The seal materials should be chemically inert so they do not affect the quality of the groundwater samples. Typically, an annular seal consisting of a minimum of two to three feet of coarse-granular or pelletized bentonite, or a bentonite slurry, is appropriate for most monitoring wells. This seal will prevent the grout from infiltrating the sand pack and the well screen. If required, a small quantity of distilled water may be added to expand the bentonite seal prior to installation of the grout. The type of seal, the depth interval, and the amount of seal materials used will be noted in the field notes.

The Contractor must place a cement or cement/bentonite grout from the top of the annular seal to the ground surface. The following mixes are acceptable:

- Neat cement: Type I or Type II Portland cement mixed with a maximum of 6 gallons of water per 94-pound bag of cement.
- Cement-Bentonite: 5 pounds of pure bentonite per 94-pound bag of cement with 7 to 8 gallons of water.

- Cement-Bentonite: 6 to 8 pounds of pure bentonite per 94-pound bag of cement with 8 to 10 gallons of water, if water mixed.

**Note:** If water is present in the borehole above the annular seal, the grout must be emplaced through a tremie pipe until undiluted grout flows from the annulus at the ground surface. If no water is present in the borehole, the grout may be surface poured using care to not bridge the grout to scour the annular seal. After curing for 24 hours, any depression at the surface due to settlement must be refilled with similar grout.

The Contractor shall install a surface seal, wellhead protection, and tamper resistant well cap to protect the integrity of the monitoring well and the samples collected. The Contractor may use an alternative completion if approved by ENV-HMM on a case-by-case basis.

**Note:** Typically, the surface seal and well protection should consist of a concrete apron, completed slightly above grade and sloped away from the center of the borehole to divert surface runoff, set with a traffic-rated, weather-tight, flush-mount monitoring well vault.

The Contractor shall secure the well cap with a lock.

**Note:** For multiple monitoring well investigations, all locks must be keyed alike. At least one monitoring well key will be provided to the district Point of Contact and one to the ENV-HMM's project manager.

The Contractor must visibly notch a permanent benchmark location on the top of the well casing as a point of reference for all depth measurements.

**171.3.4.4 Development:** The Contractor must develop the monitoring wells following installation.

**Note:** Wells must be thoroughly developed by surging, jetting, or any other method which will remove drilling mud or any other material which will pass through the screen openings or casing perforations. Development shall continue until the water is clear and reasonably free of drilling mud, silt, and sand. If water was introduced into the borehole during drilling, at least five times as much water as was added to the borehole during the drilling process must be removed during the development of the well. Samples collected from the monitor well that will be submitted to the contract laboratory for metals analyses shall have a turbidity < 5 NTUs.

The Contractor shall keep a Well Development Log detailing all aspects of the well development process to include the development method employed, volume of water removed, visual observations, turbidity, estimated drawdown and recovery rates, etc.

**171.4 Permits/Reporting Requirements:** The Contractor shall properly file all required permits, Water Well Reports, etc., with the appropriate regulatory agencies.



## 178 Groundwater Monitoring and Sampling

**178.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for monitoring static fluid levels and sample collection, handling, and custody for ENV-HMM projects.

**178.2 Procedures:** The Contractor shall utilize the following procedures when conducting groundwater monitoring and sampling activities associated with ENV-HMM projects. The Contractor shall consider hydrogeologic conditions at the site as well as the project objectives when deciding on the appropriate groundwater monitoring and sampling methods taking into account previous sampling methods.

**Note:** When monitoring wells that are equipped with vapor-tight, watertight caps, the caps should be removed approximately 30 to 60 minutes before depth to water measurements are taken to allow equilibration with atmospheric pressure and stabilization of groundwater elevation.

The Contractor shall monitor the air above the wellhead with a photo-ionization detector/flame ionization detector (PID/FID) to determine the potential for fire, explosion, and/or toxic effects on workers. The Contractor shall record the condition of the monitoring well casing, annular seal, concrete pad, and steel protective casing in the Field Logbook.

**Note:** The device used to measure fluid levels in a monitoring well shall be sufficiently sensitive so that a measurement to  $\pm 0.01$  feet can be readily obtained. The field measurements will include depth to standing water, immiscible layer(s) (DNAPL/LNAPL), if present, and total depth inside the well casing. The measurements shall be taken from a permanent, easily identified and replicable reference point on the top of the monitoring well casing.

The Contractor shall put on a clean pair of gloves at the onset of the monitoring activities and at each new monitoring well to prevent cross-contamination. Personnel shall keep their hands as clean as practical and replace gloves when necessary.

The Contractor shall decontaminate the groundwater monitoring equipment between uses at each monitoring well.

### Groundwater Sample Collection

**Note:** Low-flow groundwater purging and sampling is the preferred method for use on TxDOT ENV projects in any well that can be pumped at a constant rate of 1.0 L/min or less without drawdown of the water level in the well.

The Contractor shall conduct all Low-Flow purging and sampling procedures in accordance with ASTM Practice D 6771 – 02, *Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground Water Quality Investigations*.

The Contractor may use alternative sampling methods on a project specific basis as agreed upon by the ENV Project Manager and Contractor, or as described in the Statement of Work.

The Contractor shall collect groundwater samples with a pre-cleaned, inert (i.e. fluorocarbon or stainless steel) sampling equipment appropriate for the type of samples being collected.

**Note:** During the collection of groundwater samples, a clean and dry sheet of plastic will be placed on the ground surface in the sample handling area. If materials used in the sampling process must be put down, they will be placed on a clean portion of the plastic sheet instead of the ground surface.

Sampling should occur in a progression from the least to the most contaminated well, if known. The Contractor will not sample monitoring wells that contain immiscible layers, unless otherwise agreed upon by the Contractor and the ENV-HMM Project Manager.

**Sample Handling** – Place all samples collected for chemical analyses in pre-cleaned laboratory supplied containers. The type and size of containers and preservation methods used for groundwater samples varies based on the type of analyses performed. The Contractor shall select the appropriate sample containers and preservation methods in accordance with applicable EPA/TCEQ standards.

The Contractor shall complete sample labels at the time of sample collection and will use the following information.

- Project name
- Unique sample ID number
- Sample collection date and time
- Initial of person collecting sample
- Analyses required. (Samples collected for metals analyses shall have a turbidity < 5 NTUs.)
- Preservation method

**Sample Custody** – The Contractor shall use the following parameters when shipping samples:

- The person sealing the shipping container shall enter the time, date and sign the chain-of-custody form.
- Enclose the original chain-of-custody form in the shipping container with a copy for the project manager's file.
- Retain from the shipper a post office receipt, bill of lading, or similar document as part of the permanent chain-of-custody documentation.
- Affix over the opening one or more custody seals over the opening of the shipping container in a manner that precludes opening the container without breaking the seal(s).
- Inscribe the container seal(s) with the signature of the person sealing the container and the date and time sealed.
- The Contractor shall obtain the returned, original chain of custody form the laboratory.
- The Contractor shall properly package and send the samples to the analytical laboratory. The Contractor is responsible for any lost coolers, exceedance of holding times, broken sample containers, mislabeled or missing sample containers and/or chain-of-custody forms, and improperly preserved samples.

**Reporting** – The Contractor shall supply the logbooks and/or monitoring and sampling forms in the final reports submitted to ENV-HMM.

## 185 Aquifer Testing

**185.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures required for performing aquifer testing.

**185.2 Procedures:** The Contractor shall determine the type of aquifer tests required to meet project objective in coordination with the TxDOT Project Manager.

**185.2.1 Step-Drawdown Test:** The Contractor shall use a step-drawdown test prior to conducting a constant-rate aquifer test. The step-drawdown test will employ several different discharge rates with each subsequent flow rate greater than the prior flow rate. The Contractor will determine the step discharge rates and duration of the steps based on knowledge of the aquifer characteristics and field measurements obtained during the test.

**185.2.2 Constant-Rate Test:** The Contractor shall use a constant-rate test for a minimum duration of 8 hours followed by well recovery monitoring immediately after the pump has been shut-off. The Contractor shall determine the actual length of the constant-rate test based on field measurements.

**Note:** The optimum discharge rate is determined by the step-drawdown test, unless otherwise directed by the SOW.

The Contractor shall monitor to identify any naturally occurring short-term static water level fluctuations influenced by pumping prior to conducting step-drawdown and constant-rate tests, water levels in observation wells.

**Note:** All water level measurements should be recorded to the nearest 0.01 foot. Water level monitoring equipment will not be changed during a test.

The Contractor shall determine the length of pre-test monitoring based on knowledge of local and regional aquifer characteristics, active water wells in the area, and/or nearby water bodies. The Contractor shall record the barometric pressure readings during the pre-test monitoring and throughout the constant-rate and recovery testing periods.

**185.2.3 Slug Test:** The Contractor shall conduct slug tests on a minimum of three (3) wells at a project site.

**Note:** Slug test results can be useful for demonstrating groundwater is not of potential beneficial use (yields of less than 150 gallons per day), however slug test results alone should not be used for designing remediation systems.

**185.3 Reporting:** The Contractor shall prepare all Draft and Final Aquifer Test Reports (Deliverables) per regulatory agency specifications.

## **189 Mold Assessments**

**189.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for performing mold assessments for TxDOT-HMM Projects.

**189.2 Qualifications:** The Contractor shall conduct mold assessment(s) by individuals licensed by the Texas Department of State Health Services (TDSHS), regulated by the Texas Mold Assessment and Remediation Rules (TMARR).

**189.3 Procedures:** The Contractor shall perform mold assessment (visual hygiene assessment) of the indoor environment for identification and quantification of fungal growth. Additionally, the Contractor shall evaluate the moisture content of internal building materials, measure temperature and relative humidity, and collect tape samples for the analysis of potential fungal growth.

**189.4 Mold Laboratory:** The Contractor shall collect bulk surface and air samples and have them analyzed by a TDSHS-licensed mold analysis laboratory.

**189.5 Reporting:** The Contractor shall submit reports and final deliverables for review and acceptance by TxDOT following the procedures outlined in ENV ITEM 100.

## 190 Asbestos Inspections

**190.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for performing asbestos inspections for TxDOT-HMM Projects.

**190.2 Qualifications:** The Contractor shall conduct asbestos inspections by an accredited asbestos inspector as identified by Environmental Protection Agency (EPA), and a Licensed Asbestos Inspector by the Texas Department of State Health Services (TDSHS).

**190.3 Procedures:** The Contractor shall use the following procedures when performing Asbestos Inspections for ENV-HMM, unless otherwise outlined by the Statement of Work (SOW).

### Sampling:

- ACM Inspections conducted in general accordance with the Asbestos Hazard Emergency Response Act (AHERA) 40 CFR 763.86 Sampling and the Texas Asbestos Health Protection Rules (TAHPR),
- The Contractor shall take samples only from homogenous areas suspected to contain ACM and proposed for renovation or demolition,
- Assess each homogenous area for potential friability,
- Take a minimum of three bulk samples from each homogenous area
- For bridge or other structure inspections, collect samples from behind barriers or beneath structures when possible. Should the inspection require sample collection in areas not protected from traffic, contact the ENV project manager regarding implementation of temporary traffic control measures.

### Analysis:

- Analyze each bulk sample for the presence of asbestiform minerals utilizing Polarized Light Microscopy (PLM) coupled with dispersion staining (EPA Method 600/R-93-116).
- Analyze by 400 Point Count (EPA 600/R-93/11) if the PLM shows the asbestiform minerals are 1% or above, but less than 10%.

**190.4 Asbestos Laboratory:** The Contractor shall analyze samples by a laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) and licensed by the TDSHS as an asbestos laboratory.

190.5 Reporting: The Contractor shall submit deliverables for review and acceptance by TxDOT following the procedures outlined in ENV ITEM 100. In addition, the Asbestos Inspection Report will include the following;

- A summary of the inspection performed,
- A description of who performed the inspection and associated Licenses,
- A description of each defined homogeneous areas,
- Attachments will include:
  - Copy of TDSHS Asbestos Consultant Agency license, TDSHS Asbestos Inspector License, and Initial or current EPA Accredited Training,
  - Sample log,
  - Table of Identified ACM including description, NESHAP Category, location and estimated amount,
  - Copy of laboratory analysis with chain of custody,
- Sample Log will include the following:
  - Sample ID#,
  - Location Sample Collected,
  - For TxDOT bridges, include Bridge ID#,
  - Material Description,
  - Analytical Methods,
  - Asbestos % Found,
  - Approximate amount of ACM (square footage, linear feet, number of elements, etc....),
  - Visual friability of ACM,
  - Results of Laboratory Analysis,
  - Supporting Information



## 191 Asbestos Abatement Plans

**191.1 Description:** The procedures governing the creation of Asbestos Abatement Plans/ Specifications (AAP) for the removal of Asbestos Containing Materials (ACM) by a State of Texas licensed Asbestos Abatement Contractor.

**191.2 Qualifications:** The Contractor shall prepare AAP by a State of Texas licensed Individual Asbestos Consultant (IAC).

**191.3 Procedures:** At a minimum, the AAP shall comply with the Asbestos NESHAP for Demolition and Renovation (40 CFR 61.145), OSHA asbestos standard, and applicable provisions of the Texas Asbestos Health Protection Rules.

The Contractor shall include the following in the AAP:

- **Structure Description:** The Contractor shall give a brief description of the previously surveyed structure along with the details of the ACM for removal. The description, at a minimum, will reference and attach an Asbestos Survey. The AAP shall clearly identify the type, condition, and location of the ACM.
- **Regulatory Overview:** A brief reference to the rules and regulations utilized for the creation of the AAP.
- **Abatement Contractor Qualifications:** The AAP shall outline the regulatory licensing and qualifications required to perform the abatement procedures.
- **Regulatory Notifications Requirements:** All notifications required to perform the abatement.
- **Asbestos Abatement Procedures:** The Contractor shall investigate options to abate the ACM from the structure, considering time and cost. The Contractor shall specify, in a clear and direct manner, the preferred solution along with the methods to perform the abatement.
- **Decontamination:** The AAP shall detail the procedures to decontaminate personnel and equipment used in the abatement.
- **Clearance:** If required, the AAP shall detail the procedures for third party clearance requirements.

## 192 ACM Abatement – Bridges/Outdoor Structures

**192.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for planning and executing TxDOT Asbestos Containing Materials (ACM) abatement projects for bridges or outdoor structures.

**Note:** This SOP should not be used for asbestos abatement in Public Buildings as regulated under the Texas Asbestos Health Protection Rule (TAHPR), 25 TAC Subchapter C.

**192.2 Procedures:** The Contractor shall remove ACM from highway bridges/structures at locations specified in the scope of work, in accordance with the following procedures:

- Work Plan: Ensure that the final Scope of Work -addresses the following elements, as applicable:
  - Removal Procedures – describe materials, controls, and work practices used in removing and containing ACM.
  - Removal Verification Procedures – describe procedures for verifying and documenting removal of ACM.
  - Employee Qualifications/Training.
  - Project work schedule.
- Provide required regulatory notifications for ACM abatement work.
- Remove ACM from the structures in accordance with all applicable regulatory requirement, including 40 CFR 61.145 (Renovation and Demolition of Structures – Asbestos NESHAP) and 29 CFR 1926.1101 (OSHA Asbestos Standard for Construction).
- Do not grind, abrade or otherwise disturb the ACM in a manner that would cause an asbestos hazard or visible fiber release.
- Properly classify, contain, transport and dispose of the removed ACM in accordance with State and Federal regulations.
- Restore site to near original condition by removing all materials, equipment and debris upon completion of ACM removal activities.
- Abatement Report: The Contractor shall supply a written summary of project activities to include:
  - A description of materials, controls, and work practices used to remove the ACM,
  - Quantity of ACM removed,
  - Results of the removal work, including a statement confirming completion of all removal activities, and/or a description and explanation for any ACM that could not be removed.
  - Photographic documentation illustrating removal of the ACM.

**192.3 Reporting:** Submit project deliverables as specified in ENV Item 103, Purchase Order Deliverables and in accordance with the Contract requirements.

## **193 ACM Abatement – Building Demolition**

**193.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for the abatement of Asbestos Containing Materials (ACM) to facilitate the demolition/renovation of public building in accordance with the Texas Asbestos Health Protection Rules (TAHPR), 25 TAC, Chapter 295, Subchapter C.

**193.2 Procedures:** The Contractor shall remove ACM from buildings in accordance with the asbestos project specification. Maintain compliance with TAHPR and all other applicable regulatory requirements including:

- **Licensing:** Maintain compliance with Texas Department of State Health Services (TDSHS) asbestos abatement contractor licensure requirements.
- **Notification:** Provide notification prior to abatement work in accordance with TDSHS asbestos notification procedures.
- **Waste Handling and Disposal:** Store, transport, and dispose of asbestos waste materials in accordance with regulatory requirements.
- **Record keeping:** Maintain project records and documents as required.

**193.3 Reporting:** The Contractor shall submit project deliverables as specified in ENV Item 103, Purchase Order Deliverables and in accordance with the Contract requirements.

## **194 ACM Abatement – Building Renovation**

**194.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for the abatement of Asbestos Containing Materials (ACM) to facilitate the renovation of a public building in accordance with the Texas Asbestos Health Protection Rules (TAHPR), 25 TAC, Chapter 295, and Subchapter C.

**194.2 Procedures:** The Contractor shall remove ACM from the building(s) in accordance with the asbestos project specification. Maintain compliance with TAHPR and all other applicable regulatory requirements including:

- **Licensing:** Maintain compliance with Texas Department of State Health Services (TDSHS) asbestos abatement contractor licensure requirements.
- **Notification:** Provide notification prior to abatement work in accordance with TDSHS asbestos notification procedures.
- **Waste Handling and Disposal:** Store, transport, and dispose of asbestos waste materials in accordance with regulatory requirements.
- **Record keeping:** Maintain project records and documents as required.

**194.3 Reporting:** The Contractor shall submit project deliverables as specified in ENV Item 103, Purchase Order Deliverables and in accordance with the Contract requirements.

## 195 Lead-in Paint (LBP) Inspections

**195.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for Lead-in-Paint (LBP) Inspections.

**195.2 Procedures:** The Contractor shall utilize the following procedures when performing lead-based paint inspections for ENV-HMM, unless otherwise outlined by the Statement of Work (SOW).

### **Sampling:**

- Perform visual inspections to determine suspect painted (or coated) surfaces, which may contain lead, only in areas being disturbed by the project.
- Take bulk samples only from suspect homogenous paint (or coatings) locations, or as outlined by the SOW.
- Assess each homogenous paint (or coating) for color, texture, condition, and location,
- Take one sample from each identified homogenous paint (or coating) location. The Contractor will take enough paint (or coating) to provide adequate material for analysis.

### **Analysis:**

- Analyze each bulk sample for the presence of lead utilizing EPA 3050A/6010B, or as directed by the SOW.

**195.3 Laboratory:** The Contractor shall ensure that a lab accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) performs the analysis.

**195.4 Reporting:** The Lead-in Paint Inspector shall prepare all reports (Deliverables) per ENV ITEM 100. In addition, the Lead-Based Paint Inspection Report will include the following;

- A summary of the inspection performed,
- Description of each identified homogeneous area suspect to contain lead-based paint (or coatings), to include the following characteristics,
- Sample
  - Color,
  - Texture,
  - Condition,
  - Location
  - Area (square feet) when requested

- Results: The Contractor shall report the results in part-per-million (ppm) and not in percentages.
- Attachments shall include:
  - Sample log,
  - Copy of laboratory analysis with chain of custody

## **196 Lead-Containing Paint (LCP) Strip Abatement**

**196.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for planning and executing TxDOT lead-containing paint (LCP) abatement projects.

**Note:** The procedures are intended for projects where torch cutting, heating, welding or grinding must be performed on metals coated with LCP. Metal components covered by this procedure include, but are not limited to guardrails, posts, bridge beams/girders, diaphragms, bearing attachments/shoes and bolt heads.

**196.2 Procedures:** The Contractor shall perform LCP strip abatement at the locations provided by the TxDOT Point of Contact for the project, or at locations denoted by marking paint placed on the structure by the Bridge/Demolition Contractor. The Contractor and either the TxDOT Point of Contact or the Bridge/Demolition Contractor may meet at the structure to confirm the cut locations prior to the initiation of the abatement. The Contractor shall provide all personnel, materials, and equipment necessary (man lifts, scaffolding, ladders, stripper, etc.) to accomplish the abatement.

**196.2.1 Removal Method:** The Contractor shall perform the LCP strip abatement using wet removal methods by a combination of mechanical equipment and manual scraping. If needed, the Contractor may clean the surface using abrasive scrub pads and/or nylon brushes. The Contractor shall clearly note in the Contractor's assumptions in the Statement of Work (SOW) any weather-related or other limitations of the wet removal method.

For bridge beams/girders, the Contractor shall abate a six-inch wide strip of LCP around the perimeter of the beams/girders, centered on the agreed upon location, or as outlined in the SOW. For other, smaller components (diaphragms, guardrails, shoes, etc.) the Contractor shall abate a four-inch wide strip around the perimeter of the component, or as outlined in the SOW.

**196.2.2 Waste Management:** The Contractor shall stage in an area near the structure designated by TxDOT all waste materials generated during the LCP abatement. The Contractor shall store all paint removal wastes in approved, secured and leak-proof containers following completion of each work shift. Upon completion of the LCP project, the Contractor shall properly characterize the waste materials for transportation and disposal at an appropriate disposal facility.

**196.3 Reporting:** The Contractor shall document the LCP strip abatement, per the Deliverable section of the Statement of Work for the project, and per ENV Item 103 – Purchase Order Deliverables.



**196.4 References:** The Contractor may utilize the following references in performing the LCP strip abatement.

- 2014 Texas Standard Specifications, Item 10.1.1 – Paint Removed by Third Party
- 29 Code of Federal Regulations (CFR) 1926.62 – Lead in Construction
- 29 CFR 1926.354 – Welding, Cutting, and Heating in way of Preservative Coatings
- Occupational Safety and Health Administration (OSHA) Directive STD 3-8.1 – Welding, Cutting, or Heating of Metals Coated with Lead-Bearing Paints
- 40 CFR 302 – Reportable Quantity for Lead
- 2014 Texas Standard Specifications, Item 446 – Field Cleaning and Painting Steel

## **197 Mold Remediation Work Plan**

**197.1 Description:** The procedures governing the creation of Mold Remediation Work Plan(s) for the removal of identified mold in internal buildings by a State of Texas licensed Mold Remediation Contractor (MRC).

**197.2 Qualifications:** A Texas Mold Assessment and Remediation Rules (TMARR) Licensed Mold Assessment Consultant (MAC) shall prepare Mold Remediation Work Plans.

**197.3 Procedures:** At a minimum, the Mold Remediation Work Plans shall comply with TDSHS TMARR.

**197.4 Reporting:** The Licensed MAC shall prepare all draft and final reports (Deliverables), per ENV ITEM 100.

## **198 Lead-Containing Paint (LCP) Abatements – Building Renovation**

**198.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for planning and executing TxDOT lead-containing paint (LCP) abatement projects.

**Note:** The procedures are intended for projects where LCP will need to be abated prior to the renovation of a building or structure.

**198.2 Procedures:** The Contractor shall perform the LCP abatement in accordance with the LCP specification prepared for the project. The Contractor shall follow all applicable regulatory requirements associated with the abatement, including but not limited to Occupational Safety and Health Administration (OSHA) Lead in Construction rules and regulations.

**198.3 Waste Management:** The Contractor shall stage all waste materials generated per ENV ITEM 135 Storage Locations. The Contractor shall store all paint removal wastes in approved, secured and leak-proof containers following completion of each work shift. Upon completion of the LCP project, the Contractor shall properly characterize the waste materials for transportation and disposal at an appropriate disposal facility.

**198.3 Reporting:** The Contractor shall document the LCP abatement per the specification and/or the deliverable section of the statement of work for the project.

**198.4 References:** The Contractor may utilize the following references in performing the LCP abatement.

- Occupational Safety and Health Administration (OSHA) Lead in Construction publication (OSHA 3142-12R 2004)
- 29 Code of Federal Regulations (CFR) 1926.62 – Lead in Construction

## 199 Mold Remediation

**199.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for remediation of mold to repair or renovate a building in accordance with the Texas Mold Assessment and Remediation Rules (TMARR).

**199.2 Procedures:** Remove identified mold from building(s) in accordance with the Mold Remediation Work Plan. Maintain compliance with TMARR and all other applicable regulatory requirements including:

- **Licensing:** Maintain compliance with Texas Department of State Health Services (TDSHS) Mold Remediation Contractor Licensure requirements.
- **Notification:** Provide notification prior to remediation work in accordance with TDSHS mold notification procedures.
- **Waste Handling and Disposal:** Store, transport, and dispose of remediation waste materials in accordance with regulatory requirements.
- **Record keeping:** Maintain project records and documents as required.

## 200 Underground Storage Tank System Removal

**200.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for the removal of one or more underground storage tanks (UST) and associated ancillary equipment.

**200.2 Procedures:** The Contractor shall remove the UST system in accordance with the following Texas Commission on Environmental Quality (TCEQ) rules and guidance:

- Registration Requirements: 30 TAC, Chapter 334, Subchapter A, §334.7
- Construction Notification: 30 TAC, Chapter 334, Subchapter A, §334.6
- Permanent Removal from Service: 30 TAC, Chapter 334, Subchapter C, §334.55
- UST Contractor Registration / Licensing: 30 TAC, Chapter 334, Subchapter I, §334.401, §334.407, §334.424 and Chapter 30, Subchapter I §§30.301-319.

**TCEQ Publications and Forms:** The Contractor shall refer to the following guidance documents and use the following forms, as applicable:

- *Technical Guidance: Am I regulated (RG-042)*
- *PST Super Guide: A Comprehensive Guide to Compliance in Texas (TCEQ RG-475)*
- *Underground Storage Tank Registration and Self-Certification Form (TNRCC-0724)*
- *Underground & Aboveground Storage Tank Construction Notification Form (TNRCC-0495)*
- *Investigating and Reporting Releases from Petroleum Storage Tanks (PSTs) (RG-411)*

**TxDOT Publication:** The contractor shall refer to the following:

*Technical Guide: Removal of Underground Storage Tanks (USTs) Encountered During Construction*

**200.3 Reporting/Deliverables:** The final report (deliverable) shall contain the information outlined in TCEQ rules, particularly 30 TAC 334.55, and include the TCEQ Release Determination Report form (TCEQ-0621). The Contractor shall prepare the Regulatory Derived Deliverable(s) in accordance with the most current format specified by the regulatory agency, the Deliverable section of the Statement of Work for the project, and ENV Item 103 – Purchase Order Deliverables.

## 201 Aboveground Storage Tank (AST) Removal

**201.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for the removal of one or more aboveground storage tanks (ASTs) and associated ancillary equipment (petroleum).

**Note:** ASTs with a capacity of 1,100 gallons or less are excluded from regulation under 30 TAC, Chapter 334, Subchapter F. ASTs with a capacity greater than 1,100 gallons shall comply with regulation under 30 TAC, Chapter 334, Subchapter F.

If an AST system is in Bexar, Comal, Hays, Kinney, Medina, Travis, Uvalde, or Williamson County, additional requirements related to the protection of the Edward Aquifer or the Trinity Aquifer may apply as found in 30 TAC 213 and 214. When these additional requirements apply, the Contractor shall comply with them.

**201.2 Procedures:** The Contractor shall remove the AST system from service in accordance with the following Texas Commission on Environmental Quality (TCEQ) rules and guidance:

- Registration Requirements: 30 TAC, Chapter 334, Subchapter F, §334.127
- Installation/Construction Notification: 30 TAC, Chapter 334, Subchapter F, §334.126

**TCEQ Publications and Forms:** The Contractor shall refer to the following guidance documents and use the following forms, as applicable:

- *Aboveground Storage Tank Registration and Self-Certification Form (TCEQ-0659)*
- *Underground & Aboveground Storage Tank Construction Notification Form (TCEQ-0495)*
- *Suspected Releases from Petroleum Storage Tanks (RG-475h)*
- *Investigating and Reporting Releases from Petroleum Storage Tanks (PSTs) (RG-411)*
- *Release Determination Report form (TCEQ-0621)*

**201.3 Contractor Licenses and Registrations:** The Contractor shall have the appropriate licenses and registrations from the TCEQ to perform the removal and disposal

of fuel and fuel residue from an AST system. The transporter and disposer of the fuel and fuel residue shall be registered/ licensed with the TCEQ.

**201.4 Reporting/ Deliverables:** Submit project deliverables as specified in ENV ITEM 103, Purchase Order Deliverables and in accordance with the SOW and/or Contract requirements. The Final Report shall include:

- Location, number, contents, and size of AST(s)
- Volume of liquids/semi-solids removed, managed and disposed
- Photographic documentation of field activities, documenting removal of contents of AST(s) and removal of the AST system.



## 202 Underground Storage Tank (UST) In-Place Closure

**202.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements to close an underground storage tank (UST) and associated ancillary equipment in place.

**Note:** If a UST system is in Bexar, Comal, Hays, Kinney, Medina, Travis, Uvalde, or Williamson County, additional requirements related to the protection of the Edward Aquifer or the Trinity Aquifer may apply as found in 30 TAC 213 and 214. When these additional requirements apply, the Contractor shall comply with them.

**202.2 Procedures:** The Contractor shall close the UST in place in accordance with the Texas Commission on Environmental Quality's (TCEQ) regulations found in 30 TAC 334 and the following:

- Submit TCEQ Notification Form (TCEQ-00495) to TCEQ at least 30 days prior to in-place closure.
- Notify TCEQ regional office 24 to 72 hours prior to in-place closure.
- Notify city, county, and fire marshal of plan for in-place closure of USTs.
- Determine location of the USTs, including the proximity to the roadway and need for traffic control.
- Determine if there is a need to relocate or remove objects or structures (canopy, dispensers, building, etc.) to access the USTs.
- Determine configuration of the UST fill, pump drop tubes, and overfill prevention.
- Locate aboveground and underground utilities.
- Determine type of product stored and estimate of the volume of liquids remaining in the USTs.
- Perform waste characterization of UST contents and prepare waste profile forms.
- Contact the waste disposal contractor to identify the analytical testing needed to characterize the waste and the waste profile forms to prepare.
- Coordinate schedule and site access to the USTs.
- Remove liquids/semi-solids from the tank until it is empty.
- Triple wash the USTs.
- At the end of each of three washes, remove liquids/semi-solids and purge vapors.
- Remove overburden (i.e., concrete, asphalt, fill material, soil, etc.) to expose the top of the USTs, and stockpile overburden in area designated by the TxDOT representative.
- Cut holes in the top of the exposed USTs.
- Fill USTs with inert flowable fill (i.e., a mixture of cement, fly ash, fine aggregate, and water) or other inert fill material approved by TxDOT.

- Cut all fill risers, automatic tank gauging risers, Stage 1 vapor recovery risers, and vent lines flush with the surrounding ground or pavement surface and plug with flowable fill.
- Collect soil samples and assess the UST for a release, and submit PST Release Determination Report form (TCEQ-00621). Sampling methods, types, locations, and number collected in accordance with TCEQ RG-411.
- Restore site to original condition by removing all project-related materials, equipment and debris upon completion of field activities related to the in-place closure of the USTs.
- File an amended UST registration within 30 days of in-place closure using the UST Registration and Self-Certification Form (TCEQ-0724).

**202.3 Contractor Licenses and Registrations:** The Contractor shall have the appropriate license and registration from the TCEQ to perform the removal and disposal of fuel and fuel residue from a UST system. The transporter and disposer of the fuel and fuel residue shall be registered/ licensed with the TCEQ.

**202.4 Final Report:** Submit project deliverables as specified in ENV ITEM 103, Purchase Order Deliverables and in accordance with the SOW and/or Contract requirements. The Final Report shall include:

- Location, number, contents, and size of USTs
- Volume of liquids/semi-solids removed, managed and disposed
- Fully executed waste manifests
- UST vapor readings
- Volume of flowable fill placed into USTs and risers
- Photographic documentation of field activities, documenting removal of contents of USTs, filling USTs, and capping of fill ports and access ports

**202.5 References:** The Contractor shall close the USTs in-place in accordance with the following TCEQ rules and guidance:

- Registration Requirements: 30 TAC, Chapter 334, Subchapter A, §334.7
- Construction Notification: 30 TAC, Chapter 334, Subchapter A, §334.6
- UST Contractor Registration / Licensing: 30 TAC, Chapter 334, Subchapter I, §334.401, §334.407, §334.424 and Chapter 30, Subchapter I §§30.301-319

**TCEQ Publications and Forms:** The Contractor shall refer to the following guidance documents and use the following forms, as applicable:

- TCEQ Regulatory Guidance 411 (RG-411) – Investigating and Reporting Releases from PSTs, August 2012.
- TCEQ Release Determination Report form (TCEQ-00621).

## 203 Underground Storage Tank (UST) Temporary Out of Service

**203.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements to temporarily take an underground storage tank (UST) out of service.

**Note:** If a UST system is in Bexar, Comal, Hays, Kinney, Medina, Travis, Uvalde, or Williamson County, additional requirements related to the protection of the Edward Aquifer or the Trinity Aquifer may apply as found in 30 TAC 213 and 214. When these additional requirements apply, the Contractor shall comply with them.

**203.2 Procedures:** The Contractor shall take a UST temporarily out of service in accordance with the Texas Commission on Environmental Quality's (TCEQ) regulations found in 30 TAC 334 and the following parameters:

- Determine location of the USTs, including the proximity to the roadway and need for traffic control.
- Determine if there is a need to relocate or remove objects or structures (canopy, dispensers, building, etc.) to access the USTs.
- Determine configuration of the UST fill, pump drop tubes, and overfill prevention.
- Locate aboveground and underground utilities.
- Determine type of product stored and estimate of the volume of liquids remaining in the USTs.
- Perform waste characterization of UST contents and prepare waste profile forms.
- Contact the waste disposal contractor to identify the analytical testing needed to characterize the waste and the waste profile forms to prepare.
- Coordinate schedule and site access to the USTs.
- Remove liquids/semi-solids from the tank until it is "empty" in accordance with TCEQ's definition of empty, as follows: any fuel residue (i.e. liquid and sludge) is less than a depth of one inch and does not exceed 0.3 percent by weight of the system at full capacity.
- Contact ENV-HMM Project Manager if a release has occurred.
- File an amended UST registration within 30 days of temporary removal of service using the UST Registration and Self-Certification Form (TCEQ-0724).
- Keep all vent lines open and functioning to prevent vapors building up and potentially causing an explosion.
- Cap, plug, or lock piping, pumps, manways, tank access points (e.g., fill risers, automatic tank gauging risers, Stage 1 vapor recovery risers) and ancillary equipment to prevent access, tampering, or vandalism by unauthorized persons.
- Restore site to original condition by removing all project-related materials, equipment and debris upon completion of field activities related to temporarily removing the USTs from service.

**203.3 Contractor Licenses and Registrations:** The Contractor shall have appropriate license and registration from the TCEQ to perform the removal and disposal of fuel and

fuel residue from a UST system. The transporter and disposer of the fuel and fuel residue shall be registered/ licensed with the TCEQ.

**203.4 Final Report:** Submit project deliverables as specified in ENV ITEM 103, Purchase Order Deliverables and in accordance with the SOW and/or Contract requirements. The Final Report shall include:

- Location, number, contents, and size of USTs
- Volume of liquids/semi-solids removed, managed and disposed
- Fully executed waste manifests
- Photographic documentation of field activities, documenting removal of contents of USTs and capping of fill ports and access ports.

**203.5 References:** The Contractor shall take a UST temporarily out of service in accordance with the following TCEQ rules and guidance:

- Registration Requirements: 30 TAC, Chapter 334, Subchapter A, §334.7
- Temporary Removal from Service for a UST: 30 TAC, Chapter 334, Subchapter C, §334.54 and 30 TAC 37, Subchapter I.
- UST Contractor Registration / Licensing: 30 TAC, Chapter 334, Subchapter I, §334.401, §334.407, §334.424 and Chapter 30, Subchapter I §§30.301-319.

The Contractor shall refer to the following TxDOT guidance documents:

- TxDOT UST Temporary Removal from Service Guidance. December 2014

## 204 Non-Regulated Underground Tank System Removal

**204.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements to remove non-regulated underground storage or treatment tanks and ancillary equipment.

**Note:** Hydraulic lifts and the associated tanks are not regulated unless a release is determined to have occurred. When a release is determined, they become regulated under the Texas Commission on Environmental Quality (TCEQ) Petroleum Storage Tanks regulations found in 30 TAC Chapter 334 (reference ENV ITEM 200).

**204.2 Procedures:** The Contractor shall access the tank through existing manways or ports or pipes to determine the dimensions of the tank and possible contents and volume. The Contractor shall properly characterize for acceptance at an appropriate recycling or disposal facility any product or waste present in the tank.

The Contractor shall render the tank safe by performing the following tasks.

- Remove, to the extent practicable, the contents of the tank.
- Rinse the residual waste or product until clean (for transport to a recycling or disposal facility).
- Manually demolish cast-in-place tank structures and properly dispose of broken concrete and rebar.
- Excavate and remove metal, or cast-in-place tanks, if specified in the scope of work due to conflicts with proposed construction.
- For excavated tanks, properly transport and properly dispose or recycle the tank.

The Contractor shall take confirmation samples, selected based on the material(s) contained in the tank, for submittal to a TxDOT-contracted laboratory during the removal of the tank and will note any visual or olfactory evidence of a spill or release.

**204.3 Reporting/ Deliverables:** The Contractor shall submit the daily reports to the TxDOT ENV Project Manager detailing work completed each day. The final report (deliverable) will be a letter report detailing all the work involved with removing the targeted underground tank(s) and will include characterization analytical results, photos of the removal, a narrative of the work, transportation and disposal manifests and copies of the signed daily reports. The final deliverable shall meet the requirements detailed in ENV ITEM 103 – PO Deliverables.

## **210 Plugging and Abandoning Groundwater Monitoring Wells**

**210.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for the plugging and abandoning of monitoring wells.

**210.2 Qualifications:** The Contractor shall use an individual holding a license issued by the Texas Department of Licensing and Regulation pursuant to the Texas Occupations Code Title 12 Chapter 1901 and 16 TAC 76.21 to plug and abandon monitoring wells.

**210.3 Procedures:** The Contractor shall plug and abandon all monitoring wells in accordance with 16 TAC 76.71, 76.72, and 76.104.

**Waste Disposal:** The Contractor shall containerize and dispose of waste material generated according to Federal and State Regulations, and as directed by the Statement of Work (SOW).

**210.4 Reporting:** The Contractor shall file Well Plugging Reports in accordance with 16 TAC 76.70 and 76.71, and Texas Occupations Code Title 12 Chapter 1901. The Contractor shall document plugging and abandoning wells per the Deliverable section of the Statement of Work for the project and per ENV Item 103 – Purchase Order Deliverables.

## 212 Assessment and Removal of Abandoned Pipelines

**212.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for the assessment and removal of abandoned pipelines within the right-of-way.

**212.2 Procedures:** The Contractor shall use the following procedures to assess and subsequently remove abandoned pipelines from the right-of-way:

**Coordination:**

Coordinate the assessment and abandonment activities with the ROW Division (Map, Survey and Utility Section).

**Preliminary Site Visit:** If necessary, perform a preliminary site visit to prepare the scope of work, health and safety plan, and traffic control plan.

**Health and Safety Plan:** Prepare plan and gain TxDOT approval prior to initiating fieldwork activities.

**Traffic Control Plan:** If identified in the SOW, prepare traffic control plan.

**Utility Locating:** Notify the utility locating service for the area of planned excavation activities.

**Field Logbook:** Record fieldwork in the field logbook.

**Ownership Assessment:**

Determine pipeline and/or easement ownership (e.g., title search; known pipeline review; Railroad Commission records review, U.S. Pipeline and Hazardous Materials Safety Administration records review).

**Pipeline Assessment (as outlined within the SOW):**

- 212.2.1 Verify from the owner or records that the pipeline is abandoned and out-of-use.
- 212.2.2 Notify local emergency personnel and complete above listed pre-field work activities and notifications.
- 212.2.3 Excavate and expose pipeline.
- 212.2.4 If the pipeline has a coating, sample the coating to determine if the coating contains Asbestos Containing Materials (ACM).
- 212.2.5 Conduct a non-destructive evaluation to determine if the pipeline is active and conveying fluid (e.g., liquid ultrasonic flow meter).



- 212.2.6 Determine if the pipeline is being protected from corrosion by induced current or other system.
- 212.2.7 Determine pipeline wall thickness (ultrasonic wall thickness determination).
- 212.2.8 Conduct intrusive evaluation (pipeline hot tap) to determine contents of the pipeline.

**Pipeline Removal:**

- 212.2.9 Perform pipeline cutting at the ROW line / cleaning (residual fluid removal) / capping of the pipeline ends at the ROW line.
- 212.2.10 Dispose of investigation derived wastes, excavation wastes, and pipeline wastes (residual fluids, etc.) in accordance with applicable state and federal laws and regulations.
- 212.2.11 Remove pipeline in the ROW and transport it for disposal or recycling in accordance with applicable state and federal laws and regulations.

**Backfill and Compaction:**

- 212.2.12 Backfill and compact (backfill as specified by the TxDOT Area Engineer or Project Specifications) any remaining trenches and pits with excavated material and restore the grade to an elevation suitable for future construction needs.

**250.3 Final Report:** The Contractor shall prepare a Final Report as outlined in the Contract, SOW, and ENV Item 103 – Purchase Order Deliverables, and it must include the following items in the report.

- A description of materials, controls, and work practices used to remove pipeline,
- Quantity of pipeline removed
- Results of the removal work, including a statement confirming completion of all removal activities, and/or a description and explanation for any pipeline that could not be removed.
- Photographic documentation illustrating removal of the pipeline.

## 250 **Asbestos-Cement Pipe (Transite™) Removal and Disposal**

**213.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements for the removal and disposal of asbestos-cement pipes (Transite™ pipelines) located within TxDOT right-of-way.

**213.2 Procedures:** The Contractor shall use these procedures when removing and disposing of asbestos-cement pipes, commonly referred to as Transite™ pipe.

**213.2.1 Project Coordination:** Coordinate with TxDOT and other interested parties (city, counties, design engineers, utility contractors, prime construction contractors, etc.), on project schedules and timelines. The Contractor shall make every effort to schedule and perform the work within the timelines agreed.

**213.2.2 Excavation Procedures:** Coordinate with TxDOT and the other interested parties in determining excavation procedures and/or responsibilities, as outlined in the Statement of Work (SOW).

**213.2.3 Removal Procedures:** The Contractor shall use the following procedures to remove and dispose of asbestos-cement pipes, or as outlined in the SOW.

- Provide required regulatory notifications for asbestos abatement work through the Texas Department of State Health Services (DSHS),
- Do not grind, abrade or otherwise disturb the ACM in a manner that would cause an asbestos hazard or visible fiber release.
- Remove the asbestos-cement pipe from the excavation in accordance with all applicable regulatory requirement, including 40 CFR 61.145 (Renovation and Demolition of Structures – Asbestos NESHAP) and 29 CFR 1926.1101 (OSHA Asbestos Standard for Construction).
- Properly classify, contain, transport and dispose of the removed asbestos-cement pipe in accordance with State and Federal regulations.
- Restore site to near original condition by removing all materials, equipment and debris upon completion of asbestos-cement pipe removal activities.

**213.3 Final Report:** The Contractor shall prepare a Final Report as outlined in the Contract and/or SOW and must include the following items in the report.

- A description of materials, controls, and work practices used to remove asbestos-cement pipe.
- Quantity of asbestos-cement pipe removed.

- Results of the removal work, including a statement confirming completion of all removal activities, and/or a description and explanation for any asbestos-cement pipe that could not be removed.
- Photographic documentation illustrating removal of the asbestos-cement pipe.
- Documentation demonstrating compliance with 40 CFR 61.145 (NESHAP) and 29 CFR 1926.1101 OSHA, including results of required employee monitoring and/or negative exposure assessments, and DSHS.

## **221 Soil and Groundwater Management Plan(s)**

**221.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements to create a Soil and Groundwater Management Plan (SGMP) for the mitigation of contaminated media related to TxDOT construction activities. If directed by the Statement of Work (SOW), the SGMP will become part of a special specification that will direct construction contractors on how to manage and dispose of contaminated media within a construction zone.

**221.2 SGMP Style:** The Contractor shall utilize the following limitations/standards when preparing the SGMP:

- State the Contractor's requirements only once (other than as part of process flow charts) and do not include an executive summary;
- Do not give options (multiple methods) to the contractor in detailing how to manage each contaminated media;
- Prepare the plan as a directive, using imperative voice;
- Always capitalize CONTRACTOR, ENVIRONMENTAL SPECIALIST, or TxDOT when directing them to perform a task; and
- Utilize cost effective procedures and easily purchased products, as applicable.

**221.3 Procedures:** At a minimum, the Contractor shall prepare the SGMP to include the following, unless otherwise outlined within the SOW.

**221.3.1 SGMP Zone** – Indicate the exact location on a depiction of the Project Plan Schematic and within the initial paragraph of the plan where the SGMP starts and ends using the construction project plan station numbers.

**221.3.2 Contaminated Media Information** – Summarize past studies performed on the subject site detailing:

- The chemicals-of-concern and their concentrations;
- The impacted media (surface soils, surface water, subsurface soils, sediment, groundwater, etc.);
- The known and/or suspected horizontal and vertical extent of the contaminated media; and

- The potential hazards/exposure impacts to construction workers.

**221.3.3 Summary of potentially impacted construction improvements** – Detail what part of the construction project will potentially be affected by the contaminated media (storm sewers, bridge piers, abutments, etc.)

**221.3.4 Soil Management** – The Contractor shall evaluate methods to manage contaminated soils potentially affecting improvements within the SGMP zone. The Contractor shall consider costs and ease of construction (the least impact to normal construction methods while still providing effective management of contaminated soils). The SGMP shall include detailed written methodologies on managing the potentially contaminated soils within the SGMP zone. The Contractor shall include the rules and regulations that govern the methodologies chosen.

**221.3.5 Groundwater Management** – The Contractor shall evaluate methods to manage contaminated groundwater potentially affecting improvements within the SGMP zone. The Contractor shall consider costs and ease of construction (methods with the least impact to normal construction while still providing effective management of contaminated groundwater). Different techniques for groundwater disposal may be used under this heading, but will be based on a total gallon limit for the project, or as directed by the SOW. The SGMP shall include detailed written methodologies on managing potentially contaminated groundwater within the SGMP zone. The Contractor shall include the rules and regulations that govern the methodologies chosen.

**221.3.6 Construction Materials** – The Contractor shall evaluate all construction products used within the SGMP zone. The Contractor shall include a written description of the findings and/or alternatives within the SGMP, upon concurrence by ENV-HMM and the Point-of-Contact (POC) outlined within the SOW. If the Contractor recommends alternatives to the original design, the Contractor shall then supply plan details and specifications of the new products to the POC and the ENV-HMM Project Manager.

- The Contractor shall evaluate all construction products used within the SGMP contamination zone for compatibility with the contaminated media. If the construction products are not compatible with the contaminated media, then the Contractor shall use an alternative product. The Contractor will evaluate the alternative product for cost, reliability/life cycle, ease of installation and use, and accessibility for procurement.
- The Contractor shall evaluate all potential multi-media migration pathways created by the construction improvements. This will include all vertical and horizontal pathways. If the evaluation indicates a potential pathway issue, the Contractor will design method(s) to prevent migration of any contamination or potentially contaminated media along or through the construction improvement.

**Note:** Examples of horizontal pathways may be a graded drain through a groundwater plume or gasses migrating along a pipe chase. Examples of a vertical pathway may be a bridge pier installation through multiple confining layers.

**221.3.7 Environmental Specialist** – The Contractor shall detail the requirements for the Prime Construction Contractor to use an Environmental Specialist to manage the requirements outlined within the SGMP. The Contractor shall include a bulleted list of duties required by the Environmental Specialist to include a time schedule to complete the activities. At a minimum, the Contractor shall use the following listed items within this section as requirements for managing and using the Environmental Specialist.

- The Prime Construction Contractor shall bill at a rate no greater than a Field Technician for the onsite Environmental Specialist. TxDOT shall negotiate the rates with the Prime Construction Contractor prior to work commencing on the project.
- The Environmental Specialist shall have at least two verifiable years performing the work outlined within the SGMP (preferred). TxDOT shall review the verifiable proof prior to the work commencing on the project.
- The Environmental Specialist shall have 40-hour Hazardous Waste Operation and Emergency Response (HAZWOPR) training.
- The Environmental Specialist shall work for a firm who holds a registration in one (1) or more of the following: Professional Engineer by the State of Texas, Registered Environmental Manager/Registered Environmental Professional by the National Registry of Environmental Professionals, Professional Geoscientist by the State of Texas, or a TCEQ-registered Corrective Action Project Manager (if applicable).

**221.3.8 Revisions to the SGMP:** The Contractor shall include a sub-heading within the SGMP that outlines the requirements to make corrections or updates to the SGMP.

**221.3.9** The Contractor shall include as an attachment(s) separate process flow charts, one process per sheet, for each potentially contaminated media (soil, groundwater, atmospheric, etc.). Each process flow chart will graphically depict the method for handling the specific contaminated media from discovery to final disposition (example: the steps and decisions that must be followed to handle contaminated soils).

**221.4 Field Documentation and Reporting:** The Contractor shall include a section within the SGMP that outlines the field documentation and reporting required for submittal TxDOT at the close of the project. At a minimum, the Contractor shall include the following in the SGMP:

- SGMP Acceptance: Include an attachment that provides for written documentation from the Prime Construction Contractor, Sub-Contractor(s), Environmental

Specialist, and all personnel working within the SGMP zone to verify that they have read the SGMP and understand the contents.

**Note:** The initial SGMP Acceptance Form must be signed and dated prior to work commencing on the project. The SGMP Acceptance form is to be re-signed and delivered to TxDOT when changes to the plan or workers are made.

- Field logs and daily activities summaries: The Environmental Specialist shall submit daily activity summaries to the Prime Construction Contractor and TxDOT to verify work performed and time allocation (can be e-mailed). The Prime Construction Contractor shall use a field log for the entire project and submit this to TxDOT at the end of the project.
- The Environmental Specialist shall develop a SGMP final report and submit it through the Prime Construction Contractor at the construction project completion. The final report will contain, at a minimum:
  - Daily field logs;
  - All laboratory results with sample locations;
  - All corrections/ and revisions to the SGMP;
  - Disposal manifests;
  - Personnel and company responsible for managing the SGMP, including names and certifications; and
  - All other items related to the regulatory handling of the contaminated media, per the SGMP.

## 222 Construction Oversight

**222.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements to provide third-party oversight for environmental-related work performed by a Prime Construction Contractor.

### **222.2 Procedures:**

**Preliminary Project Review** – The Contractor shall review all management plans and/or specifications related to the environmental work. The Contractor shall review all construction related requirements affected by the environmental condition.

**Communication Requirements:** The Contractor shall prepare a written Communication Plan (CP) that describes in detail the communication hierarchy for information distribution related to the project oversight. The CP shall include names and contact information, including emergency contact information, and the preferred methods of routine, and emergency communication distribution. The Prime Construction Contractor and the TxDOT Point-of-Contact for the project will sign the CP.

**Construction Monitoring:** The Contractor shall provide construction oversight as directed within the SGMP, remedial actions, and/or corrective action events and/or as outlined with the SOW.

**Routine Reporting:** The Contractor shall prepare a typed weekly report throughout the duration of the oversight detailing the field activities, and as a default, will disseminate to the ENV-HMM Project Manager and the POC by e-mail, or as defined by the SOW. This report shall include attachments such as; maps, figures, analytical results, manifests, and other information concerning the management of the oversight activity.

**222.3 Reporting:** The Contractor shall prepare a final report for the construction oversight activities. The report shall include copies of the weekly reporting, the field logbook, photographs, and all other hard information gathered for the project execution.



## 223 Biological Waste Removal and Disposal

**223.1 Description:** This Standard Operating Procedure (SOP) identifies the requirements to provide biological waste removal and disposal from tub-girder type bridges.

**Note:** Biological waste is defined as pigeon droppings and carcasses.

**223.2 Procedures:** The Contractor shall use the following procedures for biological waste removal and disposal from tub-girder type bridges:

- Prepare Health and Safety Plan.
- Set up decontamination area, command center area, and rest area secured with orange safety fencing.
- Clean the area with shovels and brooms, placing the collected biological waste (and construction debris that will fit through access openings) into plastic trash bags. Dispose of the plastic trash bags in lined roll-off boxes staged at the site.
- After the initial cleaning, pressure wash and mop the inside of the tub girder.
- Apply Zepamine (or another approved biocide) for the final cleaning.
- Secure future bird access by covering unsecured entry locations.
- Properly dispose of accumulated wastes in the roll-off boxes at an approved landfill.

**223.3 Field Notebook:** The Contractor shall keep a field notebook following ENV ITEM 138.

**223.4 Reporting:** The Contractor shall submit the project deliverables per ENV ITEM 100.

## **224 Waste Segregation, Characterization and Disposal**

**224.1 Description:** This Standard Operating Procedure (SOP) identifies the steps for identification, handling and disposal of waste materials encountered on TXDOT Right-of Way.

**Note:** The materials may include drums, 5-gallon buckets, tanks, waste piles or waste in other forms. This procedure addresses the situation where the owner of the waste cannot be identified.

**224.2 Procedures:** The Contractor shall use the following procedures when identifying, handling, characterizing, transporting and disposing of abandoned waste materials.

**224.2.1 Preliminary Site Visit:** The Contractor shall survey the location and materials to identify the nature and potential owner of the waste. This should include reviewing labels or other markings that would identify the material, surveying the former use of the property, and taking into consideration process knowledge given the location and visual nature of the material (e.g. oil filled drums at a former gas station or dumped roofing shingles with fibrous material).

The Contractor shall identify the appropriate nearest landfill/recycling facility to the subject property. Additionally, the Contractor shall determine the appropriate analytical testing based on coordination with the disposal facility and appropriate TCEQ regulations.

**Note:** This may include a determination whether the material is hazardous or non-hazardous waste, construction debris, contains fibrous material that could be asbestos, etc. Testing should only be performed to the degree required by the disposal facility based on site factors and process knowledge in the context of TCEQ regulations.

The Contractor shall evaluate the analytical data collected for disposal/recycling options. In addition, the Contractor shall use the results for any additional labeling and manifesting requirements prior to shipment. The contractor shall complete waste profile forms provided by the disposal facility. A TXDOT representative will sign the form as a municipal generator. Alternatively, signature authority may be delegated in writing by TxDOT to the Contractor.

**224.2.2 Manifesting and Disposal:** The Contractor shall use a manifest for waste transported from the location to a recycling/disposal facility. The Contractor shall ensure that the selected transporter and disposal/recycling facility have the required local, State, and/or federal permits and/or licenses. TxDOT will serve as the generator of the material with the Contractor acting as TxDOT's agent.

**224.3 Reporting:** The Contractor shall submit project deliverables per ENV ITEM 100. The Contractor will include copies of the field logbook (including pictures of the materials), analytical testing results, and waste characterization/ waste manifest forms within the project deliverable(s).

## 225 Drilling Mud Collection and Disposal

**225.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for the use, collection, storage, sampling, characterization and offsite disposal of contaminated drilling mud.

**225.2 Procedures:** The Contractor shall use the following procedures for the management, characterization and disposal of drilling mud:

- Coordinate efforts with the Prime Construction Contractor to maximize the number of potentially impacted locations drilled sequentially to minimize the amount of contaminated drilling mud produced.
- Sample the containerized drilling mud every 5,000 gallons for waste characterization, or as outlined in the SOW.
- Prepare a waste profile and submit it to the disposal facility for acceptance.
- Prepare a waste manifests from the approved disposal facility in accordance with applicable regulatory guidelines prior to removing the drilling mud from the project location.
- After receiving approval documentation from the disposal facility, transport the waste by a State-licensed transporter subcontracted by the Contractor.
- Prior to offsite disposal, either a TxDOT employee or TxDOT third party representative will sign the waste manifests on behalf of TxDOT. The Contractor shall keep copies of all waste manifests and then provide them to TxDOT in the final deliverable.
- Track the transport vehicles and waste manifests for documentation purposes.
- Document decontamination procedures prior to moving equipment to non-affected project locations

**225.3 Field Notebook:** The Contractor shall keep a field notebook following ENV ITEM 138. At a minimum, the field notebook shall document the tracking information for each waste shipment as follows: manifest number, shipment date, transporter name, waste type, waste code if applicable, volume, waste profile approval number, and the designated disposal facility.

**225.4 Reporting:** The Contractor shall submit Daily Reports that will include the information, outlined in the Field Notebook documentation itemized in Section 225.3.

## **226 Soil or Solid Waste Reuse or Excavation, Transportation, and Disposal**

**226.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for reuse, storage, sampling, characterization and offsite disposal of soil or solid waste.

**226.2 Procedures:** The Contractor shall reuse excavated soils in accordance with the United States Environmental Protection Agency Letter (9441.1992(16)), Sylvia K. Lowrance, Director Office of Solid Waste dated June 11, 1992.

**226.3 Procedures:** The Contractor shall use the following procedures for the management, characterization and disposal of soils or solid wastes:

- Temporarily store/containerize on-site or in a designated area using plastic sheeting, 55-gallon drums or roll-off containers. Take proper precautions to ensure the safety of workers and the public.
- Sample the soil or solid waste for waste characterization. Collect samples per the cubic yard volume required by the proposed disposal facility for waste characterization.
- Prepare a waste profile and submit it to the disposal facility for acceptance.
- Obtain the waste manifests from the approved disposal facility in accordance with applicable regulatory guidelines.
- Transport the soil or solid waste by a State-licensed transporter.
- Accompany each shipment with a waste manifest.
- Prior to offsite disposal, either a TxDOT employee or TxDOT third party representative will sign the waste manifests on behalf of TxDOT. The Contractor shall keep copies of all waste manifests and then provide them to TxDOT in the final deliverable.
- Track the transport vehicles and waste manifests for documentation purposes.
- Document decontamination procedures prior to moving equipment to non-affected project locations

**226.4 Field Notebook:** The Contractor shall keep a field notebook following ENV ITEM 138. At a minimum, the field notebook shall document the tracking information for each waste shipment as follows: manifest number, shipment date, transporter name, waste type, waste code if applicable, volume, waste profile approval number, and the designated disposal facility.

**226.5 Reporting:** The Contractor shall submit Daily Reports that will include the information, outlined in the Field Notebook documentation itemized in Section 226.4.

## 227 Soil Replacement and Compaction

**227.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for “backfilling” an open excavation and machine compaction.

**Note:** The term “backfilling” is defined as filling an open excavation to grade with a TxDOT-approved material.

**227.2 Procedures:** The Contractor shall use the following procedures for backfilling/compacting an open excavation:

- The Contractor will backfill the excavation as-soon-as-possible to ensure safety at the project site. Surround any open excavations with “caution tape”, cones or equipment to prevent access.
- The Contractor shall use a TxDOT-approved backfill material free of stones or other material large enough to interfere with compaction. As a default, the Contractor shall use Class III clayey gravel or sand or Class IV lean clay with plasticity index between 7 and 20.
- Backfilled excavations in “6-inch lift” increments (loose measurement).
- Apply the deadweight of the machine (backhoe or excavator bucket) downward on the soil surface, compressing the soil particles.
- Repeat lifts until at finish grade.

### **227.3 Reporting:**

**Field Activity Daily Report(s):** In addition to the requirements identified by the project for Field Activity Daily Report(s), the Contractor shall include the following items for verification of soil replacement and compaction for that day:

- The number of truckloads and type of imported soil,
- The number of compacted lifts,
- Compaction methods, and
- Total cubic yards used to backfill the open excavation to grade

**Final Report:** In addition to the requirements identified by the project for a Final Report, the Contractor shall include the following items for verification of soil replacement and compaction:

- The total number of truckloads and type of imported soil,
- The number of compacted lifts,
- Compaction methods, and
- Total cubic yards used to backfill the open excavation to grade

## 228 Air Monitoring for Construction

**228.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for performing air monitoring for construction activities.

**Note:** The purpose of air monitoring is to collect chemical vapor or dust data for comparison to permissible exposure limits (PELs) so action can be taken before workers are adversely affected from an inhalation hazard. Air Monitoring for potential chemical exposure is a subset of an overarching Health and Safety Plan for the project.

**228.2 Procedures:** The Contractor shall use the following procedures when performing air monitoring on ENV-HMM projects, or as directed by the project specific Health and Safety Plan (HSP).

- Select a single PEL for evaluating air-monitoring data when multiple chemicals are present. A single level will enable quick and efficient identification of conditions that could adversely affect worker health and safety.
- Use the appropriate PELs relative to all appropriate industry source of exposure data such as OSHA, NIOSH and ACGIH.
- Take a baseline, air quality sample, before commencement of work activity.
- Identify fixed monitoring locations or mobile monitoring locations on a project specific basis.
- Specify upwind and downwind monitoring locations in addition to monitoring locations in the exclusion zone.
- Specify stop work thresholds.
- Identify mitigation methods to address elevated monitoring data.

### Air Monitoring Equipment

- Specify the type, make, and model of the equipment used on the project.
- Calibrate equipment before each use.

### Air Monitoring Documentation

- Documentation calibration activities

## 229 Groundwater Collection and Disposal

**229.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures for the collection and disposal of contaminated groundwater generated from TxDOT construction activities.

**Note:** These activities may include dewatering of trenches, excavations, or pier shafts in areas where groundwater contamination is confirmed prior to construction or when contamination is found or suspected during construction activities.

**229.2 Procedures:** The Contractor shall collect, containerize, characterize, and select a properly licensed transporter and disposal company to remove affected groundwater generated by construction activities. The Contractor shall not pump or discharge contaminated groundwater onto the ground surface. Contain and dispose of all drilling mud fluid or filtrate from water-based drilling that become contaminated.

Alternatively, for conditions that may produce large quantities of contaminated groundwater, and it is logistically feasible, the Contractor may possibly obtain a permit to discharge the water into a local publicly-owned treatment works (POTW).

**229.2.1 Collection and Storage:** The Contractor shall remove the contaminated water from the construction area (e.g. trench or excavation) directly into a clean storage container. Generally, this will involve pumping the water directly to a container located in a TxDOT-approved location, or into a container to be transported to the approved location. The storage container shall contain the water or drilling mud filtrate without leaking and without allowing rainfall infiltration. Examples of appropriate containers include sealed holding tanks (e.g. frac tanks), drums, etc.

For groundwater or drilling mud displaced during the placement of concrete into a drilled pier or shaft, the above collection and storage procedures will apply. The Contractor may use alternative methods if approved by TxDOT through the scope of work.

**229.2.2 Characterization, Transportation and Disposal:** The Contractor shall properly characterize the stored groundwater for ultimate disposal. Complete the characterization per ENV ITEM 224 Waste Segregation, Characterization, and Disposal, paragraph 224.2.1. The Contractor will utilize the characterization data to profile the groundwater and to obtain transport and disposal approval from the Contractor's selected transporter and disposal facility. Provide copies of the transportation and disposal manifests to the TxDOT Project Manager upon completion.



## 231 Spill Prevention Control and Countermeasures Plans

**231.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures required for the preparation of Spill Prevention Control and Countermeasures (SPCC) Plans for TxDOT facilities.

**231.2 Procedures:** The Contractor shall utilize the following procedures when preparing SPCC Plans for TxDOT facilities.

**Regulatory Compliance:** The Contractor shall prepare and/or update all SPCC Plans for TxDOT facilities in strict compliance with 40 CFR Part 112. Unless otherwise specified in the Work Authorization (WA) or in a Supplemental WA, the final SPCC Plan deliverables shall not include recommendations to bring the facility into compliance with the SPCC rule.

**Note:** Needed facility upgrades shall be discussed during the performance of the site visit, and the facility shall be given the opportunity to complete the needed upgrades prior to the final Plan preparation. If the needed facility upgrades cannot be completed in a timely manner, to be agreed upon by TxDOT and the Contractor, a Supplemental WA shall be prepared to allow recommendations for achieving compliance in the final deliverable.

**Practicality:** The Contractor shall prepare SPCC Plans in accordance with good engineering practices, and such that the Plans are cost-effective, practical to implement, and can be implemented using primarily State in-house resources, as available.

**Specificity:** The Contractor shall prepare each SPCC Plan with site-specific graphics, tabulated inventory, tank inspection schedules, notes, etc. "Typical" notes or legends shall not be acceptable on-site plans, tables, etc. Tank integrity testing schedules shall include a specific date by which each tank (as applicable) is required to undergo an initial integrity test, and a specific interval at which subsequent testing shall be required. When applicable, specific integrity testing procedures or standards shall be detailed for each tank.

**Personnel Training Criteria** – The SPCC Plan shall include guidance for required on-site personnel training. The Plan must also include a schedule for required Plan reviews, updates, and the personnel required to perform the reviews.

**Deliverable(s)** – In addition to the deliverable(s) requirements specified in ENV ITEM 100, and in the WA, each SPCC deliverable must meet the following requirements:

**Text** – Provide the deliverable in an unprotected Microsoft Word file format (i.e. \*.docx).

**Graphics** – Provide the graphic contents part of the deliverable in a MicroStation file format (i.e. \*.dgn).

**Binding** – Provide the hardcopy deliverable in a three-ring binder format.

## **232 Scrap Tire Collection, Transportation, and Recycling /Disposal**

**232.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures to be utilized by TxDOT Contractors when planning and executing TxDOT scrap tire management projects.

**Note:** Typically, scrap tire management projects shall be performed at new right-of-way (ROW) locations where used or scrap tires have been abandoned and left on the property during the ROW acquisition phase of a roadway project. Other projects may include existing ROW locations where used or scrap tires have been illegally dumped.

**232.2 Procedures:** The Contractor shall ensure that all used or scrap tires collected from the ROW parcel are transported, and disposed, or recycled in accordance with Title 30 of the Texas Administrative Code (TAC) Chapter 328; Subchapter F pertaining to the management of used or scrap tires. Recycling and energy recovery are the preferred disposition for used or scrap tires collected from TxDOT ROWs, if the cost is not prohibitively higher than disposal. TxDOT may request that the Contractor receive bids for disposal and recycling options.

**232.2.1 Inventory and Sorting:** The Contractor shall mobilize personnel to the ROW parcel location provided in the scope of work. The field personnel shall sort and inventory the scrap tires by type (e.g. number of passenger vehicle/light truck tires, number of large truck tires, number of off-road vehicle tires, etc.) and shall designate in the inventory whether the tires are on rims/wheels or off.

**232.2.2 Scrap Tire Manifesting and Transportation:** The Contractor shall properly manifest the scrap tires for transport, and shall use the Texas Commission on Environmental Quality (TCEQ) manifest form TCEQ-10304, or an equivalent form. The Contractor shall complete the manifest on TxDOT's behalf by completing and signing the Generator Information and Certification portion of the manifest. The Contractor shall use the previously completed inventory information to record the number of tires on the Generator portion of the manifest. Use "Texas Department of Transportation" as the Generator of the scrap tires.

The Contractor shall hire a properly licensed Scrap Tire Transporter to transport the tires to a properly licensed Scrap Tire Processing facility or Scrap Tire Disposal facility. The contractor shall oversee the loading by the Transporter, and shall receive and forward a copy of the Transportation Manifest to the TxDOT ENV-HMM Project Manager with the final deliverable.

**232.3 Reporting:** The Contractor shall document the scrap tire removal per the Deliverable section of the Statement of Work for the project, and per ENV Item 103 – Purchase Order Deliverables.

## 241 Remedial/Corrective Action

**241.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures governing the development, implementation and reporting of remedial and/or corrective action activities performed by ENV-HMM.

**Note:** Since the breadth of remedial and/or corrective action is extensive, the Statement of Work (SOW) shall provide most of the details.

**241.2 Procedures:** The Contractor shall utilize the following generic procedures when performing remedial/ corrective actions:

**241.2.1 Cost Benefit Analysis** –Perform and document a cost-benefit analysis for at least two appropriate technologies and options, including entire life-cycle costs, for performing site remediation.

**241.2.2 Project Implementation Plan** – Upon written approval of the appropriate remedial/corrective action by the ENV-HMM Project Manager and if required by the regulatory agency, prepare a Project Implementation Plan, as detailed by the Statement of Work.

**241.3 Personnel** - If applicable, prepare the remedial/corrective action plan under the supervision of, and signed and sealed by a Texas licensed Professional Engineer, Professional Geoscientist, or Corrective Action Project Manager in accordance with 30 TAC 334.308(g) (21), 30 TAC 334.451, Title 6 Occupations Code Chapter 1001, and 22 TAC 851.

**241.4 Permits** – Identify and secure all necessary construction and/or regulatory permits required for the remedial/corrective action implementation.

**241.5 Reporting** – Prepare all Draft and Final Reports (Deliverables) per regulatory agency specifications for the appropriate technologies and in accordance with ENV Item 103 Project Deliverables.

## 250 Mobile Dual Phase Extraction

**250.1 Description:** This Standard Operating Procedure (SOP) identifies the procedures governing the development, implementation and reporting of Mobile Dual Phase Extraction (MDPE) activities.

**Note:** The following items are common to MDPE events and shall be coordinated by the Contractor. MDPE events are generally of a fixed duration: 8 hr., 24 hr., 72 hr. or 7 days. The duration shall be proposed by the consultant and approved by the TxDOT project manager and TCEQ, as appropriate.

### 250.2 Procedures:

**250.2.1 Permits:** The Contractor shall identify and secure all necessary construction and/or regulatory permits, to include a PI-7 permits. Disposal of wastewater shall require a permit if going to a sanitary or storm sewer.

**250.2.2 Equipment:** The Contractor shall charge a flat rate for the 8, 24 and 72 hour events. The flat rate shall include mob/de-mob charges, the vapor extraction unit, a vapor destruction unit, wastewater storage tank, power supply and all other hardware necessary to perform a turnkey job, as detailed by the scope of work (SOW).

**250.2.3 Personnel:** The Contractor shall ensure that the flat rate charge includes all labor hours required for project management, permit applications, site visit, and waste disposal and reporting.

**250.2.4 Disposal:** The Contractor shall follow all wastewater disposal requirements if discharged to a sanitary or storm sewer.

**250.3 Reporting:** The Contractor shall produce a Product Recovery Report (TCEQ-0025) to document MDPE events. The report shall include all required attachments, including documentation from the equipment operation, sampling and analysis, and waste manifests. The Contractor shall meet all regulatory agency reporting standards and requirements.

## Appendix A

The following table shows the revision history for this guidance document.

Revision History	
Effective Date Month, Year	Reason for and Description of Change
April 2023	Version 5 was released. The deliverable process for SOPs 100 and 103 was revised to include a Contractor Final Deliverable Packet (CFDP).
August 2020	Version 4 was released. SOP number 135 – Storage Locations was added. These SOPs were removed. Item 228 – Air Monitoring for Construction and Item 133 – Environmental Testing Laboratory Accreditation and Certification.
October 2016	Version 3 was released. The following new SOPs were added numbers, 103, 104, 106, 123, 134, 189, 192, 193, 194, 196, 197, 198, 199, 201, 202, 203, 204, 213, 223, 224, 225, 226, 227, 228, 229, and 232.
March 2016	Version 2 was released. Added addition specifications
January 2016	Version 1 was released. Designed to be used when initiated by specific contract scopes-of-work administered by the Hazardous Materials Management Branch in the Environmental Affairs Division (ENV) of TxDOT. These SOPs can be used by other contracting entities inside or outside of TxDOT.