UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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USACE / NAVFAC / AFCEC / NASA	**UFGS-02 65 00 (February 2010)** **Change 1 - 11/13**
Preparing Activity: USACE	**Superseding** **UFGS-02 65 00 (August 2008)**

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021

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SECTION 02 65 00

UNDERGROUND STORAGE TANK REMOVAL
02/10, CHG 1: 11/13

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NOTE: This guide specification covers the requirements for removal and disposal of underground, nonhardened tanks and piping used to store petroleum products, waste oils or hazardous wastes in accordance with Federal, State, and local regulations.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

****

PART 1 GENERAL

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NOTE: Show the following information on the project drawings:

(1) Overall installation plan which identifies and locates tanks and equipment; borrow, disposal, and stockpile areas; temporary containment areas; special security areas; shoring and special support requirements; and access routes.

(2) Individual as-built site plans of tank locations which identify site features such as

buildings, roads, utilities, topography, trees and shrubs, surface condition, etc. If as-built drawings are not available, a site investigation and site plans are required to show the general location of existing tanks and site features. Detail drawings to include dimensions, sections, elevations, slopes and size of excavations and temporary containment areas. Provide, as part of the Tank Closure Report, a detailed map showing exact location of the tank prior to removal.

(3) Limits of pavement removal, fence removal, and the location of ancillary equipment to be removed.

Hardened tanks are deep buried tanks as would be found with some missile facilities. Note this in the contract as they require deeper excavations and possibly substantial demolition of concrete.

Tanks will not be abandoned in place unless a waiver is granted in accordance with state or local requirements, LEE HQ U.S. Air Force for Air Force Projects, and HQUSACE policy dated 31 July 1990, for Formerly Used Defense Sites. Waivers will be obtained prior to advertising the closure project. Exceptions will be granted when requested in writing on a case by case basis. Absence of contamination must still be verified prior to closure and prior to obtaining a waiver.

Incorporate installation, state and local requirements into this specification, including the necessary approval processes, licensing, or having their representative on site during removal operations. In many cases, the state or local jurisdiction has final authority on approval of the Work Plan. While states often enforce petroleum tank removal regulations, counties and cities are sometimes delegated authority.

Petroleum sludge and contaminated media are often considered "special wastes" and are subject to regulations enforced by the State Fire Marshals Office, local agencies, etc. Some states have adopted federal rules for management of petroleum waste.

State requirements usually involve testing, analysis, and a report. The review by the state may require additional testing or other work, and may take several months; therefore, the designer is forewarned to investigate these requirements in advance. Areas most likely to be impacted are waste and tank disposal, tank cleaning, residue and soil sampling and analysis, contaminated soil disposal or remediation, reporting, and requirements for a clean closure.

Petroleum sites which are known to have extensive

soil contamination or where groundwater contamination is a possibility, should have a Corrective Action Plan under Subtitle I of RCRA and applicable state and local regulations; refer to EM 1110-1-4006, Removal of Underground Storage Tanks (USTs).

For sites where the tank contained a hazardous waste, remediation should occur under the RCRA Corrective Action requirements of 40 CFR 264, 40 CFR 265, and applicable state requirements.

Coordinate with the customer regarding possible designer's discussions with the regulators, and the existence of unique requirements. Some MACOMS require the Installation Project/Program Manager to either be responsible for all coordination or be included on all contacts with the regulators. For projects not on an active installation discuss requirements with the regulators and omit references to the installation and the Installation Environmental Coordinator.

Include the applicable state and local regulatory references where appropriate in the body of the specification. It is recommended that the specifier refer to DoD "Policy and Guidelines for Acquisitions Involving Environmental Sampling or Testing (November 2007)

The following specifications must be used in conjunction with this section:

SECTION 00 22 13.00 20 SUPPLEMENTARY INSTRUCTIONS TO OFFERORS

SECTION 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS

Section 01 35 29.13 HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES

SECTION 01 32 01.00 10 PROJECT SCHEDULE

[SECTION 01 32 16.00 20 SMALL PROJECT CONSTRUCTION PROGRESS DOCUMENTATION] or

[SECTION 01 32 17.00 20 COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS)]

SECTION 01 45 00.00 10 QUALITY CONTROL

Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS

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[1.1 UNIT PRICES

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NOTE: This paragraph will be deleted if the work is

in one lump sum contract price. If it is retained and more detail is needed, items of consideration may include: excavation, contaminated soil, clean backfill required, non-hazardous sludge, pumpable liquids, analytical (PCB & asbestos), analytical (contaminated water), remove piping, and remainder of work. Coordinate this paragraph with the bidding schedule.

****

Compensation for removal of [contaminated soil] [and] [pumpable liquids] will be paid as a unit cost. This unit cost includes testing, excavation, stockpiling, transportation and disposal of the contaminated soil and backfilling with non-contaminated soil. Payment for all other work is under the base bid for the tank removal and constitutes full payment for all work defined in the contract documents including testing of the contents, excavation and disposal of the tank, and testing of the underlying soil.

****

NOTE: Include unit prices for removal and disposal of temporarily stockpiled contaminated soil which was excavated for tank and piping removal, provision of clean fill material to replace contaminated soils for use in backfilling tank and piping excavations, and removal and disposal of temporarily stored contaminated water in SECTION 00 22 13.00 20 SUPPLEMENTARY INSTRUCTIONS TO OFFERORS as follows:

ITEM	UNIT	UNIT PRICE	NO. UNITS	EXTENSION
Removal and disposal of stockpiled contaminated soils from excavations for removal of under- ground storage tanks and associated piping.	CUBIC METERS CUBIC YARDS	[$_____]	[_____]	[$_____]
Furnish clean fill material for use in backfilling excavations for removal of underground storage tanks and piping.	CUBIC METERS CUBIC YARDS	[$_____]	[_____]	[$_____]

ITEM	UNIT	UNIT PRICE	NO. UNITS	EXTENSION
Removal and disposal of stored contaminated water collected during dewatering to remove underground storage tanks and piping.	LITERSGALLONS	[$_____]	[_____]	[$_____]
Quantities of contaminated soils, fill material and contaminated water shall be estimated taking into consideration site conditions, and age and history of tanks.				

****

NOTE: For some locations, such as a contaminated site scheduled for site remediation, it may be permissible to use contaminated soil materials for backfill in tank and piping excavations. Get approval from local regulating authority before using contaminated soil materials.

****

Assume, for bidding purposes, that soil [bituminous pavement, concrete slabs,] and water encountered during the removal of the underground tanks are contaminated with [JP-5 fuel oil] [and] [diesel fuel] [and] [gasoline] to be handled as specified herein. [Payment for removal from temporary stockpile and disposal of contaminated soil and furnishing clean soil will be paid for at the contract unit price per cubic meter cubic yard.] Wash bituminous pavement and concrete slabs and dispose of as demolition debris. Collect and store wash water. [Disposal of contaminated water will be paid for at the contract unit price per gallon.]

]1.2 REFERENCES

****

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.
****

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN PETROLEUM INSTITUTE (API)

API PUBL 1628	(1996) A Guide to the Assessment and Remediation of Underground Petroleum Releases
API RP 1604	(1996; R 2010) Closure of Underground Petroleum Storage Tanks
API RP 2003	(2015; 8th Ed) Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents
API RP 2219	(2016) Safe Operation of Vacuum Trucks Handling Flammable and Combustible Liquids in Petroleum Service
API STD 2217A	(2017) Safe Work in Inert Confined Spaces in the Petroleum and Petrochemical Industries
API Std 2015	(2018) Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks

ASTM INTERNATIONAL (ASTM)

ASTM D1556/D1556M	(2015; E 2016) Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
ASTM D1557	(2012; E 2015) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3) (2700 kN-m/m3)
ASTM D2167	(2015) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2487	(2017; E 2020) Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4397	(2016) Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
ASTM D6938	(2017a) Standard Test Method for In-Place

	Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 200-1-1	(1994) Environmental Quality -- Validation of Analytical Chemistry Laboratories
EM 200-1-6	(1997) Environmental Quality -- Chemical Quality Assurance for HTRW Projects
EM 200-1-7	(2001) Environmental Quality - Performance Evaluation (PE) Program
EM 385-1-1	(2014) Safety and Health Requirements Manual
EM 1110-1-4006	(1998) Engineering and Design -- Removal of Underground Storage Tanks (USTs)

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 530-R-97-007	(1997) Best Management Practices (BMPs) for Soils Treatment Technologies;, Suggested Operational Guidelines to Prevent Cross-Media Transfer of Contaminants During Cleanup Activities
EPA 600/4-79/020	(1983) Methods for Chemical Analysis of Water and Wastes
EPA SW-846	(Third Edition; Update IV) Test Methods for Evaluating Solid Waste: Physical/Chemical Methods

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions

40 CFR 279	Standards for the Management of Used Oil
40 CFR 280	Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)

1.3 SYSTEM DESCRIPTION

****

NOTE: 40 CFR 280, RCRA Subtitle I closures are primarily performed on petroleum or chemical product tanks and require a minimum of 30 days notice prior to a change in service or closure.

The RCRA Subtitle C tank closures fit into three categories:

a. Hazardous waste accumulation tanks as per 40 CFR 262.34(a)(1)(ii). These tanks store hazardous waste for less than 90 days.

b. Tanks storing hazardous waste over 90 days without a permit (illegal storage).

c. Part B permitted storage tanks.

The Installation Environmental Coordinator should decide who is responsible for contacting the Implementing Agency. Accomplish Subtitle C tank closures in accordance with the closure plans previously prepared and approved, and other applicable regulatory standards including the Land Ban 40 CFR 268 requirements.

****

The work consists of removal, decontamination and disposal of [one] [_____], [_____] L gallon underground storage tank[s] and associated piping and ancillary equipment, including but not limited to dewatering (if approved), [disposal of contaminated soil,] [laboratory testing,] providing reports which are required by regulatory agencies, and backfilling.. The [tank is] [tanks are] constructed of [steel] [fiberglass] [_____] and [is] [are] at [the location shown on the drawings] [the following location: [_____]]. The [_____] L gallon tank was used for storing [leaded gasoline] [unleaded gasoline] [fuel oil] [diesel fuel] [waste oil] [diesel oil] [hazardous waste] [_____] and was taken out of service in [_____]. Residue remaining in the tank is considered a [special] [hazardous] waste. Subsurface conditions are represented [herein] [on drawings] [in Appendix [_____]] [_____]. Existing native soils are predominantly [_____]. Available backfill material is typically [_____]. Groundwater [has been encountered within [_____] m feet of the surface] [is not expected to be encountered]. Verify the actual conditions prior to submitting a bid.[Treat the site as a hazardous waste site.] [The site is not a hazardous waste site, but due due to the nature of the materials and hazards present, use specified procedures until closure activities are complete.]

1.4 SUBMITTALS

****

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

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Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Work Plan; G[, [_____]].
Site Safety and Health Plan; G[, [_____]]
Excavation and Material Handling Plan; G[, [_____]]
Field Sampling and Laboratory Testing Plan; G[, [_____]]
Tank and Piping Removal And Disposal Plan; G[, [_____]]
Spill and Discharge Control Plan; G[, [_____]]
Qualifications; G[, [_____]]
Laboratory Services; G[, [_____]]
State Licensed [Hazardous]Waste Transporter

SD-06 Test Reports

Laboratory and Field Testing Reports
Backfill Material
Tank Contents Verification
Contaminated Water Disposal
Soil Examination, Testing, and Analysis
Backfilling; G[, [_____]].

SD-11 Closeout Submittals

Salvage Rights; G[, [_____]]
Tank Closure Report

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

****
NOTE: Require certification for tank removals whenever work will be performed under a jurisdiction requiring certification.

The laboratory validation process for underground storage tank projects is addressed in EM 1110-1-4006 Removal of Underground Storage Tanks, dated 30 September 1998; EM 200-1-1 Validation of Analytical Chemistry Laboratories, dated 1 July 1994; and EM 200-1-7, dated 01 February 2001.
****

Substantiate a minimum of [2][_____] years of tank removal experience, including subcontractors and personnel employed on the project, and certification by the [[State] [County] [City] of [_____]] [local authority having jurisdiction] for tank removal work. Experience shall include removal, transportation, and disposal of underground tanks and associated piping, in conformance with the following:

a. API RP 1604

b. 40 CFR 280, State and local regulations and procedures.

c. Applicable safety rules and regulations.

d. Use of equipment and procedures for testing and vapor-freeing tanks.

e. Handling and disposal of types of wastes encountered in underground tank and pipe removal including disposal of underground tanks and associated piping.

f. Excavation, testing, and disposal of petroleum contaminated soils, liquids, and sludge.

g. Project titles, dates performed, owner's names, points of contact for each project with current contact phone numbers.

1.5.2 Laboratory Services

Submit documentation for laboratory services in accordance with State of [_____] certification requirements [EM 1110-1-4006, EM 200-1-1, EM 200-1-6

and EM 200-1-7].

1.5.3 Support Staff

Identify all staff involved for the various components, including personnel collecting and shipping samples, and detail staff member's qualifications.

1.5.4 Preconstruction Conference and Work Plan

Prior to the commencement of work, a preconstruction conference will be scheduled by the Contracting Officer. Prepare and submit a comprehensive Work Plan within [30][_____] days of contract award. The work plan shall conform to the requirements of this specification, API RP 1604, API Std 2015, API RP 2003, API STD 2217A and API RP 2219. Allow [30][_____] days in the schedule for the Government's review and approval. No adjustment for time or money will be made for re-submittals required as a result of noncompliance. No work at the site is allowed, with the exception of site inspections and mobilization, until the Work Plan is approved. As a minimum, include the following in the Work Plan:

1.5.4.1 Site Safety and Health Plan

Furnish detailed safety, health, and accident prevention provisions and develop a Site Safety and Health Plan (SSHP). Incorporate the requirements of 29 CFR 1910 and EM 385-1-1 into the SSHP. Include current training certification statement for personnel prior to entry into the work site. Do not commence work until the SSHP is approved by the Contracting Officer. As a minimum, include the following:

a. Health and safety organization, including discussion of distribution of functions and responsibilities.

b. Organization and components of the SSHP.

c. Physical and chemical site hazard identification.

d. Basic toxicology and toxicity information.

e. Discussion of the EZ and CRZ.

f. Protective clothing.

g. Respiratory protection.

h. Air quality monitoring.

i. Personnel exposure guidelines.

j. Decontamination procedures.

k. Basic first aid review.

l. Emergency response and contingency plan.

m. Site entry and exit procedures.

n. Sampling procedures.

1.5.4.2 Excavation and Material Handling Plan

Describe methods, means, equipment, sequence of operations and schedule to be employed in excavation, transport, handling, borrowing source and stockpiling of soil during underground tank removal. Include shoring requirements. [Fifteen][_____] days before beginning tank removal work, submit to the Contracting Officer, for approval, a material handling plan that describes phases of dealing with the contaminated soil and water as it relates to the proposed tank[s] and piping removal, including methods of excavating, a material handling plan for the contaminated material, soil testing requirements, and water pumping and collection requirements.

1.5.4.3 Field Sampling and Laboratory Testing Plan

Submit a detailed Sampling and Analysis Plan in accordance with [_____].

Describe field sampling methods and quality control procedures. Identify laboratory and laboratory methods to be used for contamination testing. Include sample reports showing sample identification for location, date, time, sample method, contamination level, name of individual sampler, identification of laboratory, and quality control procedures.

1.5.4.4 Tank and Piping Removal and Disposal Plan

Describe methods, means, sequence of operations, and schedule to be employed in the testing, pumping, cleaning, de-vaporizing, inspecting, [cutting and]removal, and disposal of underground storage tanks and piping. Include methods to be employed for product, sludge, vapor, and pumpable liquid removal; purging and inerting; and storage methods proposed for control of surface water. Also address the following:

a. Treatment Options
b. Identification of waste, tank and contaminated soil transporters and means of transport.
c. Disposal and alternate facilities, disposal or remediation.
d. Decontamination procedures and coordination with SSHP.

[Coordinate decontamination procedures, shoring, and safety measures in accordance with Section 01 35 29.13 HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES.]

1.5.4.5 Spill and Discharge Control Plan

Develop a comprehensive spill and discharge control plan. Consider and provide contingency measures for potential spills and discharges from handling and transportation of contaminated soils and water. A possible source of guidance for assessment and remediation is API PUBL 1628.

1.5.4.6 Site Safety And Health Officer

Identify an individual to serve as the Site Safety and Health Officer (SSHO) [Certified Industrial Hygienist (CIH)]to report problems and concerns regarding health and safety to the Contracting Officer. Provide documentation that the SSHO [CIH] possesses working knowledge of local and Federal occupational safety and health regulations, and provide training, in accordance with 29 CFR 1910 to Contractor employees in air monitoring practices and techniques. The SSHO [CIH or an Industrial Hygiene Technician (IHT) who is under the direction of the CIH] shall remain onsite to provide day to day industrial hygiene support, including air

monitoring, training, and daily site safety inspections. The SSHO [CIH] may be assigned other duties, such as project foreman or quality control manager.

1.5.5 Permits and Licenses

As required or as directed by the Contracting Officer, obtain local, state, or federal permits and licenses that directly impact the Contractor's ability to perform the work prior to commencing removal operations.

1.5.6 Statutes and Regulations

Perform tank closures, removal, and disposal in accordance with 40 CFR 280, 40 CFR 262, 40 CFR 264, and 40 CFR 265 as well as the applicable local, State of [_____], and Federal regulations. Transport hazardous [material] [waste] in accordance with Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS.

1.6 PROJECT/SITE CONDITIONS

****

NOTE: Include any pertinent information regarding the former uses of the area as a gas station or waste oil storage facility, any results of chemical analyses done on contents and/or soils, leak testing results, and any hazardous material that has been stored there, if it has been removed and any unusual site features that may be helpful to the bidders. Refer to EM 1110-1-4006 for more information.

If waste oil tanks were included in the Installation Part B Permit, include that information in this paragraph.

Coordinate with state/local regulators, and EM 1110-1-4006 for information regarding designation of non-contaminated waste oil or petroleum wastes as special wastes.

Edit the specification to reflect the implementing Agency (IA) requirements regarding Treatment, Storage, and Disposal (TSD) facilities.

****

Notify the Installation Environmental Coordinator (IEC) and the Contracting Officer [_____] days prior to tank removal. The [Contractor is] [Contracting Officer will be] [IEC will be] responsible for contacting the Implementation Agency (IA) [_____] in accordance with the applicable reporting requirements.

PART 2 PRODUCTS

2.1 BACKFILL MATERIAL

****

NOTE: Part or all of this paragraph may be deleted if the subject is addressed in other sections. Refer to EM 1110-1-4006 for special compaction

requirements such as under pavements.
****

Obtain backfill material from [the location indicated] [offsite]. Classify backfill in accordance with ASTM D2487 as GW, GP, GM, GC, SW, SP, SM, SC, MH, CL, or CH and free from roots and other organic matter, trash, debris, snow, ice or frozen materials. Secure and submit soil classification test results, including the chain-of-custody records, prior to bringing offsite materials onsite. The testing frequency for backfill material is 1 per 1000 cubic meters yards or a minimum of 1 test. Use non-contaminated material removed from the excavation for backfill in accordance with Paragraph BACKFILLING.

2.2 PLASTIC SHEETING

Provide plastic sheeting conforming to ASTM D4397.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Furnish labor, materials, necessary permits, laboratory tests, and reports and equipment to [remove and dispose of products remaining in the underground tanks; clean and vapor free the underground tanks and connecting piping;] excavate, remove underground tanks and associated piping, and backfill to the level of the adjacent ground; sample soil and water to determine if contaminated; dispose of tanks and associated piping[, and] [petroleum contaminated soil] [and] [water].

3.1.1 Safety Guidelines

Comply with personnel safety guidelines specified in Section 01 35 29.13 HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES, and conform to the guidelines as stipulated in the approved SSHP.

3.1.2 Exclusion Zone (EZ) And Contamination Reduction Zone (CRZ)

Do not permit personnel, not directly involved with the project, to enter work zones, called the EZ and CRZ. The EZ is an area around the tank a minimum of 3 m 10 feet from the limits of the tank excavation. At the perimeter of the EZ, establish a CRZ. Clean equipment and personnel within the CRZ, as stated in the paragraph titled "Personnel and Equipment Decontamination." Locate the Contractor's site office, parking area, and other support facilities outside the EZ and CRZ. Clearly mark and post boundaries of the EZ and CRZ. Include a site map, outlining the extent of work zones and location of support facilities, in the SSHP.

3.1.3 Onsite Training

Prior to starting onsite work, conduct a health and safety training class directed by the SSHO [CIH] to discuss the implementation of the SSHP. Notify the Contracting Officer 24 hours prior to beginning the training class.

3.1.4 Personnel Protection

Furnish appropriate personal safety equipment and protective clothing to personnel and ensure that safety equipment and protective clothing is kept clean and well maintained. Furnish three clean sets of personal

protective equipment and clothing for use by the Contracting Officer or official visitors as required for entry into the EZ.

3.1.5 Respiratory Protection Program

Fully employ respiratory protection program, addressing respirator usage and training, in accordance with 29 CFR 1910 and EM 385-1-1.

3.1.6 Decontamination

Decontaminate or properly dispose of personal protective equipment and clothing worn in contaminated areas at the end of the work day. The SSHO [CIH] is responsible for ensuring that personal protective clothing and equipment are decontaminated before being reissued.

3.1.7 Emergency Response and First Aid Equipment

a. Prior to commencement of work, thoroughly review emergency response and contingency plan in accordance with 29 CFR 1910. In an emergency, take action to remove or minimize the cause of the emergency, alert the Contracting Officer, and institute necessary measures to prevent repetition of the emergency. Equip site-support vehicles with route maps providing directions to the medical treatment facility.

b. Provide appropriate emergency first aid equipment for treatment of exposure to site physical and chemical hazards. Provide and post a list of emergency phone numbers and points of contact for fire, hospital, police, ambulance, and other necessary contacts. Provide and post a route map detailing the directions to the nearest medical facility.

c. Notify the Contracting Officer of any unforeseen hazard or condition which becomes evident during work.

3.1.8 Burning and Explosives

Use of explosives or burning debris is not allowed. Do not permit ignition sources in the EZ and CRZ.

3.1.9 Protection of Existing Structures and Utilities

Take all necessary precautions to avoid damage to existing structures, their appurtenances, monitoring wells, or utilities that may be affected by work activities. Repair any damage to [utilities] [monitoring wells] resulting from the Contractor's operations at no expense to the Government. Coordinate with the installation to locate underground utilities prior to beginning construction. Do not disturb utilities encountered which were not previously shown or otherwise located without approval from the Contracting Officer.

3.1.10 Shoring

Provide shoring in accordance with Section 01 35 29.13 HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES.

3.2 TANK CONTENTS VERIFICATION

Conduct sampling and analysis in accordance with the approved Sampling and Analysis Plan. Submit reports, including the chain-of-custody records.

3.2.1 Sampling

****

NOTE: If the contents have been properly characterized or already removed and disposed, delete the non-applicable portions of the specification.

The designer will detail the sampling requirements (number of samples and analytical methodology) based on the state/local regulations and EM 1110-1-4006 (i.e. tank contents, contaminated water, pumpable liquids and sludge, stockpiled soils, and in situ soils).

If the Government is to perform sampling and analyses, specify what data will be available from the Government. This will enable the Contractor to ascertain if additional analysis will be required by the TSD facility and should be reflected in the bid.

****

Sample tank [product,] [pumpable liquids,] [tank coatings] [and] [sludge]. If the data is not adequate, additional sampling and analysis to the extent required by the approved [offsite] [permitted treatment, storage or disposal (TSD)] facility receiving the material is the responsibility of the [Contractor] [Government]. Meeting all regulatory requirements, including the preparation of hazardous materials and waste for transportation, is the responsibility of the Contractor.

3.2.2 Analysis

****

NOTE: The designer will consult the state/local regulations and EM 1110-1-4006 for assistance in determining the appropriate analytical parameters for tank contents samples. Analytical protocol will also be based on historical records of tank usage and/or tank contents testing. Ensure that the Contractor addresses the specific laboratory preparation and analytical methods to be employed, especially variations in fuel related analyses.

****

[Government will test] [Test] tank contents for the parameters listed herein. Include [total petroleum hydrocarbons (TPH)] [benzene, ethylbenzene, toluene and xylene (BETX)] [lead] [_____] in the analysis.

3.2.3 Characterization

****

NOTE: Regarding "in a special manner", some states require that petroleum contaminated soils (special wastes) be disposed of in specially designated landfills.

Refer to EM 1110-1-4006 for additional information.

****

[Prior to removing any of the tank contents, characterize the contents to determine the type of required disposal: [as a [hazardous] [special] waste] [in a special manner] based on local, state, and Federal disposal regulations. Characterize [tank product] [tank product, pumpable liquids, and sludge] in accordance with 40 CFR 261 and 40 CFR 279. Submit the waste contents determination and accompanying test results for each phase present in the tank to the Contracting Officer.] [The following analyses will be performed by the Government prior to removing the tank contents: [_____]. The Contractor is responsible for any additional requirements identified by the disposal facility. Do not remove the tank contents until approval is given by the Contracting Officer.]

3.3 CLEARING, GRUBBING AND REMOVALS

****
NOTE: If underground storage tank removal is part of a larger project which contains Section 31 11 00 CLEARING AND GRUBBING, use it instead of this paragraph. Otherwise edit this paragraph as needed.
****

[Perform clearing and grubbing in accordance with Section 31 11 00 CLEARING AND GRUBBING.] [Clear areas designated for clearing and grubbing [as indicated] [as required and directed by the Contracting Officer] of all trees, stumps, downed timber, brush, rubbish, roots larger than 75 mm 3 inches in diameter, and matted roots prior to commencing operations. Saw cut concrete or asphalt pavement at the limits of removal and break, remove and dispose of the the resulting debris [off Government Property] [at the location indicated]. Chain link fence shall be [removed and salvaged for reuse] [disposed of offsite].]

3.4 TOPSOIL

****
NOTE: If underground storage tank removal is part of a larger project which contains Section 31 00 00 EARTHWORK, use it for topsoil requirements instead of this paragraph. Otherwise edit this paragraph as needed.
****

[Topsoil shall meet the requirements in Section 31 00 00 EARTHWORK.] [Strip and stockpile uncontaminated topsoil separately for reuse [at the location shown] [at a location approved by the Contracting Officer] if it meets the requirements of clean fill given in Paragraph BACKFILLING.] [Obtain additional topsoil in excess of that produced by excavation [offsite] [from designated location onsite].] [Cover with topsoil all areas disturbed by tank removal operations, other than areas to receive pavement or similar surface under this contract.] [Topsoil shall be used wherever shown or stated on the drawings.]

3.5 PREPARATIONS FOR EXCAVATION

Before excavating, [drain product piping back to the tank] [remove residual liquids trapped in the product lines] [and] remove all product from the tank. Purge and vent the tank in accordance with API RP 1604, and as specified herein.

3.5.1 Removal of Product, Pumpable Liquids, and Sludge

****

NOTE: See EM 1110-1-4006 for the analytical parameters required for recyclability, reusability and disposal consistent with characterization of tank contents.

If the Defense Re-utilization and Marketing Office (DRMO) is unwilling to take the wastes, delete reference to delivery inside the installation. Early in the design stage coordinate with the DRMO to ensure their capabilities are used to the maximum benefit of the Government and on approved containers that might be available or required by the DRMO. The bid documents must have a letter of waste acceptance attached thereto to be considered a responsive bid. Coordinate with the state regulatory personnel. Other options are addressed in EM 1110-1-4006.

Petroleum contaminated water disposal is addressed in EM 1110-1-4006.

TSD facilities appropriate to accept the wastes generated by this project may be identified. If an analysis is available, bid acceptance may be subject to the bidders having a signed letter of acceptance from a permitted TSD attached to the bid; otherwise the bid should be declared nonresponsive.

****

[Contain and store tank product, pumpable liquids, and sludge onsite, prior to disposal. Treat contaminated water as specified. Analyze and segregate tank product, pumpable liquids, and sludge to recover reusable products prior to being transported to the [designated location] [treatment, storage and disposal (TSD) facility.]] [Remove and dispose of tank product, pumpable liquids, and sludge. Use of Government facilities for permanent storage or disposal of the wastes is prohibited. Temporary storage on Government facilities will be allowed only until testing is complete, manifests (if necessary) are complete, and transportation is arranged.] The Contractor is responsible for obtaining all required permits. Usable product shall be the property of the [Government] [Contractor]. Provide approved containers, vehicles, equipment, labor, signs, labels, placards and manifests and associated land disposal restriction notices and notifications, necessary for accomplishment of the work, including materials necessary for cleaning up spills that could occur from tank removal operations.

3.5.2 Contaminated Water Disposal

3.5.2.1 Sampling, Analysis, and Containment

****

NOTE: The designer will detail the analytical parameters for contaminated water and treated effluent, treated onsite or offsite, according to the state regulations, the requirements of the recycler and/or TSD facility, and EM 1110-1-4006.

Sampling and analysis are to be conducted for parameters consistent with characterization of tank contents.

****

Sample and analyze contaminated water both prior to and after treatment. [Analyze contaminated water produced from excavation operations and tank pumping treated onsite, for pH; benzene, ethylbenzene, toluene, and xylene (BETX); total lead; oil and grease; total petroleum hydrocarbons (TPH); and [_____]. Perform sampling and analysis prior to [discharge to the installation sanitary sewer] [disposal] for every [_____] [200,000] L [_____] [50,000] gallons of contaminated water treated.] [Conform analysis of contaminated water to be taken to an offsite treatment facility to the requirements of the treatment facility, with documentation of all analyses performed furnished to the Contracting Officer in accordance with paragraph RECORDS. Contain, store onsite, and analyze contaminated water [prior to transport to the approved treatment, storage and disposal facility] [and dispose of in accordance with applicable Federal and state disposal regulations].] Provide approved containers, vehicles, equipment, labor, signs, labels, placards and manifests and associated land disposal notices and notifications, necessary for accomplishment of the work. Conform to [_____] for sampling and analyses of contaminated water, treated water, the Contractor, and laboratory quality assurance program.

3.5.2.2 Treatment

Treat contaminated water [onsite] [offsite] by [oil water separation] [_____] [filtering] [air stripping] [and] [activated carbon], or other means as approved by the Contracting Officer. If contaminated water is to be treated onsite, specify the proposed treatment in the Work Plan and submit for approval, including the chain-of-custody records. Install temporary storage and treatment equipment [in the general vicinity of the tanks] at a location approved by the Contracting Officer. Sample and analyze treated effluent and secure approval of results by the Contracting Officer before discharge to [the sanitary sewer] [the surface] [_____]. Treat and discharge effluent in accordance with the discharge permit.

3.6 PURGING AND INERTING

****

NOTE: Coordinate explosive limits with health effects, especially for BTEX (benzene, toluene, ethylbenzene, xylene) containing mixtures. Coordinate with EM 1110-1-4006, health and safety specialists or industrial hygienists.

****

After the tank and piping contents have been removed, but prior to excavation beyond the top of the tank, disconnect all the piping (except the piping needed to purge or inert the tank). Purge flammable and toxic vapors from the tank or make the tank inert in accordance with API RP 1604, with the exception that filling with water is not permitted and, if dry ice is employed, use a minimum of 1.8 kg per 500 L 3 pounds per 100 gallons of tank volume. Continuously monitor the tank atmosphere for combustible vapors if the tank is purged, or continuously monitor for oxygen, if the tank is inerted.

3.7 EXCAVATION

****

NOTE: Some states may require the use of VOC emission suppression protocols during excavation, stockpiling, and transportation operations for VOC contaminated soil. The designer may need to include requirements for submittals of VOC suppression products (polyethylene sheeting, foam, or liquid VOC suppressants) and use field demonstrations to show there are no interferences from the suppression technology used with field screening devices. Approval from state/local regulators may be required prior to usage of these products and the designer should specify accordingly.

****

Mark all excavation areas, as well as work near roadways, in accordance with Section 01 35 29.13 HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES.

3.7.1 Exploratory Trenches

a. Excavate exploratory trenches as necessary to determine the tank location, limits and the location of ancillary equipment. Upon commencing exploratory excavation, utilize organic vapor analyzer/flame ionization device (OVA/FID) equipment to obtain readings for [total petroleum hydrocarbons (TPH),] [and] [benzene, tolulene, ethylbenzene, and xylene (BTX), [and] [toxicity characteristic leaching procedure (TCLP)].][If BTEX indicates gasoline, then provide TCLP.]

b. [Contaminated soil materials may be used as backfill for tank and pipe excavations.] [To determine soil contamination levels, continuously monitor soil materials excavated to remove tanks with an OVA/FID capable of detecting volatile organic vapors to a minimum of one ppm. Further test contaminated soils with OVA/FID readings of [10] [_____] ppm or greater for TPH and BTEX as specified herein. Soils with OVA/FID readings less than [10] [_____] ppm may be used as clean backfill.] [Dispose of contaminated soils in accordance with Federal, State, and local regulations.]

3.7.2 Tank Excavation

****

NOTE: Acceptable levels of contaminations are dependent on regulations applicable to the location where tanks and piping are being removed; therefore, verify acceptable levels.

For some locations, such as a contaminated site scheduled for site remediation, it may be permissible to use contaminated soil materials for backfill in tank and piping excavations. Get approval from local regulating authority before using contaminated soil materials.

If contaminated soil materials are approved for backfill, retain first bracketed sentence and delete

the second and third bracketed sentences.
****

a. [Provide Contracting Officer with written documentation, no later than 30 days before work begins, that proper State or local authorities have been notified.] Notify the Contracting Officer at least 48 hours prior to start of tank removal work. Stage operations to minimize the time that tank excavation is open and the time that contaminated soil is exposed to the weather. Provide protection measures around the excavation area to prevent water runoff and to contain the soil within the excavation area.

b. Perform excavation around the perimeter of the tank to limit the amount of potentially [petroleum][_____] contaminated soil that could be mixed with previously uncontaminated soil. Segregate [petroleum][_____] contaminated soil in separate stockpiles.

c. Maintain an excavation around the tank of sufficient size to allow workers ample room to complete the work, but also protect the workers from sliding or cave-ins. Install sheeting, bracing, or shoring in the absence of adequate side slopes if there is a need for workers to enter the excavated area. Divert surface water to prevent direct entry into the excavation.

d. Dewatering of the excavation may require a discharge permit by the State and shall be limited to allow adequate access to the tank and piping, to assure a safe excavation, and to ensure that compaction and moisture requirements are met during backfilling. Dewatering may result in the production of petroleum contaminated water and/or free product. Recover free product from the groundwater only as part of necessary dewatering.

e. Collect and test water generated by dewatering during excavation required for removal of tanks or piping, surface water collected in open excavation, or water used for washing equipment or existing concrete or bituminous surfaces, in accordance with EPA 530-R-97-007, EPA 600/4-79/020, EPA SW-846 and state or locally required analyses.

3.7.3 Temporary Containment of Excavated Soil

Provide temporary containment area near the excavated area. Cover containment area with 0.75 mm 30 mil polyethylene sheeting. Place excavated soil on the impervious barrier and cover with 0.15 mm 6 mil polyethylene sheeting. Provide straw bale berm around the outer limits of the containment area and cover with polyethylene sheets. Secure edges of sheets to keep the polyethylene sheeting in place.

3.7.4 Piping Excavation

Perform excavation as necessary to remove tank piping and ancillary equipment in accordance with paragraphs: Shoring, Tank Excavation, and Open Excavations.

3.7.5 Open Excavations

****
NOTE: The time that tank excavations are left open depends on a variety of factors, a major one being the capability of the Contractor's lab to provide

analyses within the specified turnaround time. Since short turnaround time adds cost, carefully evaluate the need for short turnarounds to avoid unnecessary costs.

If the excavation cannot be left open, it should be lined with a geomembrane and backfilled. This will aid excavation if test results reveal further contamination. However, placing a geomembrane in the excavation prior to backfilling may interfere with future in-situ remediation (e.g. soil vapor extraction, bioventing, etc.) and should only be allowed after careful consideration.

****

Secure open excavations and stockpile areas while awaiting confirmation test results from the soil beneath the tank. Backfill the excavation as soon as possible after tank and contaminated soil removals have been completed and confirmation samples have been taken. Divert surface water around excavations to prevent water from directly entering into the excavation.

3.7.6 Hidden Structures

During excavation activities, if asphalt pavement, concrete slabs, or other hidden structures are encountered, remove and wash with high pressure water cleaning equipment. Remove and dispose of the pavement, concrete, and other structures as specified in Section 02 41 00 DEMOLITION.

3.7.7 Stockpiles

****

NOTE: Soils characterized or contaminated by a listed hazardous waste and not excluded by 40 CFR 261.4(b)(10) cannot be stockpiled unless the area has been designated by the state RCRA office as a corrective action management unit (CAMU); stockpiling of hazardous waste soil constitutes storage in a waste pile and requires a RCRA permit; placing hazardous waste contaminated soil onto plastic still constitutes a waste pile; therefore, except as stated above, all hazardous waste soils must be placed into containers such as drums, roll-offs or dumpsters.

If analytical tests have not been taken before editing of this specification, historical data may be used to assume whether a tank contained petroleum waste only or hazardous waste, until analytical test results are in and contents are verified. If the historical information indicates that a tank did not contain hazardous waste (as defined by the state), and there is no reason to believe the tank ever contained hazardous waste, the soil may be stockpiled until analytical test results required of the Contractor are received. If at that time the results indicate the presence of hazardous waste, the contaminated soil must be managed according to RCRA: no stockpiles unless they are designated

CAMUs. If historical data indicates the presence of hazardous waste, or if there is no historical data, the specification should be edited to assume that the contaminated soil is hazardous and should be containerized.

****

Uncontaminated excavated soil and petroleum contaminated soil, that is not a state-regulated hazardous waste, shall be [stockpiled and used for backfill in the tank excavation prior to using borrow material] [disposed of in the area designated on the drawings] [disposed of offsite] [_____]. Excavated material that is regulated by the state as a hazardous waste [which is visibly stained] [for which real time vapor monitoring instrument readings exceed [_____] for volatile and possibly semi-volatile hydrocarbons depending on the performance criteria for the field screening method] [and] [which has an obvious petroleum odor] [or as required by the State of [_____] or implementing agency] is considered contaminated. [Stockpile material if the site is a RCRA-designated CAMU] [Place in containers such as drums, roll-offs or dumpsters] for sampling in accordance with paragraph Stockpiled Material Sampling. Separately stockpile uncontaminated soil from the contaminated soil, a safe distance away from, but adjacent to, the excavation. [Place allowable stockpiles of contaminated soil on an impermeable geomembrane a minimum of 3 layers, each [0.152] [0.762] [_____] mm [6] [30] [_____] mils thick, covered with a [0.152] [0.254] [_____] mm [6] [10] [_____] mils sheet of geomembrane [as detailed on the drawings] [as specified]. Place the geomembrane to prevent the stockpiled soil from coming into contact with surface water run-off.] Locate the [geomembrane] [container] cover to prevent rain or surface water from coming into contact with the contaminated soil, as well as limit the escape of the volatile constituents in the [container] [stockpile].

3.7.8 Acceptable Levels of Contamination

****

NOTE: Acceptable levels of contamination are dependent on regulations applicable to the location where tanks and piping are being removed. Specifier shall verify acceptable levels.

For some locations such as a contaminated site scheduled for site remediation, it may be permissible to use contaminated soil materials for backfill in tank and piping excavations. Specifier shall get approval from local regulating authority before using contaminated soil materials.

If contaminated soil materials are approved for backfill, delete paragraph.

****

Take further samples and test soils with OVA/FID readings of [10] [_____] ppm or greater for TPH and for BTEX in accordance with EPA SW-846 and EPA 600/4-79/020, and for toxicity characteristic leaching procedure (TCLP) for lead if leaded gasoline was stored in or near the underground tank being removed. For stockpiled soils, provide a minimum of one test for every [77] [_____] cubic meters [100] [_____] cubic yards for TPH, and one test for every [77] [19] [_____] cubic meters [100] [25] [_____] cubic yards for BTEX and TCLP. Soils that contain [50] [_____] ppm or more TPH,

[10] [_____] ppm or more BTEX or have TCLP reading of [10] [_____] ppm lead or virgin petroleum products are considered contaminated materials. Soils which are less than the above may be used as clean fill. Furnish results to the Contracting Officer within 24 hours after the results are obtained.

3.8 REMOVAL OF PIPING, ANCILLARY EQUIPMENT, AND TANK

****

NOTE: Consult the state regulators to determine how the state views tank and ancillary equipment transportation, disposal and salvage rights, and what state requirements for cleaning are applicable. Depending on tank material and contents, permits and manifests and other documentation may be required.

****

3.8.1 Piping and Ancillary Equipment

Disconnect all piping and ancillary equipment from the tank. Remove the piping [completely (interior and exterior of the tank)] [from the exterior surface of the tank, cap and abandon in place] [as shown on the drawings] [or] [as directed by the Contracting Officer]. Cap all tank ancillary equipment and piping connections, except those connections necessary to inert the tank within the excavation zone. Clean the piping exterior and ancillary equipment to remove all soil and inspect for signs of corrosion and leakage. Ensure no spillage of the piping contents occurs, as specified in the Work Plan, and as required in paragraph SPILLS. If the soil under and around the tank pad is [contaminated, remove the tank pad and dispose of offsite at an approved [non-hazardous] [hazardous] waste facility.] [not contaminated, leave the tank pad in place.]

3.8.2 Tank

Remove the tank from the excavation and clean the exterior to remove all soil and inspect for signs of corrosion, structural damage, or leakage. Use only non-sparking type materials or equipment which comes into contact with the tank, or in the vicinity of the excavation such as shovels, slings and tools. After removal from the excavation, place the tank on a level surface [adjacent to the tank excavation] [at an approved location] [at the location shown on the drawings] and secure it with wood blocks to prevent movement.

3.8.3 Contaminated Soil, Tank and Piping Excavation Examination

****

NOTE: Determine the appropriate field-screening instruments for health and safety monitoring; methods should be based on historical records of tank contents testing and age of release; refer to EM 1110-1-4006 for selection. Consider the use of immunoassay field kits to save time and money. Separate immunoassay field kits sensitive to the light and heavy fuel fractions are available; these kits will not be used as real time health and safety monitoring devices.

Include the Coordinator's Name, Office, and Phone

Number.

If contamination is expected, the state may request to be present onsite to oversee contaminated soil excavation and supervise sampling efforts. The designer's or Environmental Coordinator's experience at the site or similar sites may provide a basis for estimating the amount of contaminated soil.

If USACE labs are expected to perform analysis, coordinate with them early on to verify they have the adequate resources to accomplish the work.

****

a. After the tank has been removed from the ground, examine and test the adjacent and underlying soil for any evidence of leakage. Visually inspect the soil for staining after removal of all obviously contaminated soil, then screen for the presence of [volatile and/or semi-volatile] [_____] contamination using [a real time vapor monitoring instrument] [immunoassay field kits].

b. If tank is [6] [_____] m [20] [_____] feet or less in length, take [two] [_____] samples. Take each sample [0.60] [_____] m [2] [_____] feet from each end of the tank and [0.60] [_____] m [2] [_____] feet below the bottom of the excavation.

c. If the tank is greater than [6] [_____] m [20] [_____] feet, take [three] [_____] samples. Take two samples [0.60] [_____] m [2] [_____] feet from each end of the tank and [0.60] [_____] m [2] [_____] feet below the bottom of the excavation. Take a third sample from the middle of the tank area and [0.60] [_____] m [2] [_____] feet below the bottom of the excavation.

d. Analyze samples for TPH, BTEX, and TCLP. Perform sampling and analysis conforming to standards specified above for stockpiled soils. Soils that contain [50] [_____] ppm or more TPH, [10] [_____] ppm or more BTEX, or have TCLP reading of [10] [_____] ppm of lead or virgin petroleum products are considered contaminated materials. Soils which are less than the above may be used as clean fill. Furnish results to the Contracting Officer within 24 hours after the results are obtained. Along with the results furnish a sketch showing underground tank, sampling location, and extent of excavations.

e. [Stockpile onsite in accordance with paragraph Stockpiles] [Transport offsite for disposal] uncontaminated soil or petroleum contaminated soil not regulated by the state as hazardous waste. Stockpile contaminated soil or suspected contaminated soil, or, if the site is a RCRA-designated CAMU, containerized until further disposition.

f. The [Contracting Officer] [State of [_____] inspector] will determine the extent of the contaminated soil to be removed from each site, not to exceed [_____] [cubic meters cubic yards] [kg tons] per site. Report any evidence indicating that the amount of contaminated soil may exceed the individual site limit specified, to the [Installation's Environmental Coordinator] [Contracting Officer] [_____] the same day it is discovered. If minimal additional excavation is required, the Contracting Officer may allow the Contractor to proceed. If extensive contamination is encountered, sample the excavation and backfill in accordance with paragraph BACKFILLING.

g. After the known contaminated soil is removed, sample and analyze the excavation in accordance with [_____].

3.8.4 Testing Along Piping

****
NOTE: Testing requirements are dependent on regulations applicable to the locations where tanks and piping are being removed. Verify number of tests required and required location for tests.
****

For every [7.5] [_____] m [25] [_____] linear feet of product delivery piping, [for every change in direction,] [and at every mechanical joint] take [one] [_____] soil sample and analyze for TPH, BTEX, and TCLP. Conform sampling and analysis of soil materials to EPA standards specified above.

3.9 TANK CLEANING

****
NOTE: 1. For tanks larger than 15,120 L 4,000 gallons or for projects that have tanks, some of which are smaller or larger than 15,120 L 4,000 gallons, select the first optional paragraph and include Section 33 01 50.55 CLEANING OF PETROLEUM STORAGE TANKS.

2. For tanks 15,120 L 4,000 gallons and smaller, select the second optional paragraph.
****

[Provide additional requirements for cleaning and vapor freeing tank as specified in Section 33 01 50.55 CLEANING OF PETROLEUM STORAGE TANKS.] [Provide clean and vapor free tank in accordance with API RP 1604 and the following:

****
NOTE: Data for these paragraphs should be obtained from the Commanding Officer of the individual Naval facility having tanks for cleaning.
****

a. Table of Tank History						
Tank No.	Tank Location	Tank Capacity	Date Constructed	Type of Lining (If Applicable	Type of Fuel	Remarks From the Last Inspection
[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]
[_____]	[_____]	[_____]	[_____]	[_____]	[_____]	[_____]

****
NOTE: Contact the fuel department of the nearest

Naval Supply Center or Depot to determine if dirty residual fuel can be accepted by the Government for reclamation. If not reclaimed by the Government, consider the following: Depending on the amount of residual fuel remaining in the tank after pump down by the Government and the degree of fuel emulsification, the designer, in consultation with the activity, should decide on whether to require fuel/water separation under the scope of this contract, dispose of the mixture as hazardous waste if tests show presence of hazardous constituents, or use other options available to the Government.

****

b. Fuel Removal: All possible fuel will be pumped or otherwise removed from the tank by the Government. Consider remaining fuel contaminated or waste fuel; [pump into 208 liters 55 gallon drums or other suitable containers for disposal in accordance with approved procedures meeting local, State, and Federal regulations] [provide oil/water separators for further recovery of fuels and turn over to the Government for use]. Dispose of remaining fuel emulsions in accordance with applicable local, State, and Federal regulations. Drums or tanks used for containerizing waste fuel will be furnished by the [Contractor] [Government]. Oil/water separator for fuel will be furnished by the [Contractor] [Government].

****

NOTE: Information on the hazardous waste characteristics of sludge in tanks should be provided by the activity. If not, sampling and analysis must be conducted during the 0 to 35 percent design stage to properly define scope and costs.

****

c. Identification of Tanks With Hazardous Waste Sludge and Residue

The following [tank is] [tanks are] known or suspected to contain hazardous wastes:

Tank No.	Product	Hazardous Waste, Status, Type and Basis Known[or Suspect]
[1]	[MOGAS]	[Sludge and sandblast residue; ignitibility and lead.]

]

3.9.1 Exterior

****

NOTE: Acceptable levels of contaminations are dependent on regulations applicable to the location where tanks and piping are being removed; therefore, verify acceptable levels.

For some locations, such as a contaminated site scheduled for site remediation, it may be permissible to use contaminated soil materials for backfill in tank and piping excavations. Get approval from local regulating authority before

using contaminated soil materials.

If contaminated soil materials are approved for backfill, retain first bracketed sentence and delete the second and third bracketed sentences.

****

Remove soil from the exterior of the tank, piping, and associated equipment to eliminate soil deposition on roadways during transportation to a temporary storage area, ensure markings will adhere to the surfaces, and simplify tank cutting. Use non-sparking tools to remove soil. Recover removed uncontaminated soil and soil not regulated by the state as a hazardous waste [and use them as backfill in the former tank excavation] [and] [or] [disposed of onsite]. Remove and containerize soil believed to be contaminated, or if the site is a RCRA designated CAMU, collect it on 3 layers of [0.152] [0.762] [_____] mm [6] [30] [_____] mil impermeable geomembrane and stockpile it with other contaminated soil removed from the excavation.

3.9.2 Temporary Storage

****

NOTE: Add any special state/local regulatory requirements.

****

If the tank is stored after the tank exterior is cleaned and ancillary equipment is removed, and prior to being cut into sections, label the tank as directed in API RP 1604, place it on blocks, and temporarily store it [on a flat area adjacent to the excavation] [at the location indicated on the drawings] [in the area of the existing tank site]. Prior to cleaning the tank interior, monitor the tank atmosphere for combustible vapors and purge or inert it if combustible vapors are detected. Provide warning labels as follows:

"TANK HAS CONTAINED LEADED GASOLINE

NOT VAPOR FREE

NOT SUITABLE FOR STORAGE OF FOOD OR LIQUIDS
INTENDED FOR HUMAN OR ANIMAL CONSUMPTION

DATE OF REMOVAL: MONTH/DAY/YEAR"

[Make tank unusable for future use, then transport and dispose of tank [at an EPA approved disposal site in accordance with applicable local, State, and Federal regulations] [in accordance with Federal, State, and local regulations].
]

3.9.3 Interior

****

NOTE: In lieu of eliminating any sheen, many states require a triple rinse. Coordinate with the appropriate regulators to ascertain what "clean" is, regarding tank interiors and to determine cleaning requirements for the piping and ancillary equipment; cleaning operations are highly dependent upon tank material and contents, and which state requirements

are applicable. Often the state fire inspector's office has been tasked with Subtitle I program implementation; hence the following NFPA and API standards may be used to a greater degree than in situations in which another office of state government has been tasked with enforcing the UST regulations.

NFPA-30 Flammable and Combustible Liquids Codes

NFPA-327 Standard Procedure for Cleaning or Safeguarding Small Tanks and Containers

NFPA-329 Recommended Practice for Handling Underground Leakage of Flammable and Combustible Liquids

API Std 2015 Cleaning Petroleum Storage Tanks

If API Std 2015 is used, flooding the tank should not be used in any circumstances.

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[Clean tank interior using a high pressure (greater than 3.45 MPa 500 psi), low volume (less than 0.13 L/s 2 gpm) water spray] [or] [Steam clean tank interior until all loose scale and sludge is removed, and contamination, in the form of a sheen, is no longer visible in the effluent stream]. Also clean the interior surfaces of piping, to the extent possible, using the same method used for cleaning the tank. Contaminated water generated from interior cleaning operations (of both piping and tank) shall not exceed the following quantities for each UST cleaned:

UST VOLUME (LITERS) (GALLONS)	PERCENT OF UST VOLUME
3,785 or less1,000 or less	5
37,850 or less10,000 or less	5 or 378 L, whichever is less5 or 100 gal., whichever is less
75,700 or less20,000 or less	1 or 568 L, whichever is less1 or 150 gal., whichever is less
greater than 75,700greater than 20,000	1 or 946 L, whichever is less1 or 250 gal., whichever is less

[Collect and store onsite] [Discharge to the installation sanitary sewer after passing through an oil water separator] [Handle in accordance with paragraph Contaminated Water Disposal] all contaminated water resulting from cleaning operations. Clean so as to eliminate, to the greatest extent possible, the need for personnel to enter the tank. Use specially designed tank cleaning equipment which allows the tank to be cleaned prior to cutting into sections without requiring personnel to enter the tank or, if less specialized equipment is used, the tank shall be partially dissected to overcome confined space entry hazards. Accomplish this work in accordance with Section 01 35 29.13 HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES.

3.10 SOIL EXAMINATION, TESTING, AND ANALYSIS

3.10.1 Tank Excavation Sampling Procedures

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NOTE: The designer will detail the confirmation soil sampling requirements and analytical parameters, including pipe trenches and near pump islands, based on the state/local regulations, EM 1110-1-4006.

In most cases, a 72-hour turnaround-time (TAT) is appropriate to avoid excessive downtime or remobilization of the Contractor; determine if a quicker TAT is warranted for the offsite analytical.

If the State will have an individual onsite to oversee sampling and/or excavation operations, the following may be substituted for the first sentence: "After soil known to be contaminated has been removed, collect and analyze soil samples as directed by the Contracting Officer in consultation with [_____]."

A backhoe should be used for soil sampling to eliminate the need to have personnel enter the excavation.

If the regulators do not specify the number of samples required, use a minimum of 2 samples at the bottom of the tank excavation zone, with one in the center of the tank excavation and one where the highest instrument reading was obtained or where contamination is most likely to occur.

If additional samples will likely be required, it may be best to include additional testing as a separate bid item so a credit can be easily obtained if the additional tests are not required.

If there is evidence of spillage around the tank or the possibility of horizontal movement of leaked material, the following requirement can be added: "A sample shall be obtained from each of the 4 walls of the excavation at [[600] [_____] mm [2] [_____] foot vertical intervals] [approximately 2/3 of the total depth of the excavation] and [composited] [tested as individual samples].

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After soil known to be contaminated has been removed or after soil excavation is complete, sample the excavation with procedures, number, location, and methodology [as specified] [in accordance with] [state regulations].[Obtain samples from the pits using a backhoe with a Shelby tube attached to the bucket.]

3.10.2 Stockpiled Material Sampling

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NOTE: Detail the sampling requirements and include unique stockpile segregation procedures required by the implementing agency in the body of the specification. Analytical testing of stockpiled soils will be based on visual observation, knowledge of tank contents records and testing of tank contents.

Soil that is a hazardous waste will not be allowed to be stockpiled. Unless this is a designated corrective action management unit, stockpiling of hazardous waste will require a permit. Coordinate with the state on Subtitle C tanks.

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[Stockpiled contaminated soil shall be sampled and preserved in accordance with the approved Sampling and Analysis Plan.] [Sampling locations, number and specific procedures are as required by the [State of [_____]] [implementing agency] and the disposal facility.]

3.10.3 Analysis

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NOTE: Hydrocarbon tests may vary vastly from state to state. Designer should consult the latest state requirements for the appropriate hydrocarbon test methods.

Take into consideration that testing of stockpiled soils and testing of the excavation pit to confirm "clean closure" may require different testing. Stockpiled materials testing is performed relative to disposal criteria, confirmation soil testing from the pit is tested to demonstrate clean closure.

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Test soil samples from the excavation and stockpiled material in accordance with the approved Sampling and Analysis Plan for the following parameters: [total petroleum hydrocarbon (TPH)] [benzene, ethylbenzene, toluene, xylene (BETX)] [toxicity characteristic leaching procedure (TCLP)] [the following constituents: [_____]]. Submit copies of all test results, including the chain-of-custody records,.to the Contracting Officer.

3.11 BACKFILLING

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NOTE: Coordinate with the IA regarding the maximum contaminant levels allowable for clean closure, and if waste from one stockpile can be used as backfill for another. Coordinate with the user concerning preferences in regard to leaving excavations open pending lab results, state inspector's evaluations, road closures and other factors. Lab turnaround time plays a critical role in the duration of excavations left open and times must be coordinated. If field analysis is allowed by the state inspector, this would reduce or eliminate turnaround time concerns.

If the Government or state will analyze samples, revise this paragraph and give the length of time the Contractor should expect the excavation to be open.

If additional constituents require analyses to meet state/local closure requirements, include the appropriate limits in this paragraph and include the same limits in the definition for clean fill.

Add applicable requirements for backfilling the excavation in this section or revise the reference to the appropriate section of the specifications; see EM 1110-1-4006 for guidance.

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a. Backfill the tank area and any other excavations [as soon as possible after tank and contaminated soil removals have been completed and confirmation samples have been taken] [only after the soil test results have been approved]. Complete contaminated soil removal after [the bottom of the tank excavation is determined to have soil contamination levels below the state standards of [100] [_____] ppm TPH] [approval by the [state inspector] [Contracting Officer]].

b. Dewater the excavation if necessary. Use stockpiled material, subjected to chemical confirmation testing as backfill, if it is found to [conform to the requirements of clean fill in accordance with appropriate [state] [local] regulations] [contain less than [100] [_____] ppm of total petroleum hydrocarbons (TPH)] [contain less than [10] [_____] ppm of BETX] [_____]. Place clean backfill in layers with a maximum loose thickness of [_____] [200] mm [_____] [8] inches, compacted to [90] [_____] percent maximum density for cohesive soils and [95] [_____] percent maximum density for cohesionless soils. Perform density tests using an approved commercial testing laboratory or by facilities furnished by the Contractor. Attach test results to Contractor's Quality Control Report; submit [_____] copies of the report for each UST site opened, prepared in a standard 3-ring binder, within 14 days of completing work at each site. Label each binder with contract number, project name, location and tank number; each binder shall be indexed. Furnish a copy of the report to the Installation Environmental Coordinator.. Perform a minimum of 1 density test on [each] [_____] lift. Determine laboratory tests for moisture density relations in accordance with ASTM D1557, Method B, C, or D, or ASTM D6938. A mechanical tamper may be used, provided that the results are correlated with those obtained by the hand tamper. Determine field in-place density shall be in accordance with ASTM D1556/D1556M, ASTM D6938, or ASTM D2167.

3.12 DISPOSAL REQUIREMENTS

3.12.1 Treatment, Disposal, and Recycling

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NOTE: List approved facilities in the area of the project.

Many IA's allow contaminated soil treatment onsite and the specification revised accordingly with

potential IA approval of a work plan. The approval process should be started by the designer, if possible, to ensure IA approval does not cause project delays.

Supply the EPA hazardous waste number in accordance with 40 CFR 261.

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Perform disposal of [hazardous] [or] [special] wastes in accordance with all local, State, and Federal solid and hazardous waste laws and regulations; the RCRA; Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS; and conditions specified herein. This work includes all necessary personnel, labor, transportation, packaging, detailed analyses (if required for disposal, manifesting or completing waste profile sheets), equipment, and reports. Recycle product and pumpable liquids removed from the tank to the greatest extent practicable. Dispose of the tanks removed at one of the following state approved facilities: [_____]. Provide manifest for each tank disposed of in this manner as required by the State of [_____] to document delivery and acceptance at the disposal facility.

3.12.2 Tank and Ancillary Equipment Disposal

After the tank, piping, and ancillary equipment have been removed from the excavation and the tank cleaned, cut the tank into sections with no dimension greater than [1500][_____] mm [5][_____] feet. [Recycle] [Dispose of] tank and piping sections [in a State approved offsite disposal facility] [or] [in a salvage yard] [at the Defense Reutilization and Marketing Office (DRMO)] [at the location shown on the drawings]. Perform tank cutting prior to being taken [off Government property] [from the tank removal site]. Do not sell the tank intact. [Recycle] [Dispose of] ancillary equipment at [an approved offsite disposal facility] [a salvage yard] [the DRMO] Piping shall be disconnected from the tank and [removed] [grouted full of a portland cement and water slurry consisting of 22.7 L 6 gallons of clean water per 42.6 kg 94 pound sack of portland cement, thoroughly mixed and free of lumps] unless otherwise indicated.

3.12.3 Transportation of Wastes

Provide transportation in accordance with Department of Transportation (DOT) Hazardous Material Regulations and State and local requirements, including obtaining all necessary permits, licenses, and approvals. Submit evidence that a State licensed [hazardous]waste transporter is being used.

3.12.4 Salvage Rights

The Contractor retains the rights to salvage value of recycled or reclaimed product and metal not turned in to the DRMO or otherwise identified, so long as the requirements of 40 CFR 266 and 40 CFR 279, or the applicable State requirements are met. At the end of the contract, provide documentation on the disposition of salvaged materials.

3.12.5 Manifest Records

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NOTE: Manifests are required only when the tank

contents are a RCRA regulated hazardous waste. If the tank contents are a DOT hazardous material but not a RCRA regulated hazardous waste, there are Bill of Lading requirements. Edit this paragraph accordingly.
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Maintain records of all waste determinations, including appropriate results of analyses performed, substances and sample location, the time of collection, and other pertinent data as required by 40 CFR 280, Section 74 and 40 CFR 262 Subpart D. Also record transportation, treatment, disposal methods and dates, the quantities of waste, the names and addresses of each transporter and the disposal or reclamation facility, shall and available for inspection, as well as copies of the following documents:

a. Manifests.

b. Waste analyses or waste profile sheets.

c. Certifications of final treatment/disposal signed by the responsible disposal facility official.

d. Land disposal notification records required under 40 CFR 268for hazardous wastes.

Provide records in accordance with Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS. Upon contract close out, the records will become the property of the Government.

3.12.6 Hazardous/Special Waste Manifests

Provide manifesting conforming to the requirements specified in Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS.

3.12.7 Documentation of Treatment or Disposal

Take wastes, other than recyclable or reclaimable product or metal, to a treatment, storage, or disposal facility which has EPA or appropriate state permits and [hazardous] [or special] waste identification numbers and complies with the provisions of the disposal regulations. Furnish [documentation of acceptance of special waste by] [the original return copy of the hazardous waste manifest, signed by the owner or operator of] a facility legally permitted to treat or dispose of those materials shall be furnished to the Contracting Officer not later than [5] [_____] working days following the delivery of those materials to the facility; and include a copy in the Tank Closure Report. Furnish a statement of agreement from the proposed treatment, storage or disposal facility and certified transporters to accept [hazardous] [or special] wastes [in the Work Plan] [to the Contracting Officer not less than 14 days before transporting any wastes]. If the Contractor selects a different facility than is identified in the [contract] [Work Plan], provide documentation for approval to certify that the facility is authorized and meets the standards specified in 40 CFR 264.

3.13 SPILLS

Use appropriate vehicles and operating practices to prevent spillage or leakage of contaminated materials from occurring during operations. Inspect vehicles leaving the area of contamination to ensure that no

contaminated materials adhere to the wheels or undercarriage. Take immediate containment actions as necessary to minimize effect of any spill or leak. Cleanup in accordance with applicable Federal, State, local laws and regulations, and district policy at no additional cost to the Government. Refer to Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS for spill response and reporting requirements.

3.14 INSPECTIONS

Arrange for and perform required inspections. Provide copies of inspections to Contracting Officer.

3.15 TANK CLOSURE REPORT

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NOTE: Execute Subtitle C tank closures in accordance with previously prepared closure plans and 40 CFR 264, Section 197. Some states have forms and/or requirements that must be included.

The number of copies required is dependent on how many the state requires, what the installation requires, and what the Government wants. To avoid additional printing costs to the Government for unforeseen copies, get a realistic number.

Execute Subtitle I closures in accordance with 40 CFR 280 as well as applicable state regulations.

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Submit a Site Assessment/Tank Closure Report in a single binder notebook containing a collection of reports, records, starting and ending dates of reporting period, inspections, documentation, and data as follows:

a. Complete UST Notification Form (within 30 days of closure).

b. Description of work, including removal procedures, number of tanks removed, identification of tanks removed and disposed of (include site map showing location of tank and piping), cubic yards of excavated soil, location of disposal sites, and dates of excavation.

c. Site plan, including location of tanks and piping, limits of excavation, sampling points, results of excavation, and depths.

d. Laboratory and field testing reports, copies of data and test results from testing laboratory and the chain-of-custody records.

e. Tank disposal paperwork ([_____] copies of UST Notification Form and method of conditioning tank for disposal), contaminated soil disposal paperwork (include laboratory testing reports), and contaminated water disposal paperwork (include laboratory testing reports).

f. Certifications required by implementing agency.

g. Building permit[, inspection permits,] and other permitsrequired for underground tank removal, notifications, and inspection reports.

[h. Cumulative quantities of soil excavated, beginning with start date for each tank and associated piping.

] Include in Tank Closure Reports the following information as a minimum:

a. A cover letter signed by a [responsible company official] [Professional Engineer registered in the State of [_____]] certifying that all services involved have been performed in accordance with the terms and conditions of this specification.

b. A narrative report describing what was encountered at each site, including:

(1) condition of the UST.

(2) any visible evidence of leaks or stained soils.

(3) results of vapor monitoring readings.

(4) actions taken including quantities of materials treated or removed.

(5) reasons for selecting sample locations.

(6) sample locations.

(7) collection data such as time of collection and method of preservation.

(8) reasons for backfilling site.

(9) whether or not groundwater was encountered.

c. Copies of all analyses performed for disposal.

d. Copies of all waste analyses or waste profile sheets.

e. Copies of all certifications of final disposal signed by the responsible disposal installation official.

f. Information on who sampled, analyzed, transported, and accepted all wastes encountered, including copies of manifests, waste profile sheets, land disposal restriction, notification and certification forms, certificates of disposal, and other pertinent documentation.

g. Copies of all analyses performed for confirmation that underlying soil is not contaminated, with copies of chain-of-custody for each sample. Analyses shall give the identification number of the sample used. Sample identification numbers shall correspond to those provided on the one-line drawings.

h. Scaled one-line drawings showing tank locations, limits of excavation, limits of contamination, underground utilities within 15 m 50 feet, sample locations, and sample identification numbers.

i. Progress Photographs. Take a minimum of 4 views of the site showing such things as the location of each tank, entrance/exit road, and any other notable site condition before work begins. After work has been started at the site, photographically record activities at each work location daily. Photographs shall be 89 x 127 mm 3-1/2 x 5 inches and shall include:

(1) Soil removal, handling, and sampling.

(2) Unanticipated events such as discovery of additional contaminated areas.

(3) Soil stockpile area.

(4) Tank.

(5) Site or task-specific employee respiratory and personal protection.

(6) Fill placement and grading.

(7) Post-construction photographs. After completion of work at each site, take a minimum of four (4) views of the site. Prints shall illustrate the condition and location of work and the state of progress. The photographs shall be mounted and enclosed back-to-back in a double face plastic sleeve punched to fit standard three ring binders. Each color print shall show an information box, 40 x 90 mm 1-1/2 x 3-1/2 inches. The information box for the 892 x 127 mm 3-1/2 x 5 inch photographs shall be scaled down accordingly, or taped to the bottom of the photo. The box shall be typewritten and arranged as follows:

Project No.	Contract No.
Location	
Contractor/Photographer	
Photograph No.	Date/Time:
Description	
Direction of View	

j. [_____] copies of the report for each UST site opened, prepared in a standard 3-ring binder, within 14 days of completing work at each site. Label each binder with contract number, project name, location and tank number; each binder shall be indexed. Furnish a copy of the report to the Installation Environmental Coordinator.

3.16 COMPACTION, FINISH GRADING, and SEEDING

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NOTE: NAVFAC projects should use Section 31 23 00.00 20 in lieu of Section 31 00 00 below.
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Provide backfill, compaction, grading, and seeding in accordance with Section 31 00 00 EXCAVATION.[Line the excavation with two plastic sheets before backfilling.]

-- End of Section --