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SECRETARY OF THE AIR FORCE**

**DEPARTMENT OF THE AIR FORCE
MANUAL 32-1067**



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CIVIL ENGINEERING

WATER AND FUEL SYSTEMS

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This Department of the Air Force Manual (DAFMAN) implements Air Force Policy Directive (AFPD) 32-10, *Installations and Facilities*, and is consistent with AFPD 32-70, *Environmental Considerations*, in Air Force programs and activities. It provides guidance for managing water, wastewater, fuels storage tanks and piping/pipeline systems throughout the Department of the Air Force (DAF). This DAFMAN applies to all DAF civilian employees and uniformed members of the United States Space Force, regular Air Force, the Air Force Reserve, the Air National Guard, and those who are contractually obligated to comply with DAF publications performing work or inspections in accordance with this DAFMAN. Ensure all records generated because of processes prescribed in this publication adhere to AFI 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the office of primary responsibility (OPR) using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. This publication may be supplemented at any level, but all supplements must be routed to the OPR of this publication for coordination prior to certification and approval. The authorities to waive wing, unit, delta or garrison level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the publication OPR for non-tiered compliance items. See DAFMAN 90-161, *Publishing Processes and Procedures*, for a description of the authorities associated with the tier numbers. The use of the name or mark

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SUMMARY OF CHANGES

This DAFMAN has been substantially revised and must be completely reviewed. Major changes include the addition of requirements for review and approval of aircraft fuel servicing inside hangars; complete re-write of **Chapter 7**, liquid fuels systems maintenance; addition of organizational tank requirements and updates to fuels storage tank compliance; a complete review of waiver levels for all tiered requirements; and updates to applicable laws and regulations.

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Chapter 1

OVERVIEW

1.1. Purpose.

1.1.1. This DAFMAN defines responsibilities and provides guidelines to help Base Civil Engineers (BCEs) design, operate, and maintain DAF owned or operated drinking water, wastewater, and stormwater systems; liquid and gas fuels systems; and storage tanks, and associated piping containing petroleum and hazardous substances. It provides guidance to comply with applicable federal, state, and local regulations.

1.1.2. This DAFMAN also addresses environmental compliance requirements for systems located in the United States (U.S.).

1.1.3. **Chapter 9** describes environmental and engineering requirements for underground and aboveground storage tanks (AST) and associated piping that store petroleum and hazardous substances. The chapter also addresses environmental compliance requirements associated with Title 40 Code of Federal Regulations (CFR) Part 112, *Oil Pollution Prevention*, and 40 CFR Part 280, *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)* or overseas equivalent and provides instructions for managing organizational fuel storage tanks.

1.2. Applicability.

1.2.1. This DAFMAN applies to all Department of the Air Force (DAF) installations.

1.2.2. Installations located outside the U.S. must comply with applicable international agreements and country-specific Final Governing Standards (FGS). In cases where no FGS exists, use the applicable DoDM 4715.05, Overseas Environmental Baseline Guidance Document volumes as governing requirements.

1.2.3. Requirements of this DAFMAN do not apply to water or gas systems on installations not owned or operated by the DAF (e.g., privatized systems) except as specifically provided in the contractual terms of the privatization agreements.

1.2.4. Laws, regulations, statutes, or agreements take precedence when this publication conflicts.

1.2.5. For Space Force activities at enduring locations controlled by other DoD Components, the tenant shall implement the policies and programs required by the host.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Assistant Secretary of the Air Force Energy, Installations, and Environment (SAF/IE). SAF/IE is accountable for all doctrine, strategy, policy, guidance, and resource advocacy related to drinking water, wastewater, stormwater, and liquid and gas fuel systems programs.

2.2. Air Force Surgeon General (AF/SG).

2.2.1. Provides environmental health oversight of DAF-owned drinking water systems supported by Defense Health Agency (DHA).

2.2.2. Ensures DAF-owned drinking water systems are properly surveyed, sampled, analyzed, and monitored to provide adequate supplies of safe drinking water to personnel at garrisoned and deployed locations.

2.2.3. Develops implementation instructions for drinking water surveillance and establishes drinking water requirements to protect the health of personnel as required in Department of the Air Force Instruction (DAFI) 48-144, *Drinking Water Surveillance Program*.

2.2.4. Provides Title 42 U.S. Code Sections 300f – 300j-27, Safe Drinking Water Act (SDWA) oversight for drinking water surveillance. This includes analysis of present and proposed federal legislation associated with SDWA surveillance.

2.2.5. Coordinates on proposed revisions to FGS Department of Defense Manual (DoDM) 4715.05, Volume 3, Overseas Environmental Baseline Guidance Document: Water, Section 4, “Drinking Water.”

2.2.6. Establishes implementation instructions for drinking water surveillance programs and regulatory compliance.

2.3. Deputy Chief of Staff of Operations, Plans and Requirements (AF/A3).

2.3.1. Determines conditions that require aircraft fuel servicing inside a facility as a mission essential, military-unique requirement.

2.3.2. Coordinates on requests to allow aircraft fuel servicing inside facilities as a required military-unique application.

2.4. Headquarters, United States Air Force, Chief of Safety (AFSEC/SE).

2.4.1. Determines the risks associated with fueling operations inside a structure.

2.4.2. Coordinates on requests to allow aircraft fuel servicing inside facilities as a required military-unique application, providing the associated risks for the requested operation.

2.5. Deputy Chief of Staff for Logistics, Engineering & Force Protection (AF/A4).

2.5.1. Responsible for DAF policy, strategy, doctrine, oversight, and directive guidance related to aircraft fuel servicing inside facilities.

2.5.2. Approves requests to allow aircraft fuel servicing inside specific facilities as a required military-unique application. This approval is required to begin the System Safety Engineering Analysis (SSEA) required by DAFMAN 91-203, *Air Force Occupational Safety Fire and*

Health Standards, using the process identified in DAFI 91-202, *The Department of the Air Force (DAF) Mishap Prevention Program*. This approval is also required prior to including language in DD Form 1391 *for program construction or modification of facilities and designs*. Approval authority cannot be delegated.

2.6. Deputy Chief of Staff for Logistics, Installations, & Force Protection, Directorate of Civil Engineers (AF/A4C).

2.6.1. Responsible for DAF policy, strategy, doctrine, oversight, directive guidance, and resource advocacy related to DAF drinking water, wastewater, stormwater, liquid and gas fuel system, and environmental compliance programs.

2.6.2. Accountable for non-directive guidance related to DAF drinking water, wastewater, stormwater, liquid and gas fuel system, and environmental compliance programs.

2.6.3. Coordinate with the Space Force Mission Sustainment Office (SF/S4O) to capture Space Force equities when appropriate.

2.7. Air Force Installation and Mission Support Center (AFIMSC).

2.7.1. Supports development of policy, strategy, doctrine, directive guidance, and oversight related to drinking water, wastewater, stormwater, liquid and gas fuel system, and environmental compliance programs.

2.7.2. Responsible for development of non-directive publications and resource advocacy related to DAF drinking water, wastewater, stormwater, liquid and gas fuel system, and environmental compliance programs.

2.7.3. Responsible for the activity management program for utilities and natural infrastructure for drinking water, wastewater, and stormwater.

2.7.4. Oversees the DAF portfolio of water-related infrastructure and assets.

2.7.5. Provides policy and program implementation support to major commands (MAJCOMs) and installations through associated AFIMSC Detachments.

2.8. Air Force Civil Engineer Center (AFCEC).

2.8.1. Supports development of DAF policy, strategy, doctrine, directive guidance, oversight, and resource advocacy related to Air Force drinking water, wastewater, stormwater, liquid and gas fuel system, and environmental compliance programs.

2.8.2. Provides the DAF with drinking water, wastewater, stormwater, liquid and gas fuel system reportable dams, and environmental compliance subject matter experts to function as Air Force senior consultants.

2.8.3. Executes Air Force drinking water, wastewater, stormwater, liquid and gas fuel system, and environmental compliance programming support for execution by setting standards, developing procedures, and providing technical assistance to implement Air Force policies and programs.

2.8.4. Consults with SAF/IE, SF/S4O and AF/A4C on all non-directive guidance and execution of the Air Force drinking water, wastewater, stormwater, and liquid and gas fuel system programs.

2.8.5. Coordinates with other DoD agencies on military drinking water, wastewater, stormwater, liquid and gas fuel system, and environmental compliance programs.

2.8.6. Provides environmental and operational technical support, guidance, centralized project execution, and training to address water quality compliance.

2.8.7. Assists with environmental compliance and technical support regarding regulatory matters that impact installation operations, in accordance with: 33 U.S. Code §§ 1251–1389, Clean Water Act (CWA), 42 U.S. Code §§ 300f-300j-27, Safe Drinking Water Act (SDWA); 42 U.S. Code §§ 6901–6992k, Resource Conservation and Recovery Act (RCRA); and 33 U.S. Code §§ 2701-2762, Oil Pollution Prevention Act (OPPA)

2.8.8. The AFCEC Environmental Directorate (AFCEC/CZ) is the lead office for coordination with Offices of the General Counsel of the Department of the Air Force and The Judge Advocate General's Corps (AF/JA) in providing clear regulatory interpretations and guidance to Air Staff, Space Staff, MAJCOMs, Field Commands (FLDCOMs) and installations for drinking water, wastewater, stormwater, and fuel tank compliance when there are compliance uncertainties. MAJCOMs along with FLDCOMs are not applicable traditions for the established hierarchy for United States Space Force (USSF) echelon structure.

2.8.9. Supports DoD Regional Environmental Coordination per DoD Instruction (DoDI) 4715.02, *Regional Environmental Coordination*. Provides assistance to the Air Force Regional Environmental offices and DoD Regional Environmental Coordinators on state or national legislative or regulatory issues and initiatives. Facilitates application of consistent environmental standards across regions and installations.

2.8.10. Reviews, coordinates, and provides recommendations on requests to allow aircraft fuel servicing inside specific facilities.

2.9. Air Force Petroleum (AFPET) Office. AFPET coordinates the Defense Logistics Agency (DLA) – Energy Sustainment Restoration and Modernization (SRM), Environmental, and Military Construction (MILCON) programs with MAJCOMs and installations for infrastructure containing DLA capitalized fuels. Detailed roles are called out in DAFI 23-201, *Fuels Management*.

2.10. Defense Logistics Agency – Energy (DLA Energy).

2.10.1. Provides programming, tracking, and management of SRM and DLA MILCON funding specifically for fuel systems, components, and supporting facilities that have been identified as capitalized per DLA procedures for DAF owned real property.

2.10.2. Provides centralized and funded programs to acquire, inspect, maintain, and modernize tank gauging and leak detection systems.

2.10.3. Provides funding and contracts to support environmental cleanup of assets identified as capitalized per DLA procedures.

2.11. Defense Centers for Public Health - Dayton (DCPH-D) United States Air Force School of Aerospace Medicine (USAFSAM).

2.11.1. Provides consultation regarding safe drinking water quality.

2.11.2. Reviews commercial (including overseas and deployed locations) laboratory quality assurance and quality control programs.

2.11.3. In coordination with the Air Force Civil Engineer Center (AFCEC), analyzes open enforcement actions associated with SDWA surveillance for trend analysis, corrective action, and future preventative measures.

2.12. Field Commands and Major Commands. (FLDCOM and MAJCOM/A4C) within both commands their responsibility is to ensure implementation of drinking water, wastewater, stormwater, liquid and gas fuel systems, and environmental compliance policies and programs at their respective installations.

2.13. MAJCOM Bioenvironmental Engineer (BEE).

2.13.1. Supports installations to ensure that drinking water surveillance programs are conducted in accordance with DAFI 48-144.

2.13.2. Provides consultative guidance and timeline recommendations on drinking water surveillance, surveys, assessments, and reporting that are not otherwise defined in this instruction (i.e., surveillance and health risk assessment of non-Public Water System and exempt systems, etc.).

2.13.3. Fulfills the role of appropriate DoD medical authority, if appointed by the in-theater DoD Component commander, with respect to drinking water monitoring and surveillance for installations in foreign countries as specified in the country-specific FGS or DoD Manual 4715.05, Volume 3, *Overseas Environmental Baseline Guidance Document: Water*, if no FGS exists.

2.14. Installation Commander or Equivalent.

2.14.1. Implements drinking water, wastewater, stormwater, liquid and gas fuel systems, and environmental compliance policies and programs at their respective installations through subordinate units.

2.14.2. Ensures that installation units, sub-ordinate organization and tenant storage tanks and distribution systems are compliant with applicable Federal, state and local regulations. For overseas installations, comply with international agreements and the applicable FGS or Environmental Governing Standards, or in their absence the OEBGD.

2.15. Base Civil Engineer (BCE).

2.15.1. Provides oversight and support for all installation drinking water, wastewater, stormwater, liquid and gas fuel system, and environmental compliance programs. Provides oversight and support of active utility privatization agreements in accordance with DoD, federal, state, and applicable host nation laws.

2.15.2. Provides facilities, equipment, and material to support local drinking water, wastewater, stormwater, and liquid and gas fuel system programs.

2.15.3. Operates and maintains drinking water, wastewater, stormwater, liquid and fuel system and petroleum, oil, lubricant (POL) storage tanks using appropriate Civil Engineer Playbooks, (<https://www.ceplaybooks.com/playbooks/17a231e3-0b61-464e-b5b8-98113f552eb9/>) as guides.

2.15.4. Performs sampling and conducts testing necessary for regular, proper, and safe operation of the drinking water, wastewater, stormwater, liquid and gas fuel systems, and environmental compliance. Reviews monitoring, sampling, and testing reports, and

implements corrective actions required for compliance with applicable permits, standards, laws, and regulations.

2.15.5. Ensures system operations personnel are properly trained and have required licenses or certifications (e.g., applicable federal, DoD, state, local, or host nation). Required training, licensing, and certifications put in place before assuming plant operations, maintenance, or repair responsibility for drinking water, wastewater, stormwater, liquid and gas fuel systems, and storage tanks.

2.15.6. Ensures all systems have required regulatory permits and sufficient resources to operate in compliance with applicable federal, state, and local regulations and standards.

2.15.7. Develops local operating instructions (including operational monitoring for process control), sampling and testing procedures, emergency operations, maintenance, and regulatory compliance requirements.

2.15.8. Conducts engineering and scientific studies, using an asset management approach, to support planning and efficient, effective operation of drinking water, wastewater, stormwater, and liquid and gas fuel systems. Examples of engineering and scientific studies include, but are not limited to, hydraulic modeling; Operations, Maintenance, and Training Assistance Program; lead service line inventory; leak-detection surveys; inflow/infiltration investigations; closed-circuit television inspections; supervisory control; and data acquisition.

2.15.9. Corrects system deficiencies identified by regulatory agencies by preparing responses and conducting internal assessments, regular monitoring and inspections, or by making repairs and keeping records of corrective actions.

2.15.10. Maintains facility operating logs, records, drawings, system distribution maps, and plant-specific operation and maintenance manuals.

2.15.11. Maintains an accurate inventory of drinking water, wastewater, stormwater reportable dams, and liquid and gas fuel system assets in designated data record systems. Provides analytic and diagnostic evaluations concerning the value, condition, and functionality of those assets. Uses authoritative data sources and business information systems established by Civil Engineering (CE) governance. Maximizes use of asset data available from authoritative data sources, where possible, to meet reporting and compliance requirements.

2.15.12. Maintains oversight where drinking water, wastewater, stormwater, and natural gas are provided through regional connections or a privatized system. Provides means and methods to accurately determine total consumption from these services and their total cost.

2.15.13. Ensures that wastewater treatment plant effluent or stormwater effluent are not used for aquifer recharge unless: (a) recharge is authorized under an applicable permit; or (b) an affirmative determination is made, in the absence of a permit, that such discharge will not violate any federal, state, or local groundwater protection standard. Permit applications should comply with applicable federal, state, or FGS/OEBDG regulations. Considers water rights implications before implementing water reuse of any kind.

2.15.14. Obtains permits required for construction, modification, and operation of drinking water, wastewater, stormwater, and fuel systems as required by the primary agency per federal, state, or local law. Operates systems in compliance with permits as well as other applicable environmental laws and regulations.

2.15.15. Applies for and obtains National Pollutant Discharge Elimination System (NPDES) permits for all point source discharges into applicable waters of the U.S. The BCE must ensure DAF-owned treatment works are operated and maintained in full compliance with the *Clean Water Act* and applicable NPDES permits.

2.15.16. Operates and manages other discharges to waters of the U.S. in accordance with NPDES requirements, including municipal separate storm sewer system permits, industrial multi-sector general stormwater permits, stormwater construction general permits, installation specific stormwater permits, and any other applicable water discharge permits.

2.15.17. Appoints an appropriate Backflow Prevention Program Manager, who must have training and knowledge in plumbing and backflow systems.

2.15.18. Appoints a Petroleum, Oil, and Lubricants (POL) Storage Tank Compliance (STC) Program Manager to oversee installation compliance with the tasks outlined in [Chapter 9](#) of this DAFMAN.

2.15.19. Obtains AF/A4 approval for aircraft fuel servicing inside specific facilities for DD Form 1391 development.

2.15.20. Supports Bioenvironmental Engineering in completion of sanitary survey and water vulnerability assessments. Addresses identified deficiencies and vulnerabilities.

2.15.21. Oversee and ensure monthly and annual water, wastewater, natural gas, fuel oil, etc. consumption and cost data are reported accurately for use in the Annual Energy Performance and Resilience Report (formerly the Annual Energy Management and Resilience Report) using NexGen IT, no later than 60 days after the end of month of consumption or the end of the established billing cycle. For details, see Department of the Air Force Manual (DAFMAN) 32-1061, *Providing Utilities to Department of the Air Force Installations*.

2.16. Installation Bioenvironmental Engineer (BEE).

2.16.1. Provides general surveillance of potential environmental contamination of drinking water from facilities. Provides copies of monitoring and evaluation reports indicating an exceedance of a drinking water action level (upon request, to the BCE).

2.16.2. Monitors compliance of drinking water and water supplies with applicable standards (see DAFI 48-144).

2.16.3. Provides reporting and public notification assistance as required. Submits monitoring results and suggestions for improving water quality to the BCE.

2.16.4. In coordination with CE, ensures sanitary surveys are performed to satisfy applicable regulations and standards. Recommends mitigation actions to either the appropriate Civil Engineer or Surgeon General organization to maintain the sanitary quality of the base drinking water system.

2.16.5. Supports civil engineers by conducting technical reviews of repairs, renovations, and modifications to drinking water systems to assess and avoid potential health hazards.

2.16.6. Upon request, assists in the hazard classification of new cross-connections using the most recent Uniform Plumbing Code® criteria, designed to provide consumers with safe and sanitary plumbing systems.

2.16.7. Ensures water vulnerability assessments are completed in accordance with DAFMAN 10-246, *Food and Water Protection Program*.

2.17. Civil Engineer Installation Management Flight (CE/CEI).

2.17.1. Submits applicable Notice of Intent to the appropriate permitting agency and receives required approvals prior to implementing planned discharges.

2.17.2. Ensures compliance, in cooperation with other installation stakeholders, with all water discharge permit conditions, including sampling, analysis, record keeping inspections, reporting, and training. Submits monitoring reports on time to the regulatory authority by certified mail or regulatory agency-approved electronic methods. Submits drinking water and wastewater information in authoritative data systems and Water Enterprise Tracking (WET) system.

2.17.3. Submits NPDES water discharge permit renewal applications by certified mail or DAF and regulatory agency approved electronic method in accordance with regulatory timelines.

2.17.4. Submits a timely Notice of Termination with all permits to the appropriate permitting agency when required.

2.17.5. Serves as the lead and technical representative and consultant for installation water quality environmental programs including programs that fall under Clean Water Act and Safe Drinking Water Act authorities. Will carry out responsibilities described in AFI 32-7001, *Environmental Management* for wastewater, stormwater and drinking water.

2.18. Logistics Readiness Squadron (LRS).

2.18.1. Operates DLA Energy funded, DAF owned facilities containing DLA Energy capitalized fuels products in compliance with the responsibilities of DAFI 23-201. Operates DLA contracted facilities in compliance with DLA Energy policies and procedures.

2.18.2. Performs and documents operator level maintenance of fuels systems per appropriate Technical Orders and technical guidance documents.

2.18.3. Provides a Fuels Management Team (FMT) member to the POL Storage Tank Compliance (STC) Cross Functional Teams (CFTs).

2.18.4. Assigns personnel to gain access to Storage Tank Accounting and Reporting (STAR) to maintain/update current tank information and inspections in the database for DLA Energy capitalized tanks.

2.18.5. DLA Energy contracted Fuels Management/Bulk Storage sites must designate a government representative from the LRS to join the POL STC CFTs. This individual will be granted access to (STAR) for the purpose of maintaining and updating the database with current tank information and inspections pertaining to DLA Energy capitalized tanks.

2.19. Organizational Tank Owning Unit Commander or Equivalent(s).

2.19.1. Designates both a primary and alternate tank custodian through written appointment and issues a signed and dated tank custodian appointment letter to the POL STC CFTs. Assigns a representative to the POL STC CFTs. The appointment letter should be updated whenever a change in tank custodian takes place.

2.19.2. Ensures appointment letters are uploaded to the STAR system.

2.19.3. Ensures that programs, funds, and contracts cover the necessary maintenance, repair, and replacement for fuel release response, cleanup, and reporting.

2.20. Organizational Tank Custodian.

2.20.1. Manages and serves as the central point of contact for operation of the organization tanks.

2.20.2. Complete STAR and Organizational Tank Custodian training upon assignment of duties and before accepting receipt for conducting fuel delivery operations. The POL, STC CFTs will specify who provides training for the installation.

2.20.3. Ensures organization tanks comply with security, safety, accountability, and environmental protection requirements per all applicable technical directives and applicable federal, state, and local environmental regulations.

2.20.4. Gains access to STAR to maintain/update current tank information in the database for assigned tanks and has a current appointment letter.

2.20.5. Ensures an accurate storage tank inventory with attributes and shell capacity (reported in U.S. gallons) is maintained in STAR.

2.20.6. Inspects assigned tanks in accordance with this DAFMAN and ensures minor maintenance or contract repairs on assigned organization tanks are completed. Ensures monthly and annual inspections are completed and recorded in STAR.

2.20.7. Notifies the BCE any time there is a change in organizational tank status, such as when taken out of service and/or returned to service, or when operational conditions of the tank change.

2.20.8. Receives fuel deliveries and operates dispensing nozzle when receiving product via open port and/or nozzle. In accordance with DAFI 23-201, a two-person team is required for fuel receipts to prevent spills and overfills when deliveries to organizational tanks.

2.21. POL Storage Tank Compliance (STC) Cross Functional Teams (CFTs). As defined in [Chapter 9](#)

2.21.1. All tank custodians or managers must attend STAR and tank inspection requirements training. This CFT develops installation-level training and determines who provide training to Tank Custodians.

2.21.2. Tracks assigned organization tanks and custodians.

2.21.3. Meets semi-annually or more often as needed to define installation procedures that identify which entity will input inspection results into the STAR system, review the currency of training for Tank Custodians, review the status and results of required tank inspections and deficiencies, and review the status of corrective actions or repairs.

2.21.4. Provides status of tanks, inspections, tank custodian assignment and training to the wing leadership through reports at Environment, Safety, and Occupational Health Council meetings.

Chapter 3

GUIDANCE AND PROCEDURES

3.1. Compliance with Statutory Requirements.

3.1.1. Water System Requirements (*Safe Drinking Water Act*).

3.1.1.1. Consumer Information. Bioenvironmental Engineers will coordinate drinking water system evaluations to ensure drinking water violations are reported through public notification procedures in accordance with DAFI 48-144. CE/CEI and the Civil Engineer Operations (CE/CEO) Flight will provide coordinating support and assistance as needed. **(T-1)**

3.1.1.2. Regulatory Compliance. Civil Engineers and Bioenvironmental Engineering will coordinate drinking water system evaluations to ensure that drinking water parameters meet current federal, state, and local standards or host nation FGS or OEBCD, and Air Force standards. **(T-0)** CE/CEI will provide Safe Drinking Water Act compliance support in accordance with requirements in AFI 32-7001, *Environmental Management*, but will not duplicate roles specifically assigned to the installation BEE, per DAFI 48-144. **(T-3)**

3.1.1.3. Water Vulnerability Assessments. Drinking water system vulnerability assessments are conducted by installation BEE with cooperation and input from Civil Engineers and other appropriate base and local agencies.

3.1.2. Wastewater System Requirements (*Clean Water Act*).

3.1.2.1. Civil Engineers or other authorized personnel will monitor wastewater discharged from the installation to publicly owned treatment works or sewage collection systems through sampling to ensure local standards developed by the publicly owned treatment works are achieved in accordance with procedures prescribed in the *Air Force Civil Engineer Clean Water Act Playbook*.

[\(https://www.ceplaybooks.com/playbooks/d6ab6da2-7bca-4774-9f98-89f0b9941632/\)](https://www.ceplaybooks.com/playbooks/d6ab6da2-7bca-4774-9f98-89f0b9941632/)

3.1.2.2. Wastewater sampling or monitoring may be delegated to another base agency or private contractor. Civil Engineers will ensure that delegated or contracted agencies meet applicable wastewater sampling or monitoring requirements in accordance with the contractual agreement. **(T-0)**

3.1.2.3. When first applying for or renewing a wastewater discharge permit (or similar governing instrument), the National Guard Bureau (NGB), Air Force Reserve Command (AFRC), or AFCEC Installation Support Section will review the draft permit requirements proposed by the regulatory agency, along with the installation, to ensure they are reasonable and achievable. **(T-2)** If conditions in a draft permit could be amended to better suit DAF needs, or are unacceptable or unachievable, negotiate these issues in close coordination between the installation legal office and CE/CEI. All permit applications will be signed in accordance with 40 CFR Part 122.22, *Signatories to permit applications and reports*, or applicable state or local regulations. **(T-0)** For military facilities, the authorized signature authority is the installation commander.

3.1.3. Gas, Fuels, and Other Oil and Lubricant Storage Systems.

3.1.3.1. Manage in accordance with 29 CFR, Part 1910, *Occupational Safety and Health Act (OSHA)*, (OSHA, Department of Transportation (DOT), 49 U.S. Code §§ 60101–60301 - *Natural Gas Pipeline Safety Act*, 42 U.S. Code §§ 7401 –7671q - *Clean Air Act*, *Oil Pollution Prevention Act*, *Resource Conservation and Recovery Act*).

3.1.3.2. The system must be operated in accordance with any applicable environmental and safety operating permits. The responsible party for ensuring compliance is the designated system operator. **(T-0)**

3.1.3.3. All liquid and gas fuels systems will be constructed and maintained using Unified Facilities Criteria (UFC) and in accordance with:

3.1.3.3.1. 29 CFR Part 1910, *Occupational Safety and Health Standards*.

3.1.3.3.2. 29 CFR Part 1928, *Occupational Safety and Health Regulations for Agriculture*.

3.1.3.3.3. 33 CFR Part 154, *Facilities Transferring Oil or Hazardous Material in Bulk*.

3.1.3.3.4. 40 CFR Part 60, *Standards of Performance for New Stationary Sources*.

3.1.3.3.5. 40 CFR Part 112, *Oil Pollution Prevention*.

3.1.3.3.6. 40 CFR Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES)*.

3.1.3.3.7. 40 CFR Part 280 *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)*.

3.1.3.3.8. 40 CFR Part 281, *Approval of State Underground Storage Tank Programs*.

3.1.3.3.9. 49 CFR, Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*.

3.1.3.3.10. 49 CFR Part 193, *Liquefied Natural Gas Facilities: Federal Safety Standards*.

3.1.3.3.11. 49 CFR Part 195, *Transportation of Hazardous Liquids by Pipeline*.

3.1.3.4. Operators of privatized natural gas and liquefied petroleum gas systems must meet the qualifications outlined in the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration, *Small Natural Gas Operator Guide*. The responsible party for ensuring compliance is the designated system operator. **(T-0)**

3.2. Total Maximum Daily Load Regulations (applies to installations in the US).

3.2.1. Waste load allocations with assigned target load reductions are established by regulatory authorities to attain and maintain water quality standards. Installations and appropriate stakeholders must actively participate in the Total Maximum Daily Load (TMDL) development process. **(T-1)** CE/CEI must advise AFCEC/CZ and AF/JA Environmental Law Field Support Center (AF/JAOE-FSC) of any draft TMDL documents prepared. **(T-1)** Technical and legal review of proposed TMDL waste load allocations must be accomplished to assess feasibility, reasonableness, and impact on the Air Force mission. **(T-1)** Installations located in the U.S. must:

3.2.1.1. Assess whether installation (on-base) point and non-point source discharges are contributing to impairments in the water body and watershed and must follow the Department of Defense *Installation Watershed Impact Assessment Protocol*. **(T-0)**

3.2.1.2. Develop and implement a TMDL compliance program per NPDES permit requirements as well as federal, state, and local regulations as stated in 40 CFR Part 130, *Water Quality Planning and Management*. **(T-0)**

3.3. Privatization, Inventories, and Facility Access.

3.3.1. Acquisition and Sales of Water Services. DAFMAN 32-1061, *Providing Utilities to Department of the Air Force Installations*, covers contracting and sales of utility services for reimbursement. The sale of drinking water to non-federal agencies may impact the base's regulatory status under federal and state regulations. Water rights are an important asset in ensuring the continued operation and resilience of DAF missions. The Utilities Privatization Program Office will coordinate with Bioenvironmental Engineering and Civil Engineer Installation Management and Operations Flights prior to taking contract action. The AF/JA Utility Law Field Support Center (AF/JAOE-ULFSC) will be consulted as part of contract proceedings. See the AFCEC *Utilities Privatization Playbook* for more details regarding utilities privatization and consult with the AFCEC Utilities Privatization Branch (AFCEC/CIUU).

3.3.2. Linear Segmentation/Asset Inventories. The BCE will develop and maintain accurate inventories of drinking water, wastewater, stormwater, natural gas, and liquid fuel system and tank assets. **(T-1)** Asset inventories will be maintained in both spatial (e.g., GeoBase) and tabulated (e.g., database) formats in accordance with Air Force approved linear segmentation guidance (see *Sustainment Management Systems (SMS) Playbook*). **(T-1)**

3.3.3. Regulator Access to Facilities. Agency representatives may inspect treatment facilities, examine facility operating records, and test as necessary to verify compliance with water quality standards in accordance with regulatory requirements. The BCE must provide authorized representatives of a regulatory authority with access to treatment facilities without prior notice if the entry is consistent with security requirements and at a reasonable time or consistent with the conditions specified in the applicable permit. **(T-0)**

3.4. Training and Certification.

3.4.1. Operator Training. New water system operators must receive classroom training and extensive, supervised on-the-job training before assignment to critical tasks. Experienced personnel need to also receive technical refresher courses and routine training to maintain competency and sustain the operator certification/license. The BCE ensures all training courses are compliant with applicable federal, state, and local regulatory requirements. **(T-0)** Military personnel are not required to have specific operator training if the plant has the appropriate number of trained and certified operators overseeing operations.

3.4.2. Operator Certification. Wastewater and drinking water operators must comply with state and, when necessary, federal operator certification requirements for treatment plant operations. Job descriptions will require state certification or that the certification is obtained and maintained, as appropriate. The operator cannot commence treatment system operations until fully certified. Proper certification must be a condition of employment for new civilians or contractors. **(T-0)**

3.5. Logs, Records, and Drawings.

3.5.1. Operating Log Preparation and Procedures.

3.5.1.1. CE/CEO must prepare prescribed forms, including required training records, daily operating logs, and laboratory records in compliance with applicable regulations and DAF requirements. **(T-3)** Operating logs should record throughput (water/wastewater produced/treated), level of activity, and time. Operating data can be collected remotely or electronically and maintained in a database. If operating data is manually read and transcribed, it must be recorded in a bound, page-numbered journal in ink with any corrections or deletions lined out and initialed by the user. **(T-2)** NPDES permits have mandated record archive timelines. Records must be kept according to applicable permit requirements. **(T-0)**

3.5.1.2. NexGen IT and asset management requirements may dictate collection of additional operating data. CE/CEO must maintain accurate data in DAF-mandated and authoritative data applications to foster effective and efficient water system operation and maintenance. **(T-1)**

3.5.1.3. The BCE may delegate final review and signature of operating logs to an appropriate engineer.

3.5.2. Physical Facility Information. CE/CEO must develop, maintain, and keep available at treatment facilities the documents described in paragraphs 3.5.2.1 through 3.5.2.3. **(T-1)**

3.5.2.1. Operation and Maintenance Manuals: Plant-specific operation and maintenance manuals, and applicable publications for each treatment system must be provided. **(T-3)**

3.5.2.2. Operating Instructions: System operating instructions with single-line drawings must be developed, including operational and compliance monitoring procedures. **(T-2)**

3.5.2.3. Up-to-Date System Drawings: Plans include elevation profiles (where applicable) and drawings of the entire collection and distribution system. Systems drawing information is updated upon addition into the base Geographic Information System as changes occur to the system. Shop drawings, catalog cuts, and any other equipment information must be retained for compliance with applicable permits, regulations, codes, DAF policy, Unified Facilities Criteria, and best management practices. **(T-2)**

3.5.3. Maintenance Records. CE/CEO must develop and maintain effective maintenance plans, including:

3.5.3.1. A preventive maintenance schedule must be established. **(T-1)**

3.5.3.2. A maintenance history for each major piece of equipment must be maintained. **(T-1)**

3.5.3.3. An essential spare parts list must be compiled, with essential spare parts stocked at the treatment facility or another accessible location. **(T-1)**

3.5.3.4. A long-range maintenance and improvement plan must be developed. **(T-1)**

3.5.3.5. Service outage logs must be maintained. At a minimum, the time/date of the incident, description of the incident, location of the incident, impact of the incident, description of repairs, and time/date of restoration of service must be recorded. **(T-1)**

3.5.4. Environmental Operations Permits. The Civil Engineering Installation Management Flight Environmental Element (CE/CEIE) must retain and verify required records of all monitoring information, including process control data and calculations, all calibration and maintenance records, all original strip chart recordings, and plant operation logs.(T-2) CE/CEIE must retain required Discharge Monitoring Reports and other reports or notices provided to the regulatory agency, including information prepared to complete the application for the permit. (T-2)

3.5.5. Adhere to the disposition of operational records in accordance with the Air Force Records and the National Archives and Records Administration (NARA) (44 U.S.C. [Chapter 33](#)) approved disposition schedule, unless state or federal laws or regulations require longer retention or unusual circumstances, such as litigation, dictate other retention requirements. (T-0)

3.6. Environmental, Safety, and Occupational Hazards. Supervisors must ensure all personnel are familiar with applicable safety instructions (reference UFC 3-230-02, *Operations & Maintenance (O&M): Water Supply Systems*, DAFMAN 91-203 and AFI 32-7001). (T-0) Supervisors must maintain installation BEE occupational health risk assessment reports and must use the reports to train workers on occupational health hazards.(T-0) Supervisors must make safety instructions readily available to all operating personnel; train facility personnel on safety procedures and equipment; and always enforce their proper use.(T-0) Once trained, individual workers and the environment must be protected. Workers are personally responsible for following safety procedures. (T-0)

Chapter 4

DRINKING WATER SYSTEMS

4.1. Water Facility Design. Design drinking water systems in accordance with UFC 3-230-01, *Water Storage and Distribution*; UFC 3-230-03, *Water Treatment*; UFC 3-420-01, *Plumbing Systems*; UFC 4-020-01, *DoD Security Engineering Facilities Planning Manual*; UFC 4-020-02FA, *Security Engineering: Concept Design (CUI)*; and UFC 4-020-03FA, *Security Engineering: Final Design (CUI)*.

4.2. Facility Operation and Maintenance.

4.2.1. Water Treatment and Distribution Systems. Installations must operate and maintain water treatment and distribution facilities according to this DAFMAN, UFC 3-230-02 *Operations & Maintenance: Water Supply Systems*, and applicable state and federal laws. **(T-0)** When appropriate, installations will also use the manufacturer's operation and maintenance manuals or plant-specific Operations, Maintenance, and Training Assistance Program, Volume II, for specific treatment components. **(T-0)**

4.2.2. Fluoridation. Installations that own or operate a potable water treatment facility serving 3,300 persons or more must have the ability to provide optimally fluoridated water as required by the Deputy Under Secretary of Defense for Installations and Environment (DUSD (I&E)) memorandum, "Fluoridation at DoD Owned or Operated Water Treatment Plants," March 18, 2013, and UFC 3-230-03. **(T-0)** Fluoridation decisions should be made locally, in consultation with competent dental authorities, while balancing the evolving science on fluoridation with readiness requirements.

4.2.3. Scale and Corrosion Control. Reference AFI 32-1001, *Civil Engineer Operations* and UFC 3-570-06, *Operation and Maintenance: Cathodic Protection Systems*, for details of the corrosion control program and UFC 3-230-13, *Industrial Water Treatment Operation and Maintenance*, for corrosion control.

4.2.4. Disinfection. The disinfection process inactivates pathogenic organisms in water by chemical oxidants or equivalent agents. Specific disinfection procedures can be found in American Water Works Association (AWWA) Standard C651-05, *Disinfecting Water Mains*, AWWA Standard C652-02, *Disinfection of Water Storage Facilities*, and AWWA Standard C654-03, *Disinfection of Wells*.

4.2.4.1. DAF-owned or -operated water production and treatment facilities must comply with an appropriate regulatory agency to be operated with a detectable (measurable level) disinfection residual at all points of the distribution system and throughout the potable water storage tanks served by the treatment plant. **(T-0)** The allowed minimal disinfection residual level varies from location to location, so consult with the appropriate regulatory agency to establish the correct level. Refer to DAFI 48-144 for additional guidance regarding disinfectant surveillance.

4.2.4.2. The BCE must inspect, perform preventive maintenance, and check for proper operation at least semi-annually in accordance with UFC 3-230-02 on all distribution components, such as fire hydrants and blow-off hydrants. **(T-0)** The BCE must conduct fire-flow test and system flushing every five years in accordance with UFC 3-601-02, *Fire Protection Systems Inspection, Testing, and Maintenance*. **(T-0)** The required frequency

and method of flushing (routine or unidirectional) will be determined based on individual water system requirements and documented in an installation flushing plan. However, in no case will any section of the water main go longer than five years without a unidirectional flushing, and as allowed per stormwater discharge permit. The installation flushing plan will be coordinated with Bioenvironmental Engineering. **(T-3)** Due to corrosion and tuberculation associated with material, cast iron pipes may require more frequent flushing. Reference the AFCEC guidance document *Unidirectional Flushing (UDF) Guide for Water Distribution Systems* on the CE DASH site (<https://usaf.dps.mil/teams/CEDASH/Scripts/Homepage/Home.aspx>) for setting up a proper UDF program.

4.2.5. Water System Hydraulic Models. Follow the latest edition of AWWA Manual M32, *Computer Modeling of Water Distribution Systems*. When water system hydraulic models are used, the BCE will ensure that water system hydraulic models are checked for accuracy by field flow testing. Hydrant and distribution system flow testing results will be documented. Integrate the water system hydraulic models into the installation's Geographic Information System. For major water distribution system construction projects, the construction contract must require the contractor to update the water system hydraulic models and other associated utility management systems to reflect these construction changes or additions and help develop the most appropriate construction project design and execution. **(T-3)**

4.2.6. Water Treatment Logs. NexGen IT, electronic spreadsheets, commercial software, or other electronic formats that collect the same data as the forms in [paragraph 4.2.6.1](#) may be used in place of these Air Force forms. The use of Environmental Protection Agency (EPA) or state-mandated forms in place of these Air Force forms is also authorized.

4.2.6.1. AF Form 1460, *Water Utility Operating Log (Supplemental)* and AF Form 1461, *Water Utility Operating Log (General)*. Operators at every installation must prepare AF Form 1461, *Water Utility Operating Log (General)*. If the water requires treatment beyond chlorination, operators must prepare AF Form 1460, *Water Utility Operating Log (Supplemental)*. **(T-1)**

4.2.6.2. Daily Well and Pumping Station Activity Records. Maintaining daily operating records for wells and pumping stations is a necessary part of water supply systems operation and maintenance. The forms in [paragraph 4.2.6.1](#) are available for use.

4.2.6.2.1. AF Form 997, *Daily Well Activity Record*. Use to record operational information about the well. This information helps evaluate the performance of the well and pumping system. Records showing trends such as an increase in drawdown or decreased yield help detect existing problems and prevent future ones.

4.2.6.2.2. AF Form 998, *Daily Pumping Station Activity Record–Water*. Use to record pertinent operational information, such as pumping times and rates. Entries on this record are reliable performance indicators.

4.2.6.2.3. DD Form 2680, *Military Water Well Completion Summary Report*; DD Form 2679, *Piping and Casing Log*; and DD Form 2678, *Well Driller's Log*.

4.2.6.2.3.1. Complete and keep a file for each well, beginning with initial construction.

4.2.6.2.3.2. Update the information after completing a repair, redeveloping a well, or conducting a performance test.

4.2.6.2.3.3. Properly licensed personnel may be needed to construct new wells or modify existing wells in accordance with state and local regulations.

4.2.7. Recordkeeping. The BCE ensures that all required documents, records, and monitoring and sampling data are retained for the length of time required by applicable health service and environmental regulations or other applicable codes and standards. Some records are required to be retained for a specified amount of time between three to ten years (e.g., chemical monitoring analysis, disinfection residuals if the system disinfects). The BCE will verify that some information is kept permanently (e.g., well siting approval letters, pump test results, groundwater withdrawal permit). **(T-0)** The Water Enterprise Tracking application may be used to archive water system regulatory records. The Installation Water Dashboard hosted on CE Dash should be utilized for storing installation infrastructure, regulatory, and water supply information. The Dashboard should be updated annually and certified by the Deputy Base Civil Engineer.

4.2.8. Distribution Valve Operation and Maintenance. The Civil Engineer Operations Flight will implement a valve exercise program in accordance with American Water Works Association guidelines to ensure that water distribution valves are in working order or replaced if not operable.

4.3. Special Considerations.

4.3.1. Install metering on all potable, non-potable and industrial water supplies IAW DAFMAN 32-1061 sufficient to detect system leaks. **(T-1)**

4.3.2. Water Rights. The BCE must maintain permanent records on all water-related documents and data pertaining to water rights in the real property section in [Attachment 2](#) and adhere to the disposition schedule noted in [paragraph 3.5.5](#). **(T-1)** The Civil Engineer Real Property Office will lead the documentation of water rights/water resources. It is DAF policy to retain water rights. If systems or services are privatized, the base must ensure that DAF interests in water rights/water resources are not jeopardized. **(T-1)** For further details regarding privatization, refer to the AFCEC *Utilities Privatization Playbook* and consult with AFCEC/CIUU.

4.3.3. Water Vulnerability Assessments. Civil Engineer personnel will assist Bioenvironmental Engineering in accomplishing Water Vulnerability Assessments, on all Air Force-owned water systems serving over 25 persons in accordance with DAFMAN 10-246 and prepare water contingency response plans for deficiencies identified in paragraphs [A3.1.2.4.1](#) through [A3.1.2.4.2.3](#) **(T-0)** This requirement applies to potable water systems on Air Force installations that produce, treat, and purchase water, or distribute drinking water to U.S. military, federal and contractor employees, and all resident users. For installations consisting of a host base with associated but independent water systems located on the host installation's property and serving an effective population of 25 users or more, the host installation's Water Contingency Response Plan will include an annex containing subsystem-specific response guides. Other installations will follow the Response Guide Development identified in paragraphs [A3.2](#) through [A3.2.2.6](#). **(T-0)**

4.3.4. Water System Lead Content. All new installations or repairs to public drinking water systems require the use of lead-free flux and solder, pipes, and pipe fittings as defined by the *Safe Drinking Water Act*. **(T-0)** Complete a Lead Service Line Inventory as required by Federal policy, DoD policy, DAF policy, environmental laws and regulations, and local plumbing code. Utilize asset management authoritative data and asset management principles as required by this DAFMAN to complete the Lead Service Line Inventory. Update authoritative data per Lead Service Line Inventory findings. Implement Lead Service Line Replacement Plan in accordance with asset management principles to remove any lead service lines and address unknowns as required. **(T-1)** Privatized drinking water system owners must complete Lead Service Line Inventories as required.

4.3.4.1. Per AFI 32-7001 the Installation Environmental Element is responsible for liaison with the regulatory agency, BEE and environmental managers. In the submission of the lead service line inventory and replacement plan to the regulatory agency unless other liaison role is approved by the base Drinking Water Working Group. **(T-3)**

4.3.4.2. Per AFI 32-1001, the Operations Flight is the OPR to update the lead service line inventory annually (or triennially if allows), update the authoritative asset data with findings of the inventory update in accordance with the *Sustainment Management Systems (SMS) Playbook*, implement the lead service line replacement plan to address unknown service line infrastructure data and conduct any required service line replacement as preventative maintenance. **(T-3)** Other CE functions may be required to support CE Operations for service line inventory updates and replacement such as for geospatial information system (GIS) updates, programming, and contract execution.

4.3.4.3. Per DAFI 48-144 the Bioenvironmental Engineer is the OPR for drinking water surveillance (sampling) and public notification. **(T-1)**

4.3.4.4. All functions listed in paragraph 4.3.4.1 through 4.3.4.3 and other applicable stakeholders will coordinate lead service line inventory and replacement plan activities through the Drinking Water Working Group. Applicable coordination includes but is not limited to ensuring updates to the inventory and schedule to replace service lines is provided with sufficient time for public notification, feedback regarding regulator or public concerns, and identification of required support. **(T-3)**

4.3.4.5. For base public water systems subject to the Lead and Copper Rule (40 CFR Part 141.84), an initial inventory must be completed and submitted to the primacy agency. **(T-0)** If all service lines can be classified as non-lead per definitions in the Lead and Copper Rule then a lead service line replacement plan is not necessary, but a statement must be authorized by the base public water system stating all service lines are classified as non-lead. **(T-0)** Once the base public water system gets to the point of all service lines being classified as non-lead through inventory updates such as resolution of unknowns, and/or service line replacement, then the replacement plan can be considered completed and updated with a statement that all service lines are now classified as non-lead. If the public water system discovers a lead, galvanized or unknown service line that is subject to the Lead and Copper Rule, the lead service line inventory must be updated. If the public water system previously classified all service lines as "non-lead" the, the Lead Service Line Replacement Plan must be updated or reactivated. **(T-0)**

4.3.4.6. For public water systems not subject to the Lead and Copper Rule such as exempt public water systems as defined in 40 CFR Part 141.3 and Transient Non-Community Water Systems, lead service line inventories and replacement plans will be conducted if directed by DoD and/or DAF policy. For privatized water utilities, the privatized system owner subject to the Lead and Copper Rule is required to complete the lead service line inventory and provide public notification to the customers. Overseas installations will complete lead service line inventories and replacement as required by the country specific (OEBGD) or Final Governing Standards (FGS); until requirements similar to the Lead and Copper Rule are incorporated into the OEBGD or FGS, lead service line inventories and replacement plans will be conducted for overseas installations per current OEBGD and FGS requirements, as a matter of policy or as necessary to address lead and copper concerns such as meeting health-based standards. Overseas installations will complete lead service line inventories and replacement as required by the country-specific FGS or OEBGD. **(T-1)**

4.3.5. Backflow Prevention Program. Bases under U.S. jurisdiction will use the Uniform Plumbing Code® (UPC®), Section 603, *Cross-Connection Control*, and *UPC® Illustrated Training Manual*, to inspect, test, install, repair, and replace backflow prevention devices. **(T-0)** Fire protection systems are exempt from this requirement; see [paragraph 4.3.5.6](#) for fire protection systems requirements. When the backflow requirements of this DAFMAN, the UPC®, and the International Plumbing Code® (IPC®) conflict, comply first with this DAFMAN, second with the UPC®, and third with IPC, all in accordance with state and local regulations. Specific backflow requirements are as follows.

4.3.5.1. Design of Equipment. Civil engineers must first consider designing a solution to eliminate the potential for a cross-connection and meet the requirements of UFC 3-420-01. **(T-3)**

4.3.5.2. Device Accessibility. New and existing backflow devices will be planned for and installed to be readily accessible within 1 to 5 feet (0.3 to 1.5 meters) above the floor or grade, at least 1 foot (0.3 meter) from the back wall and have at least 1 foot (0.3 meter) clearance above the device, and documented on AF Form 845, *Cross-Connection Information* or state mandated forms. Document location of these devices in the installation's GIS utilities map database records. Backflow devices must be installed with appropriate clearances and in accordance with the manufacturer's installation instructions. **(T-3)**

4.3.5.3. Device Location Safety. Devices will be located outside of areas containing toxic, poisonous, or corrosive fumes. **(T-0)**

4.3.5.4. Device Protection. Enclosures will be installed to secure exterior backflow preventers serving critical or high-risk facilities. **(T-0)** Backflow preventers serving only non-potable uses (e.g., fire protection systems) are excluded.

4.3.5.5. Hose Bibb Devices. At a minimum, specify atmospheric vacuum breaker-type devices that meet American Society of Sanitary Engineering (ASSE) Standard 1011-2004, *Performance Requirements for Hose Connection Vacuum Breakers*.

4.3.5.6. Fire Suppression Systems. Backflow protection on fire suppression systems will comply with AWWA Manual M14, *Backflow Prevention and Cross-Connection Control*:

Recommended Practices, Chapter 6, and UFC 3-601-02, in lieu of the UPC®. **(T-1)** Fire protection systems that use non-potable water are exempt from backflow requirements.

4.3.5.6.1. The Director of Municipal Services are responsible for new fire suppression systems using potable water which must have backflow prevention installed. **(T-0)** Install a double check valve backflow preventer on new dry/wet fire suppression systems that use only water as a fire suppressant (with or without fire department connections). A reduced pressure-type backflow device must be used only in situations where antifreeze, foam, or other hazardous chemicals are added, or where local or state requirements necessitate such devices, and the waiver of sovereign immunity applies. **(T-0)**

4.3.5.6.2. Existing fire suppression systems using only water as a fire suppressant are exempted from the backflow requirements for new systems if they met the existing backflow requirements at the time they were installed.

4.3.5.7. Hydraulic Losses. Pressure losses through a backflow prevention device will degrade the effectiveness of a fire protection system or other water system. Design and submittal acceptance by a registered Professional Engineer must be completed to ensure that the rated working flow rate of the selected valve meets the flow requirements of the system. **(T-0)**

4.3.5.8. Water System Backflow Prevention/Cross-Connection Survey. Civil engineers, under the supervision of the base backflow program manager and with the assistance of qualified contractors, must survey all facilities (including non-government owned facilities connected to the DAF drinking water systems) and water-using equipment and systems every five years. Results must be documented on an AF Form 848, *Inventory of Cross-Connection Control and Backflow Prevention Devices*, a computerized maintenance management system, or state submittal forms. **(T-1)**

4.3.5.9. Testing and Inspecting Backflow Preventers. The backflow program manager ensures that a schedule is developed and used by certified technicians to inspect and test backflow assemblies. At a minimum, testable devices will be tested after installation, cleaning, repair, or relocation. Testing will be done at least annually, with results documented on an AF Form 843 *Backflow Prevention Device Inspection Data* and AF Form 845, *Cross-Connection Information*, state-mandated forms, and the NexGen IT Program Management module or another computerized maintenance management system approved by the backflow program manager. **(T-0)**

4.4. Backflow Certification Program.

4.4.1. General Certification Information. To protect potable water, only certified military, civilian, or contracted personnel are authorized to test, maintain, and install backflow prevention devices. Additionally, only qualified personnel are authorized to conduct cross-connection surveys. Certification is essential in meeting the standards of the Safe Drinking Water Act, as amended, 42 U.S. Code § 300f et seq. DAF programs will adhere to all state training and certification requirements for backflow device testing and maintenance. If a particular state does not have specific training and certification requirements, backflow technicians must be certified by ASSE, International Association of Plumbing and Mechanical Officials, or American Backflow Prevention Association. Outside the Continental United

States (OCONUS) personnel will attend the Air Education and Training Command (AETC) J7AZT3E451 03BB Backflow Prevention Device Testing Mobile Training Course to satisfy certification requirements.

4.4.2. Technician Certification Procedures. Backflow technicians must possess a current backflow/cross-connection certification from their state, state approved equivalent, or approved third party agent. **(T-0)** OCONUS locations will use an AF Form 483 for *Certification of competency* (which expires three years from date of issue).

4.4.3. Technician Recertification. Backflow technicians must obtain recertification in accordance with their state requirements. **(T-0)** OCONUS members will attend the AETC J7AZT3E451 03BB Backflow Prevention Device Testing Mobile Training Course during the three-year anniversary date listed on their AF Form 483.

4.4.3.1. Individuals who hold a current state backflow certification are eligible to receive an AF Form 483 through reciprocity keeping the same expiration date after validation from the AFCEC 3E4X1 Force Development Manager.

4.4.3.2. Individuals may have their AF Form 483 certification extended up to but no greater than six months based on course availability. However, this must be validated and approved by the AFCEC's 3E4X1 Force Development Manager. **(T-1)** If approved, the AFCEC 3E4X1 Force Development manager will provide a new AF Form 483 with the new expiration date.

Chapter 5

WASTEWATER SYSTEMS

5.1. Design. Wastewater systems will be designed in accordance with UFC 3-240-01, *Wastewater Collection and Treatment*. **(T-0)**

5.2. Operation and Maintenance. CE/CEO operates and maintains water pollution control facilities within applicable permit limits and other permit requirements according to base-specific Operations, Maintenance, and Training Assistance Program manuals or plant-specific operation and maintenance manuals. Relevant guidance can be found in UFC 3-240-03, *Operation and Maintenance (O&M): Wastewater Treatment*.

5.2.1. Activities that require special attention include metal finishing and electroplating; vehicle and engine maintenance and vehicle and aircraft wash facilities; aircraft maintenance (paint stripping, nondestructive inspection, painting, and solvent cleaning); battery shops; photo labs; hospitals; aircraft deicing; civil engineer activities; and fire training. Proper operation and maintenance of oil/water separators, pretreatment systems, and lift stations must be addressed as specified. **(T-0)**

5.2.2. Operators must prepare AF Form 1462, *Water Pollution Control Utility Operating Log (General)*. **(T-0)** Use of electronic databases or EPA and state-mandated forms in place of AF Form 1462 is authorized.

5.2.2.1. Bases with wastewater treatment plants must have written instructions governing the discharge of industrial and non-domestic waste to the sanitary system by generating activities. **(T-0)** These instructions will outline pretreatment requirements, discharge procedures, and limitations for industrial waste. **(T-0)** The BCE has the authority to impose these requirements. Within each generating organization, the activity commander is responsible for controlling industrial discharges. These organizations must adhere to pollution-control techniques specified in AFI 32-7001 to minimize pollutant discharges. Hazardous waste or other prohibited materials may not be discharged to the collection system. **(T-0)**

5.2.2.2. Bases must address emerging contaminants in their wastewater discharge policies. **(T-0)** This includes identifying and managing substances such as per- and polyfluoroalkyl substances (PFAS) that may be restricted under Publicly Owned Treatment Works (POTW) permits. Written instructions must outline monitoring and sampling procedures for these contaminants, specify pretreatment requirements, and recommend appropriate treatment systems. **(T-0)** These measures are critical to comply with POTW discharge limitations and to prevent disruptions to industrial and sanitary wastewater operations.

5.2.2.3. Effluents must be disinfected when necessary to comply with federal, state, and local requirements for water pollution control. **(T-0)** De-chlorination of the effluent may also be required at some locations.

5.3. National Pollutant Discharge Elimination System Permits: For installations located in the U.S., discharges of domestic wastewater require NPDES permit from federal or delegated state regulatory authorities. CE/CEI will coordinate these permits with the NGB, AFRC, or AFCEC Installation Support Section to ensure that proposed requirements are reasonable and achievable. Input and maintain wastewater NPDES permits in WET. **(T-1)**

5.3.1. Applications: Permit applications will be signed in accordance with 40 CFR Part 122.22 or applicable state or local regulation. **(T-0)** For military facilities, the authorized signature authority is the senior executive officer; typically, this is the DAF commander having responsibility for the overall operations of the installation. Reports required by permits and other information must be signed or certified by the installation commander except to the extent delegations are authorized under applicable federal or state regulations. **(T-0)**

5.3.2. Enforcement Action and Host Nation Enforcement Action Process: Refer to AFI 32-7001 for coordination, processing, and reporting.

5.3.3. Pretreatment Requirements: BCEs will develop pretreatment programs, if required, for wastewater discharges to satisfy pretreatment requirements. See 40 CFR Parts 403 – 471, *Effluent Guidelines and Standards*. **(T-0)**

5.3.4. Discharges to Publicly Owned Treatment Works: Installations that discharge to publicly owned treatment works are considered as indirect dischargers and are regulated by the publicly owned treatment works authority. Installations must comply with applicable publicly owned treatment works regulations, permits, and contractual agreements. **(T-0)**

5.3.5. Discharges from Federally Owned Treatment Works: Wastewater point source discharges into waters of the U.S. require NPDES permits. **(T-0)**

5.3.6. Septic Systems. The BCE ensures compliance with applicable state or local regulations regarding septic systems. Connect septic systems to publicly owned treatment works or domestic wastewater systems to maintain compliance. Industrial wastewater will not be discharged to septic systems. **(T-0)**

5.3.7. Other Water Discharge Permits.

5.3.7.1. Dredge or Fill Permits. The *Clean Water Act*, Section 404, requires a permit from the U.S. Army Corps of Engineers (authorized state) to discharge dredged or fill material into navigable waters (waters of the U.S., including jurisdictional wetlands that are waters of the U.S.). **(T-0)** Examples of such activities include depositing of dredged or fill material, site development fill, and construction activities.

5.3.7.2. Pesticides. The *Clean Water Act* NPDES general permit covers application of biological pesticides or chemical pesticides that leave a residue “on or near” waters of the U.S. Due to the permit differences from state to state, care must be taken to determine applicability. **(T-0)**

5.3.8. Discharge Monitoring Report Submissions. The Civil Engineer Installation Management Flight will ensure discharge monitoring reports have been submitted to the permitting authority, as required, according to the schedule that the discharge permit specifies, by registered mail or Air Force/agency-approved electronic method to guarantee a record of on-time arrival. **(T-0)**

5.4. Special Considerations. Air Force installations and facilities located in the U.S. will operate in accordance with applicable federal, state, and local regulations. This includes requirements to obtain permits, or applicable publicly owned treatment works regulations, permits, and contractual agreements. **(T-0)**

5.4.1. Pretreatment: Develop pretreatment programs, if required, for wastewater discharges to satisfy pretreatment requirements. **(T-0)** See 40 CFR Parts 403 – 471.

5.4.2. Septic Systems: Comply with applicable state or local regulations regarding septic systems. **(T-0)**

5.4.3. NPDES-permitted Federally Owned Treatment Plants: These treatment plants and other applicable systems such as pretreatment or privatized systems must comply with 40 CFR Part 503, *Standards for the Use or Disposal of Sewage Sludge*, including requirements to obtain permits for land application, surface disposal, or incineration of sewage sludge. **(T-0)** Land application of sewage sludge is undesirable by the DAF and should only be considered when no other disposal options are available or when the sludge has been sampled and characterized and is free of contaminants or hazardous substances.

5.4.4. Cross Connections: Installations will correct cross-connections and illicit discharges identified through inspections by elimination, operational modifications, repairs, or construction. **(T-3)**

5.4.5. Sewer Overflows: Eliminate or minimize stormwater inflow and groundwater infiltration to wastewater collection systems to prevent sewer system overflows and non-compliance with permit requirements. **(T-0)** Reduce wastewater discharge cost for metered systems discharging to Publicly Owned Treatment Works or to other quantity-based fee systems by reducing inflow and infiltration.

5.4.6. Hazardous Material Management: Collect and manage industrial wastewater as a hazardous material per AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, if regulations or permit limits prohibit discharging such wastewater into domestic or other non-industrial sewer systems. Pre-treat regulated industrial wastewater discharges to federally owned treatment works or host nation wastewater systems per applicable permit requirements. Installations will not discharge domestic waste containing industrial waste that does not qualify under the Resource Conservation and Recovery Act domestic sewage exclusion to cesspools, septic systems, or stormwater retention ponds. Manage industrial wastewater created by releases of aqueous film forming foam (e.g., wastewater discharge from aircraft hangar accidental release of firefighting foam solution) in accordance with applicable regulations, permit conditions, pretreatment limits, and Air Force guidance and policy. **(T-0)**

5.4.7. Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS): Do not discharge commercial products containing PFAS into sanitary sewers. Release of firefighting solutions that contain PFAS compounds from test activation of fire suppression systems and fire vehicle chemical discharges will be captured, contained, and disposed of to meet applicable regulatory requirements or applicable policy directives. **(T-0)** Firefighting solutions that do not contain PFAS compounds will be discharged to the sanitary sewer after receiving approval from the receiving publicly or federally owned treatment works. **(T-0)** Installations must document and follow procedure for metered release of non-PFAS firefighting solutions. **(T-1)** Agreements for discharge are subject to AFCEC Installation Support Environmental Risk Assessment review.

5.4.8. Lift Stations: Lift stations must have audible and visual alarms at each pump station to alert maintenance staff of pump failures, including at times of power loss. **(T-0)** Include equipment to transmit alarm signals to a central monitoring point, if possible. Ensure major lift stations are equipped with emergency backup power supply such as a mobile or fixed generator. Provide all lift stations with at least duplex pump systems to ensure redundancy. **(T-0)**

5.4.9. Oil/Water Separators: Do not install any new oil/water separators until all alternative methods have been evaluated. Follow Army Environmental Center SFIM-AEC-EQ-CR-200010, Multiservice Oil/Water Separator Guidance Manual, to evaluate alternatives. **(T-2)** Operate oil/water separators in accordance with applicable federal, state, and local regulations. Applicability of regulations may vary based on discharge of oil/water separator to systems with NPDES permit coverage.

5.4.9.1. Installations will not directly discharge solvents, paints, cleaning compounds, corrosion-control facility waste, and non-oily wastes into oil/water separators. **(T-0)** Residuals of these substances in wastewater will be minimized or prohibited in accordance with any pretreatment or NPDES requirements. **(T-0)** Consider emulsification of oil by soap during decision making for the installation and use of oil/water separators. Soap use may render the oil/water separator ineffective for separation of oil and grease from water.

5.4.9.2. Obtain an appropriate NPDES or host nation wastewater discharge permit if a discharge from an oil/water separator to a wastewater treatment plant is not possible. **(T-0)**

5.4.10. Large-Capacity Cesspools: Federal regulations require closure of existing large-capacity cesspools. Federal regulations also require closure or permitting of Class V underground injection control wells that discharge motor vehicle maintenance operations wastewater. **(T-0)**

5.4.11. Prohibition of Bypasses: Federal and some Final Governing Standards prohibit piped connections, overflow devices, and intentional bypasses that directly discharge untreated wastewater into waters of the U.S. or the host nation, except under limited circumstances (see 40 CFR Part 122.41, *Conditions applicable to all permits*, (m)(4) and (m)(2)). Wastewater collection systems and pumping stations must not bypass nor allow overflow into storm sewers or waters of the U.S. Notify regulatory authorities of an unauthorized discharge event within 24 hours of discovery or in accordance with state, local, or other reporting requirements, whichever has the most rapid reporting requirement (see AFMAN 10-206, *Operational Reporting* (OPREP), and AFI 32-7001). **(T-0)**

Chapter 6

STORMWATER SYSTEMS

6.1. Design. The BCE must design surface drainage, underground drainage systems, stormwater management facilities, and erosion and sediment control in accordance with UFC 3-201-01, *Civil Engineering*, and applicable requirements of the local regulatory agency with jurisdiction over the installation; UFC 3-210-10, *Low Impact Development*; and the criteria in this DAFMAN. **(T-0)** When there is a conflict among criteria, installations will follow the most stringent. Other important construction-related stormwater references include UFC 1-200-02, *High Performance and Sustainable Building Requirements*, and EPA 841-B-09-001, *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects Under Section 438 of the Energy Independence and Security Act*.

6.2. Operation and Maintenance and Compliance. The BCE must operate and maintain stormwater facilities within applicable permit limits and according to relevant guidance in the applicable Civil Engineering Playbook. **(T-0)**

6.2.1. Stormwater National Pollutant Discharge Elimination System Permit (NPDES). Stormwater discharges to the waters of the U.S. must be covered under either a General or an Individual permit. When possible, installations should strive to operate under a general stormwater permit as the permit is written to cover multiple discharges.

6.2.1.1. Industrial activities coverage under an NPDES permit is required for discharge of certain stormwater categories associated with for example, runway and aircraft deicing, landfill runoff, or wash racks, into waters of the U.S. Installations are automatically regulated as small municipal separate storm sewer systems if they are located within an urbanized area, designated by the U.S. Census Bureau.

6.2.1.2. Installations must input and maintain stormwater NPDES permits in WET and other authoritative data sources per Civil Engineering governance. **(T-0)**

6.2.2. Stormwater Pollution Prevention Plan. For continental U.S. installations, NPDES stormwater discharge permit holders must develop and implement a stormwater pollution prevention plan meeting federal and state regulatory requirements (40 CFR Parts 122.26, *Stormwater Discharges*, and 123.25, *Requirements for Permitting*). **(T-0)** For overseas installations, the FGS or DoDM 4715.05, Volume 3 also require the development and implementation of a stormwater pollution prevention plan. Installations should develop and implement best management practices to eliminate or minimize pollutants. Installations pursue achievable, cost-effective, non-structural best management practices before considering structural best management practices. **(T-0)**

6.2.3. The BCE develops and implements plans as required by NPDES stormwater permits to detect and address unauthorized non-stormwater discharges, including illicit discharges, illegal connections, illegal dumping, and improper waste disposal. The BCE will execute appropriate enforcement procedures as established in authorized plans required by the NPDES permit and certified by the appropriate installation authority. **(T-0)** The plan is composed of operating procedures that include the following areas.

6.2.3.1. The BCE will include the established schedules and protocols for identifying priority areas for comprehensive screening of the system in accordance with the applicable permit. Consider the likelihood of unauthorized non-stormwater discharges, illicit discharges and connections. Comprehensive screening methods by Civil Engineer personnel may include but are not limited to visual inspections, water sampling of stormwater conveyances and outfalls, infrared or thermal photography, investigation of information provided by cross-trained staff capable of detecting illicit discharges in the field or responding to public complaints.

6.2.3.2. The BCE is responsible to correct structural and infrastructure causes of unauthorized non-stormwater discharges, illicit discharges and connections. Any corrections to operational procedures which contribute illegal dumping, improper waste disposal or non-structural causes for unauthorized discharges are the responsibility of the contributing organization.

6.2.3.3. The Civil Engineer Installation Management Flight is responsible for the stormwater plans as required by NPDES permits that outline procedures and enforcement measures for the removal and/or correction of the source of the unauthorized stormwater discharge, illicit discharge, illegal connection, illegal dumping, and improper disposal.

6.2.3.4. The Civil Engineer Installation Management Flight maintains documentation of all corrective actions undertaken in accordance with the applicable plans and permits.

6.2.4. Municipal Separate Storm Sewer System. Installations are automatically regulated as small municipal separate storm sewer systems if they are located within an urbanized area as designated by the Bureau of the Census. Installations should consult with the installation legal office to determine whether the installation is required to comply with municipal separate storm sewer system requirements. Under some conditions, the regulatory agency may designate installations not located in an urbanized area for municipal separate storm sewer system permit coverage.

6.3. Special Considerations.

6.3.1. Regulated Construction Activities. Construction activities disturbing one or more acres in aggregate require stormwater permit coverage and may require timely submission of a Notice of Intent to be sent to the appropriate permitting agency. A site-specific stormwater pollution prevention plan must be prepared and implemented per permit requirements. **(T-0)** Upon construction of work installation personnel will periodically review individual construction Stormwater Prevention Pollution Plans, (SWPPPs) for updates that will change with the Best Management Practices (BMPs) to adjust with content of permit. The Civil Engineer Installation Management Flight will review proposed construction activities to determine whether exemptions to submitting a Notice of Intent are available. Attention should be given to permitting authority-specific requirements such as parties submitting a Notice of Intent; signature authority; preparing and keeping a copy of the stormwater pollution prevention plan on-site; statutory waiting period after submission of the Notice of Intent before construction can begin; and permit fees. Overseas installations will complete lead service line inventories and replacement as required by the country-specific FGS or OEBCD. **(T-0)** Upon start of construction work, Installation Management Flight personnel will periodically review individual construction SWPPPs for updates as condition on the construction site will change and the BMPs must be adjusted to comply with the intent of the permit. **(T-0)**

6.3.2. *Energy Independence Security Act of 2007* Section 438 Projects (Military Construction, Operations & Maintenance, Non-Appropriated Funds). The Civil Engineer Engineering Flight (CE/CEN) updates the NextGen IT Program Management MAJCOM unique module by selecting “EISA 438” and inputting in the value field ‘Yes’ or ‘No’ to indicate whether *Energy Independence Security Act of 2007* Section 438 has been addressed for the project. Estimated design and construction costs for implementing *Energy Independence Security Act of 2007* Section 438 will be documented in the project cost estimate as a separate line item. **(T-0)**

6.4. Stormwater Fees. Section 313(c) of the *Clean Water Act* requires federal entities to pay “reasonable service charges” for stormwater discharge or runoff from federal property or a federal facility, to include reasonable nondiscriminatory fees, charges, or assessments. **(T-0)**

6.4.1. Installations that receive a stormwater fee assessment will coordinate with their installation legal office and the AFCEC Installation Support Section prior to any payments. The installation legal office can contact the AF/JA Environmental Law and Litigation Division (AF/JAOE), as necessary.

6.4.2. Only make payments after an appropriate technical review and obtaining legal approvals. Input stormwater fees paid pursuant to 33 U.S. Code § 1323, *Federal facilities pollution control* in WET. **(T-0)**

6.5. Wastewater Discharges from Aircraft Hangars. Aircraft or vehicles will not be washed or rinsed off in non-corrosion control facilities, corrosion control facilities, or other aircraft hangars unless this specific effluent has been addressed within a NPDES permit application and approved by NPDES authority. **(T-0)** Wastewater from aircraft hangars containing non-petroleum materials or underground containment system or underground storage tank products which do not meet pretreatment standards will not be discharged to pretreatment gravity oil/water separators. Soaps and detergents which emulsify oil such that oil/water separators are ineffective will not be discharged to oil/water separators. If wastewater characterization determines wastewater does not meet requirements for coverage under NPDES or other wastewater permitting authority, the organization must follow appropriate waste disposal requirements per federal, state, and local regulations as well as DAF policy and guidance. **(T-0)**

6.6. Accidental Releases of Fire Fighting Foam Solutions. Do not discharge substances that contain PFAS. **(T-0)** Release of firefighting solutions from the test activation of fire suppression systems, fire vehicle chemical discharges, firefighting training discharges, and accidental discharges will be captured, contained, and disposed of in accordance with current DAF and DoD guidance and applicable regulatory requirements. **(T-0)** Prior to discharge to the sanitary sewer, obtain approval of the receiving publicly or federally owned treatment works. Firefighting foam of all types will not be released to stormwater conveyance structures. Overseas installations will refer to water discharge permits issued by recognized host nation governments or authorities. **(T-0)** See AFI 32-7001 on release reporting requirements.

6.7. Other Wastewater and Stormwater Discharges. Installations must ensure wastewater and stormwater discharges associated with industrial activities (such as aircraft birdbaths, aircraft deicing operations, firefighting training operations) are authorized by federal, state, or local agencies as required by applicable NPDES regulations. **(T-0)**

Chapter 7

LIQUID FUELS SYSTEMS

7.1. Design. Liquid fuel systems must be designed in accordance with UFC 3-460-01, *Design: Petroleum Fuel Facilities*. (T-0)

7.1.1. Fueling And Defueling Operations Inside Structures. Requirements of paragraphs 7.1.1.1 through 7.1.1.3 must be met prior to operations of systems including R-11 and R-12 fuel trucks or pantograph systems that support performance of aircraft fuel servicing inside of structures.

7.1.1.1. Prior to operations, there must be a documented designation of the specific facility as a required military-unique exception to the National Fire Protection Association (NFPA) standards, approved by AF/A4. (T-1) Previous listing of a facility in T.O. 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, previous design documents, or implied approval from interpretations of T.O. 1-1-3, *Inspection and Repair of Aircraft Integral Tanks and Fuel Cells*, do not fulfill this requirement. The approval document must be filed in the Real Property record. (T-1)

7.1.1.2. The construction of the structure where servicing will take place must adhere to relevant UFCs and technical orders.

7.1.1.3. Completion and documentation of the SSEA required by DAFMAN 91-203. must be ensured. (T-1)

7.2. Operation and Maintenance. Liquid fuel system facilities must be operated and maintained in accordance with UFC 3-460-03, *Petroleum Fuel Systems Maintenance*. (T-1)

7.2.1. The LRS FMT will operate fuels systems per DAFI 23-201 and appropriate technical orders and DoD directives to provide a quality product.

7.2.2. **Table 7.1** lists installations where 3E4X1A military positions are assigned and the separated Liquid Fuels Maintenance (LFM) Section must be staffed with 3E4X1A personnel. Civil Service fuels system maintenance position descriptions authorized to support units assigned 3E4X1A will be in the LFM Section that has a dedicated work center used to keep personnel proficient.

7.2.2.1. Commanders at bases outlined in **Table 7.1** must ensure 3E4X1A positions are filled with personnel qualified and awarded that Air Force Specialty Code (AFSC). (T-1)

7.2.2.2. The CFETP3E4X1, *Water and Fuel Systems Maintenance and Liquid Fuels Maintenance Specialties Career Field Education and Training Plan*, identifies the minimum requirements for the commander to approve award of AFSC to members required to fill positions.

7.2.3. Installations with no Type I, II, III, IV, V or similar pressurized hydrant systems do not require specifically qualified 3E4X1A personnel but will assign 3E4X1 or Civil Service technicians within the Water Fuels Systems Maintenance Shop to execute LFM responsibilities in **paragraph 7.3**.

7.2.4. Contracted, Civil Service, and military liquid fuels maintenance section personnel must be qualified to perform systems maintenance tasks called out in UFC 3-460-03. (T-1)

7.2.5. Fundamental enhancement seminars identified in [Attachment 5](#), require a minimum of one LFM representative per civil engineer unit to attend. **(T-1)**

7.3. LFM Responsibilities. LFM tasks must be accomplished using the two-person concept to ensure complete safety in and around fuel facilities. **(T-1)**

7.3.1. Provide overall quality assurance for all inspections, repairs, periodic maintenance, and modifications to petroleum systems under LFM jurisdiction, including inspection of work done by other BCE shops and contractors.

7.3.2. Assist CE/CEN and the LRS FMT preparing and maintaining flow diagrams and schematics for all systems and developing the sequence of operations for the systems.

7.3.3. Ensure assigned fuel infrastructure as-built drawings are current and include changes made to the system either in-house or by contract services. Updates to GeoBase may be necessary (GIS Utilities Data).

7.3.4. Review project documents during the design phase, participating in the final inspection and recommending approval/disapproval of contract work.

7.3.5. At installations listed in [Table 7.1](#), the LFM Section will:

7.3.5.1. Maintain and repair facilities with assigned manpower and utilize the Recurring Maintenance and Minor Repair (RMMR) contract only where there is a documented lack of manpower. **(T-1)**

7.3.5.2. Identify all valves both on the charts and on the valve itself by tagging. (T-1) Valve identification is the joint responsibility of the LFM Section and LRS FMT. Valve identification is the joint responsibility of the LFM Section and LRS FMT.

7.3.5.3. Provide technical representatives to support any contracted work on assigned fuel systems. The contracting officer may be from DLA, AFCEC, Naval Facilities Engineering Command (NAVFAC), United States Army Corps of Engineers (USACE), or the installation. The contracting officer:

7.3.5.3.1. Reviews project documents during the design phase.

7.3.5.3.2. Ensures work on fuel systems conforms to regulations and meets the contract technical requirements.

7.3.5.3.3. Participates in the final inspection and recommends approval/disapproval of contract work.

7.3.5.4. Oversee in-house and contract tank cleaning operations.

7.3.5.5. Implement safety procedures:

7.3.5.5.1. Notify the Fuels Service Center before removal of a system component or when the system is opened in a manner that may result in a fuel spill.

7.3.5.5.2. Mechanically close off open fuel lines (blind flange, pipe caps, tube fittings) when any system component is removed or altered and left unattended. Except for double block and bleed valves, a closed valve upstream that is locked or tagged is not considered a positive shutoff and will not substitute for this requirement. When flanges are used to secure the system, all bolts must be installed. **Note:** The individual who

physically removes a component or alters the system is responsible for mechanically closing off open fuel lines prior to leaving the area, thereby ensuring the integrity of the fueling system. When removing components from any system that remains packed with fuel, provide an alternate means of thermal pressure/vacuum relief, if needed. If alternate means are not available, drain the system until work is complete. Depending on the volume, liquid fuel can cause a pressure change of 75 pounds per square inch (psi) inside a container or pipe.

7.3.5.6. Maintain the records within the LFM section:

7.3.5.6.1. Current system schematics and as-built drawings.

7.3.5.6.2. O&M manuals for installed fuel system components.

7.3.5.6.3. Copies of RMMR inspections and service call records, contractor inspection records (e.g., American Petroleum Institute (API) 570, *Piping Inspection Code: In-Service Inspection, Rating, Repair, and Alteration of Piping Systems*; API 653, *Tank Inspection, Repair, Alteration, and Reconstruction*, and leak detection reports). All RMMR preventive maintenance, and work requirements accomplished must be correctly identified/documented with work tasks in NexGen/Joint Programs to ensure system integrity.

7.3.5.6.4. Copy of the Five-Year Planning Study for installed capitalized systems (from AFCEC Strategic Design and Construction Execution Division AFCEC/CFSD contract).

7.3.5.6.5. Inspection schedules and in-house and contracted cathodic protection records.

7.3.5.6.6. Documents to support DLA acceptance of components for capitalization after in-house repair/replacement or contracted services.

7.3.6. Ensure the following are properly input and accounted for in NexGen IT or Joint Base authorized system:

7.3.6.1. Codes to capture DLA capitalized property for proper funding.

7.3.6.2. Preventative Maintenance Task List.

7.3.6.3. Labor accounting for all assigned personnel.

7.3.6.4. Material ordering.

7.4. Tank Entry Requirements.

7.4.1. Tank Entry Supervisor (TES) Certification. The tank entry supervisor is responsible for all aspects of tank entry and must have a Tank Cleaning Certificate of Competency issued by the Air Force Fuels Infrastructure Subject Matter Expert or their delegate. **(T-2)** Submit the following to the Air Force Fuels Infrastructure Subject Matter Expert or their delegate for certification:

7.4.1.1. American Petroleum Institute TES - Tank Entry Supervisors Certification or AETC Tank Entry Supervisor Course completion certificate.

7.4.1.2. Tank Cleaning Experience. List at least two tanks cleaned, including information on dates, sizes, locations, and tank-cleaning supervisor.

7.4.1.3. Medical Evidence. Applicant is physically qualified to perform tank cleaning.

7.4.2. Certification must not exceed five years from the completion date of the Tank Entry Supervisor Course. **(T-0)** The Air Force Fuels Infrastructure Subject Matter Expert or their delegate may approve an extension.

7.4.3. All tank cleaning entries will be treated as confined space entries and performed in accordance with DAFMAN 91-203.

Table 7.1. Installations with 3E4X1A Positions.

Altus Air Force Base	Kunsan Air Base
Andersen Air Force Base	Lajes Field
Aviano Air Base	Little Rock Air Force Base
Barksdale Air Force Base	McConnell Air Force Base
Beale Air Force Base	Minot Air Force Base
Cannon Air Force Base	Misawa Air Base
Davis Monthan Air Force Base	Mountain Home Air Force Base
Dover Air Force Base	Nellis Air Force Base
Dyess Air Force Base	Osan Air Base
Eielson Air Force Base	Royal Air Force Fairford
Ellsworth Air Force Base	Royal Air Force Lakenheath
Fairchild Air Force Base	Royal Air Force Mildenhall
Grand Forks Air Force Base	Ramstein Air Base
Holloman Air Force Base	Seymour Johnson Air Force Base
Joint Base Andrews	Sheppard Air Force Base
Joint Base Charleston	Spangdahlem Air Base
Joint Base Elmendorf-Richardson	Travis Air Force Base
Joint Base Langley-Eustis	Whiteman Air Force Base
Joint Base McGuire-Dix-Lakehurst	Yokota Air Base
Joint Base Pearl Harbor-Hickam	
Kadena Air Base	

Chapter 8

NATURAL GAS SYSTEMS

8.1. Design. Natural gas, liquid natural gas (LNG) and liquefied petroleum gas systems must be designed in accordance with UFC 3-430-05, *Natural Gas and Liquefied Petroleum Gas (LPG) Distribution Pipelines*, which complies with DOT Pipeline and Hazardous Materials Safety Administration and 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*. LPG distribution systems must comply with NFPA 58, *Liquefied Petroleum Gas Code*. LNG plants must comply with NFPA 59A, *Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG)*. Natural gas distribution systems and interior piping must comply with NFPA 54, *National Fuel Gas Code*. **(T-0)**

8.1.1. Buried Piping. Nonmetallic buried piping must have an electrically conductive wire or tape buried within 12 inches (305 millimeters) above the pipe as a means for locating the pipe. **(T-0)** High-density polyethylene pipe specifically manufactured for natural gas or liquefied petroleum gas is the only acceptable nonmetallic material for buried systems.

8.1.2. LPG Containers. LPG containers must comply with NFPA 58. Containers must have pressure relief devices. It must be verified that liquefied petroleum gas containers or pressure vessels meet the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code and American Petroleum Institute minimum requirements. Additionally, it must be verified that these vessels are clearly marked to show compliance with these requirements. Markings must show designed working pressure and capacity. Container content must be identified according to Military Standard (MIL-STD)-101C, *Standard Practice Color Code for Pipelines and for Compressed Gas Cylinders*. Testing dates must be shown on all LPG pressure vessels. **(T-0)** AFCEC Operations Mechanical and Electrical Branch (AFCEC/COSM) can approve use host-nation codes equivalencies to NFPA 58 or ASME Boiler and Pressure Vessel Code.

8.1.3. LPG Gas Propane-Air Mix Plants (PAMP). Propane air mix is also known as synthetic natural gas. Design of propane-air mix plants must comply with NFPA 58 and NFPA 59, *Utility LP-Gas Plant Code*. **(T-0) Plants** must coordinate with the Air Force Fuels Subject Matter Expert at AFCEC/COSM prior to installation or modification. **(T-1)**

8.1.3.1. Propane-air mix plants supplied by liquefied petroleum gas may be installed when economically justified or as standby for systems with interruptible natural gas supply contracts. The original manufacturer's instructions for operation, maintenance, and inspection of this equipment must be followed. **(T-1)**

8.1.3.2. Do not connect any compressed natural gas (CNG) station to output gas from the PAMP. The LPG in the propane-air mix will separate from the air and liquefy when processed by the CNG system, which operates at a much higher pressure than LPG systems. This may damage the CNG system. This may also damage vehicles or equipment designed to operate strictly on CNG.

8.2. Operation and Maintenance. Operate fuel gas systems and perform maintenance on the systems to comply with the air requirements in AFMAN 32-7002 and the operation and maintenance plan developed using the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration, *Small Natural Gas Operator Guide*. **(T-0)** Coordinate with

CE/CEN to prepare and update system maps in the installations GeoBase database per [paragraph 8.3](#) below. Maintain cathodic protection on metallic piping systems. Use the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration, *Small Natural Gas Operator Guide* for shop reference. **(T-0)**

8.2.1. Verify that system-critical (key) valves and other critical components have been maintained and operated as required in the operation and maintenance plan. Key valves must be checked at least once every year to ensure they are operable. **(T-0)**

8.2.2. Installations must accomplish gas leak surveys annually using leak-detection equipment with a maximum time allowed between surveys of 15 months. **(T-0)** Installations must document gas leak surveys on forms like those in Appendix B to U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration, *Small Natural Gas Operator Guide* and report to appropriate authorities as described in AFMAN 32-7002 and kept on file in CE/CEO. **(T-1)** The frequency of inspections may be extended to two years, with approval from the Air Force Fuels SME, AFCEC/COSM, for systems where underground piping is entirely constructed of high-density polyethylene pipe and when no leaks were discovered in the test immediately prior to the current test cycle. Gas lines in highly populated areas of the base must be tested annually regardless of pipe materials. **(T-1)**

8.2.3. All gas on installations must have a distinct odor to allow easy detection in the atmosphere at all gas concentrations from one-fifth of the lower explosive limit and above. **(T-0)** When such gases are not otherwise available, in-house technicians or the gas supplier should add the odorant.

8.3. System Map. The BCE will prepare and maintain a general layout map of the base gas distribution system in the “G” layer of the Installation Development Plan. **(T-1)** The BCE must distribute a complete map to the Fire Chief and all base entities involved in operating and maintaining the gas distribution system. Copies will be updated annually; they must show dates of revisions. **(T-1)** The map will be large enough to show (if applicable).

8.3.1. Regulator locations must be indicated. **(T-1)**

8.3.2. Flow quantities and pressures must be specified. **(T-1)**

8.3.3. All connected loads must be clearly marked. **(T-1)**

8.3.4. Size and material of all mains and services (including the manufacturer’s name, numerical designation, American Society for Testing and Materials number, connectors, and any other available descriptive information) must be provided. **(T-1)**

8.3.5. Locations with respect to streets must be identified. **(T-1)**

8.3.6. Any major structures related to or served by the system must be included. **(T-1)**

8.3.7. Valves and distribution-line regulators must be numbered for identification. **(T-1)**

Chapter 9

STORAGE TANK (AND ASSOCIATED PIPING) ENVIRONMENTAL COMPLIANCE

9.1. Objective. This chapter provides higher headquarters and installations with a framework for complying with regulatory requirements for storage tanks and associated piping that store petroleum and hazardous substances except hazardous and radioactive waste.

9.2. Applicable Standards and Regulations. The DAF complies with applicable federal, state, and local laws and regulations; executive orders; DoD and DAF publications, technical orders, and policies; and, overseas, with the OEBGD, appropriate FGS, international host-nation agreements, and applicable portions of this DAFMAN. Tank operators, organizational tank custodians, and maintainers must implement this DAFMAN in accordance with the Overseas installations will complete tank inventories and inspections as required by the country-specific FGS or OEBGD. **(T-0)** DAF personnel are expected to comply fully with the underlying regulatory requirements of 40 CFR Parts 112 and 280; UFC 3-460-01; UFC 3-460-03; NFPA 30, *Flammable and Combustible Liquids Code*; and applicable state programs. Other requirements may apply to storage tanks under the Clean Air Act; 42 U.S. Code §§ 11001 – 11050, *Emergency Planning and Community Right-to-Know Act*; other environmental laws; Occupational Safety and Health Administration (OSHA) regulations; and the national codes and standards listed in [Attachment 1](#) to this DAFMAN. The description of regulations applicable to storage tanks which follows addresses only the principal requirements and is not intended to be exhaustive. Also, refer to 40 CFR 112 and 40 CFR 280 for exemptions and exclusions. For non-regulated SPCC aboveground storage containers or non-RCRA-I regulated underground storage tanks, the facility must comply with other governing or regulatory requirements (federal, state, or local) or must adhere to best management practices. **(T-0)** Refer to the DAF POL Tank Management Playbook for additional guidance on this chapter.

9.2.1. Underground Storage Tanks.

9.2.1.1. Federal and State Regulations. Federal UST standards are found in 40 CFR Part 280. UST requirements may also be established by states regulating programs authorized by EPA under 40 CFR Part 281. Some states without EPA authorization may have additional UST requirements. Given the broad waiver of sovereign immunity in the federal law, installations must comply with these requirements. **(T-0)** Consult the installation legal office to address any questions regarding applicability of state requirements.

9.2.1.2. Regulated Substances. The RCRA (42 U.S. Code §§ 6901–6992k) addresses underground storage tanks containing regulated substances. Regulated substances are defined by 40 CFR Part 280.12, *Definitions*, and include hazardous substances regulated under 42 U.S. Code §§ 9601–9675 - *Comprehensive Environmental Response, Compensation, and Liability Act*, which are not otherwise regulated as RCRA hazardous waste, as well as petroleum and petroleum-based substances.

9.2.1.3. Spill Prevention, Control, and Countermeasure (SPCC) Plan and Facility Response Plans. The Oil Pollution Prevention Act SPCC Plan and Facility Response Plan requirements, found in 40 CFR Part 112, do not apply to USTs regulated under and complying with applicable portions of 40 CFR Parts 280 and 281. However, underground storage tanks need to be included in the facility diagram and appropriately notated [as provided in 40 CFR Part 112.7(a)(3), *General Requirements for Spill Prevention, Control,*

and Countermeasure Plans], or if the EPA Regional Administrator otherwise requires the underground storage tanks to be included in the SPCC Plan [as provided in 40 CFR Part 112.1(f)]. Section 311(j) of the *Clean Water Act* requires facilities that could potentially cause “substantial harm” to their surrounding environments by discharging oil to develop and implement a Facility Response Plan. 40 CFR Part 112 defines facilities with this harmful potential.

9.2.1.4. Clean Air Act. Requirements in 40 CFR Part 60, Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984*, apply to underground storage tanks.

9.2.2. Aboveground Storage Tanks.

9.2.2.1. The Spill Prevention, Control, and Countermeasures (SPCC) Plan and Facility Response Plan requirements in paragraphs 9.2.2.1.1 and 9.2.2.1.2 apply to installations located where a discharge could reasonably be expected to reach navigable waters (including sewer pathways) unless both: (1) the completely buried storage capacity of the installation facility has a total aggregate of 42,000 gallons or less of oil, and (2) the total aggregate aboveground storage capacity of the installation is 1,320 gallons or less of oil. Containers 55 gallons or larger that store petroleum, oil, or lubricants are subject to SPCC regulatory requirements are included in the total volume for the installation in determining applicability. Refer to the EPA definition of ‘oil’ in [Attachment 1, Terms](#).

9.2.2.1.1. 40 CFR Part 112.3 requires preparation of an SPCC Plan. The SPCC Plan details the training, equipment, workforce, procedures, and steps to prevent, control, and provide adequate countermeasures for a potential discharge. 40 CFR Parts 112.3 – 112.8 provides requirements for preparing an SPCC Plan.

9.2.2.1.2. A facility’s location must determine, in accordance with 40 CFR Part 112.20, *Facility Response Plans*, whether a spill of oil could cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines (does not apply in overseas locations). **(T-0)**

9.2.2.1.2.1. If the installation (“facility” as defined by 40 CFR Part 112) determines it meets the substantial harm criteria, it must prepare a Facility Response Plan as provided in 40 CFR Part 112, Appendix F, *Facility Response Plans*, or as required by the EPA Regional Administrator (does not apply in overseas locations). **(T-0)**

9.2.2.1.2.2. If the installation (“facility” as defined by 40 CFR Part 112) determines it does not meet the substantial harm criteria, it will complete and maintain certification that the criteria do not apply. **(T-0)** Even if substantial harm criteria are not met, the EPA Administrator has the discretion to require a Facility Response Plan (does not apply in overseas locations).

9.2.2.2. Aboveground storage tanks containing used oil, as defined 40 CFR Part 279.1, *Standards for the Management of Used Oil - Definitions*, must also meet the applicable RCRA used oil management requirements of 40 CFR Part 279 (does not apply in overseas locations). **(T-0)**

9.2.2.3. In accordance with 40 CFR Part 112, SPCC Plans must include schedules and requirements defined for “periodic” inspections of factory-fabricated aboveground storage tanks (see [paragraph 9.8.5.](#)). 40 CFR § 112.3 (d) (1) (iii), *Requirement to prepare and implement a Spill Prevention, Control, and Countermeasure Plan* also requires the SPCC plan to be prepared in accordance with good engineering practice, including consideration of applicable industry standards. **(T-0)** A professional engineer must certify Tier II SPCC plans to ensure the plan was prepared with good engineering practice. **(T-0)**

9.2.2.4. Requirements in 40 CFR Part 60, Subpart K, and 40 CFR Part 81, *Designation of Areas for Air Quality Planning Purposes*, apply to aboveground storage tanks (to include shop and field-erected tanks) as pertinent (does not apply in overseas locations).

9.2.2.5. Aboveground storage tanks (ASTs) are generally subject to Clean Water Act requirements. Some tanks that appear to be "aboveground," however, may fit the regulatory definition of underground storage tanks (USTs). "Underground storage tank" is defined in 40 CFR 280.12 to include "any one or combination of tanks (including underground pipes connected thereto...the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground." All tanks must be examined to determine whether they are regulated as ASTs or USTs and managed according to the applicable regulatory requirements. Note: Several state and local regulators have different approaches for regulating underground storage tanks, aboveground storage tanks, and associated piping. For example, some states require all piping to be removed if a tank is removed, while this requirement may not apply in another jurisdiction. Partially buried tanks will be subject to both UST and SPCC requirements. **(T-1)**

9.2.3. State and Local Regulations. States may adopt or enact storage tank regulations if those regulations are at least as stringent as federal storage tank regulations. Installations must comply with state or local underground storage tank regulations, and aboveground storage tank requirements where sovereign immunity has been waived. **(T-1)** Installations will consult with the installation legal office to obtain guidance on whether state or local regulations apply to installation aboveground storage tanks. **(T-1)**

9.2.4. Construction and Operation Criteria. Construction and operation of petroleum storage tanks is governed by UFC 3-460-01, UFC 3-460-03, DoD Standard Design AW 78-24-27, *Aboveground Vertical Fuel Tanks with Fixed Roofs*, and other sources, including some national codes and standards listed in [Attachment 1](#).

9.3. Tank Ownership and Operator Definitions.

9.3.1. Real Property or Real Property Installed Equipment (RPIE) tanks. These tanks are stand-alone, permanently fixed structures with greater than 55-gallon capacity that store petroleum products.

9.3.1.1. The BCE, through the Real Property Office, is the owner of all Real Property and RPIE tanks, including RPIE tanks supplying utility plant heat or power generation. The BCE uses assigned or contract personnel to perform systems maintenance tasks identified in UFC 3-460-03.

9.3.1.2. The LRS FMT is the operator of petroleum storage tanks for the DLA capitalized product and requirements identified in DAFI 23-201. The FMT uses assigned or contract

support personnel to perform operator maintenance tasks per technical orders, DAF guidance, and UFC 3-460-03.

9.3.1.3. Organizational tanks are stand-alone storage tanks 55 gallons or larger established by a unit to store petroleum that is not DLA capitalized product (e.g., product has been purchased from FMT or via DLA contract). Organizational tanks are personal property owned and operated by the specific unit/organization. The organizational tanks must be inventoried and recorded by the BCE in STAR. **(T-1)** The tanks are owned and operated by the organization. Tanks that are integral to and part of the design of specific equipment are not considered organizational tanks. For example, a portable generator with a 60-gallon fuel tank as part of its inherent design is not considered an organizational fuel tank, but feeder and/or expansion tanks connected to or modified to an integral tank are considered an organizational tank. There are three major types of organizational storage tanks:

9.3.1.3.1. Support tank: Any tank physically connected by fixed piping to a consuming facility or an installed piece of equipment (e.g., generators, hush houses, fuel test cell). A subbase or “belly” tank for a generator is a support tank.

9.3.1.3.2. Portable tank: Any movable (non-stationary) tank used for mobility maintenance, research and development, or similar purpose.

9.3.1.3.3. Issue tank: Any tank used to dispense fuel to vehicles, mobile trailers, ground support equipment, or portable containers.

9.3.2. Army Air Force Exchange Services (AAFES) Service Station Tanks.

9.3.2.1. AAFES is the operator of all aspects of their service stations.

9.3.2.2. USTs and appurtenances, up to the shear valve below the dispenser, are considered DAF Real Property. Tank gauging equipment needed to meet environmental requirements is also categorized as RPIE, and maintenance of these systems is the responsibility of the BCE.

9.3.2.3. Aboveground storage tank appurtenances after the shear valve including but not limited to dispensers, impermeable surface and fuel inventory/gauging are operated and maintained by AAFES. Maintenance of “functionally unique” system components are the responsibility of AAFES per AFI 65-106, Appropriated Fund Support of Morale, Welfare, and Recreation (MWR) and Other Non-Appropriated Fund Instrumentalities (NAFIS); DAFI 32-1020, Planning and Programming Built Infrastructure Projects; DoDI 1015.15, Establishment, Management, and Control of Nonappropriated Fund Instrumentalities and Financial Management of Supporting Resources, [paragraph 4.7](#); <https://www.aafes.com/about-exchange/>; and Army Regulation (AR) 215-8/DAFI 34-110(I), Army and Air Force Exchange Service Operations.

9.4. Budgeting and Funding for Storage Tanks.

9.4.1. For Real Property or RPIE not included in the DLA Capitalized listing, in accordance with DoDM 4140.25V8, Management of Energy Commodities: Energy Commodity Infrastructure Operations, use BCE-managed Facilities Sustainment Repair and Maintenance) or O&M funds to support inspection, maintenance, and repair of tank systems.

9.4.1.1. Projects for storage tanks should be planned for and programmed in accordance with sustainment, restoration, and modernization guidelines in DAFI 32-1020.

9.4.1.2. Program Environmental Quality fund-eligible storage tank requirements in accordance with AFI 32-7001, and the EQ Programming Matrix.

9.4.2. Real Property and RPIE tanks and components that have been identified as accepted by DLA Energy as capitalized, per DoDM 4140.25V8, use DLA Sustainment Repair Modernization, working capital, or DLA MILCON funds to support inspection, maintenance, repair, replacement, operational environmental permits or fees, and other environmental-related costs of tank systems.

9.4.2.1. DLA Energy and AFPET coordinate with the BCE and execute centrally managed programs for inspection, cathodic protection systems, and sustainment project planning for tank systems.

9.4.2.2. Funding for SRM projects or reimbursement for components are made through AFPET designated request processes.

9.4.2.3. Air Force Civil Engineer Center, Environmental Management Directorate (AFCEC/CZ) provides valid environmental funding requirements (e.g., DLA capitalized fuel fair share costs) to DLA through their Regional Support Branch and AFPET via the Enterprise Business System.

9.4.3. Funding authorities for non-appropriated fund activities including AAFES station storage tanks are detailed in AFI 65-106, *Appropriated Fund Support of Morale, Welfare, and Recreation (MWR) and Other Non-Appropriated Fund Instrumentalities (NAFIS)* and DAFI 32-1020.

9.4.4. Organizational tanks are use unit operational funds to support inspection, maintenance, repair and replacement of tank systems.

9.5. POL Storage Tank Compliance CFT.

9.5.1. The installation POL Storage Tank Compliance (STC) Program Manager will lead a POL Storage Tank Compliance CFT that coordinates inspection and reporting responsibilities for all installation units, tenant units, and non-appropriated fund organizations with storage tanks subject to AST environmental regulations for petroleum products (40 CFR Part 112), UST (40 CFR Part 280) and FGS or if no FGS, then OEBGD for overseas installations. The POL Storage Tank Compliance Program Manager will follow the established guidelines. **(T-1)**

9.5.2. At a minimum, the CFT includes personnel from civil engineering operations management, environmental, and fuels maintenance, LRS FMT, units with organizational tanks, and AAFES. All listed organizations will be required to participate in the meetings. **(T-2)** Note: The group commander may appoint a single representative to represent all subordinate units/organizations under the group command.

9.5.3. The CFT will meet at least semi-annually to create and update a CFT Charter that define roles and responsibilities of members. to include who will input inspection results into STAR, which function will provide required training, which member will track training and assigned Tank Custodians. **(T-1)** The meeting will review currency of training to Tank Custodians, the status and results of required tank inspections and deficiencies, and status of corrective actions/repairs. **(T-1)** Report status of tanks and inspections to wing leadership semi-annually. **(T-2)**

9.5.4. The *Department of Air Force POL Tank Management Playbook* contains best practices for the CFT.

9.6. Tank System Requirements. Existing and new tank systems containing oils must comply with 40 CFR Parts 112 or 280, UFC 3-460-01, applicable state and local regulations, and the requirements in this section. **(T-0)** Overseas installations must comply with the FGS or if no FGS exists then OEBGD as well as the requirements listed in this section. **(T-0)** UFC 3-460-01 must be used for UST and AST construction, repair, or modernization. **(T-0)**

9.6.1. Regulatory Agency Notification and Certification for Construction for New Storage Tanks. Civil Engineering ensures the design/construction agent, or its contractor will:

9.6.1.1. Obtain proper notification and certification forms including necessary construction and operating permits from the appropriate regulatory agency. **(T-1)**

9.6.1.2. Send state or local agencies a Notice of Intent or Construction Notification, and required registration documents and fees, if applicable, prior to starting construction or fuel delivery as required by regulatory agencies. **(T-0)**

9.6.1.3. Notify the appropriate regulatory agency of all new ASTs or USTs within the prescribed notification timeline per applicable federal, state, and local regulations before their use. Ensure notification accurately describes the tank system. **(T-0)**

9.6.1.4. Obtain certification from the tank installer that the tank was installed according to applicable codes and standards. Conduct integrity testing in accordance with federal, state, and local regulations and maintain records. Maintain installation certification, registration records, and as-built drawings in appropriate files and authoritative data systems. **(T-0)**

9.6.1.5. Notify the regulator in advance if the installation cannot meet a regulatory deadline. **(T-0)**

9.6.1.6. Anchor all parts of underground and aboveground storage tanks, vaulted tanks, and cylindrical ASTs to prevent floating in floods or dislocation in earthquakes or other conditions. **(T-0)**

9.6.1.7. As-built records of tanks will be provided to the CFT for tracking. **(T-1)**

9.7. Monitoring for Releases.

9.7.1. Tank operators, organizational tank custodians, and maintainers must periodically (as established by the installation SPCC plan) check tank systems for leaks. **(T-1)**

9.7.1.1. Underground Storage Tanks. Tank operators must check leak detection systems every 30 days or per local regulatory agreements to verify proper function per 40 CFR Part 280.41, *Requirements for Petroleum UST systems*. **(T-0)** Remote monitoring systems may be used to check leak detection systems. For non-contiguous or remote sites, UST spill and overfill prevention equipment must be checked/inspected prior to a delivery or at least annually per 40 CFR 280.36(a)(1)(i).

9.7.1.2. Vertical Aboveground Storage Tanks. Tank operators must perform integrity and leak testing when material (major) repairs are accomplished. Major repairs are defined in API 653 and include: removal of the annular plate ring; replacement of the container bottom; jacking of a container shell; installation of a 12-inch or larger nozzle in the shell; replacement of a door sheet; replacement of a tombstone in the shell; other shell repair; or

such repairs that might potentially change the potential for oil to be discharged from the tank. **(T-0)**

9.7.1.3. New and Existing Aviation Fuel Pressurized Piping. Tank operators must perform a line tightness test annually or monitor this piping monthly using a release detection monitoring method that detects 0.1 gallon per hour, reference UFC 3-460-03. **(T-0)**

9.7.1.4. New and Existing Underground Piping for Underground Storage Tanks. Tank operators must perform a line tightness test or use an approved monthly monitoring method in accordance with 40 CFR Part 280, or state and local requirements. **(T-0)**

9.8. Operating, Maintaining and Inspecting Tanks.

9.8.1. Record of Operator Inspections. While managing DLA capitalized product, per DAFI 23-201 and applicable technical orders, LRS FMT must use AFTO Form 39 *to accomplish and record inspections of tanks fuel and other components of the fuels system*. **(T-0)**

9.8.2. Tank Custodian. The unit/organization appointed Tank Custodian must manage and act as the central point of contact for the operation of the organizational tanks. **(T-2)** Trained Tank Custodians must conduct fuel receipt operations, including from commercial vendors, and use AF Form 500, *Daily and Weekly Fuel Record*, to document fuel use to ensure an accurate storage fuel inventory (reported in U.S. gallons). **(T-0)** Report fuel inventory discrepancies to the owning organization commander and BCE for investigation. Report to the POL Storage Tank Compliance Program Manager when there is a change in organizational tank status, such as taken out of service and/or returned to service or when operational condition of the tank changes. **(T-1)**

9.8.3. Corrosion Protection for Steel Underground Storage Tanks and Steel Aboveground Storage Tanks in Direct Contact with Soil. Impressed current cathodic protection systems must be inspected every 60 calendar days and galvanic cathodic protection systems annually by a qualified cathodic protection specialist. **(T-0)** Manage per AFI 32-1001, Chapter 14.

9.8.4. Repairs.

9.8.4.1. 40 CFR Part 280.33(f), *Repairs allowed* to determine whether a specific repair job is allowed, or a replacement is required under federal, state, and local regulations. Tank operators must ensure that qualified personnel licensed by state agencies perform repairs on all USTs when required by state regulations, and authorized inspectors certify repairs performed on ASTs. **(T-0)**

9.8.4.2. Accomplish tightness testing of USTs, including piping, within the state-specified time of completing repairs to any UST or underground piping. **(T-0)**

9.8.4.3. Accomplish integrity testing of a UST, including piping, when major repairs are accomplished on a cathodic protection system before the tank system is returned to service in accordance with 40 CFR Part 280, state, and local requirements. **(T-0)**

9.8.5. Tank Inspections. Inspect tanks following guidance and frequency specified in UFC 3-460-03. Inspect issue and portable organizational tanks at frequencies directed by appropriate technical order or DAF guidance employed by the owning unit.

9.8.5.1. Checklist. Conduct monthly, annual, and periodic inspections using a standard checklist listed in UFC 3-460-03, technical order, an inherent STAR system checklist, or a

form required by the state or jurisdiction regulating the installation. **(T-1)** Checklists must be signed/validated by the tank inspector, electronically or with wet ink, to document inspection activity. **(T-1)** The tank custodian or their designated STAR tank administrator must record/key the environmental compliance assessment into STAR, with supporting documentation as appropriate. **(T-1)**

9.8.5.1.1. Supporting documentation (e.g., checklist, field notes, photos) during field validation/inspection is considered part of the official process and must be uploaded to STAR. **(T-1)**

9.8.5.1.2. Electronic (inherent system) checklists (signed and validated) are an acceptable customary and business practice and will constitute an official record.

9.8.5.1.3. The FMT monthly review of AFTO Forms 39 is used to complete the checklist for monthly compliance inspections of assigned tanks. **(T-1)**

9.8.5.2. Factory-Fabricated and Organizational Tanks.

9.8.5.2.1. The frequency and types of required formal inspections defined by Steel Tank Institute/Steel Plate Fabricators Association Standard SP001 (STI/SPFA SP001), *Standard for the Inspection of Aboveground Storage Tanks*, must be documented in the installation SPCC. **(T-1)**

9.8.5.2.2. Only an STI/SPFA STI SP001 certified inspector will conduct formal internal and external inspections of factory-fabricated tanks. **(T-0)**

9.8.5.2.3. The organizational Tank Custodian will conduct monthly or otherwise directed periodic compliance inspections and document them on the checklist ([paragraph 9.8.5.1](#)). **(T-1)**

9.8.5.2.4. Civil Engineering will direct qualified personnel to conduct annual inspections on fixed tanks, which can be completed concurrent with the monthly inspection and will document each event on the appropriate checklist ([paragraph 9.8.5.1](#)).

9.8.5.2.5. For overseas installations, inspections will be conducted by an authorized inspector in accordance with the FGS for the specific country if different than listed in preceding sections.

9.8.5.3. Field-Erected Tanks.

9.8.5.3.1. Formal external and internal inspections of all field-erected ASTs must be accomplished by a certified inspector in accordance with API 653. **(T-0)** See UFC 3-460-03 for inspection frequencies.

9.8.5.3.2. Dates of API 653 inspections will be documented in the installation SPCC. **(T-0)**.

9.8.5.3.3. Annual inspections will be performed in accordance with UFC 3-460-03 and documented a standard checklist ([paragraph 9.8.5.1](#)). **(T-0)**

9.8.5.4. Underground Storage Tanks.

9.8.5.4.1. A certified Class A or B operator must inspect USTs every 30 days, not to exceed every 35 days, using the checklist required by the implementing regulatory

agency or as discussed in [paragraph 9.8.5.1\(T-0\)](#) Exceptions may apply to frequency of overfill equipment inspections and allowance for remote monitoring of release detection, and review of implementing agency requirements. Class A and B operators are defined in 40 CFR § 280.242, *Requirements for operator training*. For overseas, refer to the country-specific FGS or DoDM 4715.05, Volume 4, Overseas Environmental Baseline Guidance Document: Hazardous Materials, Storage Tanks, Spills, and Pesticides (latest version) if no FGS exists.

9.8.5.4.2. Field constructed tanks and aviation pressurized fuel systems regulated as a UST system must be inspected in accordance with 40 CFR § 280.252, *Additions, exceptions, and alternatives for UST systems with field-constructed tanks and airport hydrant systems*. **(T-0)**

9.8.5.4.3. Aviation fuel pressurized systems that are regulated as part of a UST system must comply with requirements of 40 CFR Part 280, Subpart K, UST Systems with Field-Constructed Tanks and Airport Hydrant Fuel Distribution Systems, and applicable state and local requirements.

9.8.5.5. Tank Equipment Testing. Spill prevention, overfill protection, and release detection equipment must be tested in accordance with 40 CFR § 112.8, *Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities)* and 40 CFR § 280.35, *Periodic testing of spill prevention equipment and containment sumps used for interstitial monitoring of piping and periodic inspection of overfill prevention equipment*. **(T-0)**

9.8.5.6. Vaulted Aboveground Storage Tanks. For AST in subterranean vaults requiring Confined Space Entry Permits, monthly inspections may be performed from outside the vault in accordance with industry practice, and UFC 3-460-03.

9.8.5.7. Tanks at Remote Facilities. For tanks at remote, unmanned facilities or missile sites, inspection intervals may be greater than monthly provided that all applicable environmental, safety, operational, or other inspection requirements (following appropriate technical orders) are met. Per 40 CFR Part 280, inspection frequency will not exceed 12 months.

9.9. Training.

9.9.1. Training of personnel under 40 CFR § 112.7(f), *Personnel, training, and discharge prevention procedures*, is intended to reduce the potential of spills by reducing human error. The regulation allows flexibility in designing training programs that reflect site-specific needs. Oil-handling personnel will be trained in operation and maintenance of equipment to prevent discharges; discharge procedure protocols; pollution control laws, rules, and regulations; general facility operations; and the contents of the facility SPCC Plan.

9.9.2. Personnel training for UST system operators must comply with 40 CFR Part 218, Subpart J, Operator Training, AFI 32-7001; and for overseas requirements, the country-specific FGS or DoDM 4715.05V4 if no FGS exists., **(T-0)**

9.9.3. Operators of USTs must receive UST operator training in accordance with 40 CFR Part 280, Subpart J, Operator Training. **(T-0)**

9.9.4. Unit commanders who operate tanks must ensure their oil-handling personnel obtain annual and/or refresher regulatory required training in specific topics and based on recurring needs. **(T-0)** The POL Storage Tank Compliance CFT will detail how training is provided, and training will be scheduled and recorded by the Unit Training Manager in the appropriate system identified by the POL Storage Tank Compliance CFT. **(T-1)**

9.9.5. Training on SPCC and UST operation is available at installations with a DLA Bulk Storage support contract. Installations coordinate with AFPET and DLA Energy to arrange. Organizational tank operator/custodian training is coordinated with the POL Storage Tank Compliance CFT to ensure consistency and relevant lessons and materials. The DAF Environmental Awareness Course Hub platform is available for standardized (enterprise or installation-specific) virtual training, knowledge quizzes, tracking certification, and centralized reporting.

9.10. Release Response, Cleanup, and Reporting.

9.10.1. Suspected Releases confirm that the Installation POL Storage Tank Compliance Program Manager or CE/CEI must report suspected releases from USTs to regulators within 24 hours per 40 CFR § 280.50, *Reporting of suspected releases*, and appropriately investigate and confirm. **(T-0)** Paragraphs **9.10.1.1** and **9.10.1.2** define suspected releases (does not apply to overseas locations).

9.10.1.1. A suspected release includes the discovery of regulated substances at the UST site or in the surrounding area (such as free product or vapors in soils, basements, sewer and utility lines, and near surface water).

9.10.1.2. A suspected release also includes when the system indicates a release. Mechanical automatic line leak detectors and some electronic line leak detectors may cause unusual operating conditions, such as erratic behavior of dispensing equipment, sudden loss of product from the system, or an unexplained loss of product from detectors signaling a suspected line leak by greatly slowing down the flow of product in the distribution line. These conditions are considered a suspected release unless system equipment is found to be defective but not leaking within the 24-hour period allowed for reporting suspected releases and the equipment is immediately repaired or replaced.

9.10.1.3. The Installation POL Storage Tank Compliance Program Manager or CE/CEI must report monitoring results from a required tank or line release detection method that indicates a suspected release unless the following conditions can be met within the allowed 24-hour period. **(T-0)** These conditions include (1) the monitoring device being found defective and immediately repaired, recalibrated, or replaced; and (2) additional monitoring does not confirm the initial result. **(T-0)**

9.10.1.3.1. If fuel inventory control shows excessive variance (that is, monthly reconciliations using the EPA leak check comparison of book inventories versus tank measurements exceeds 1% of tank throughput plus 130 gallons), FMT or the Organizational Tank Custodian must report a suspected release and follow up if there are two consecutive months of excessive variances. **(T-0)** See 40 CFR § 280.43, *Methods of release detection for tanks, Inventory control*.

9.10.1.3.2. Additional release detection methods are available in 40 CFR Part 280.43.

9.10.2. Responding to Releases. If a release from a tank system is confirmed, coordinate with the Fire Department, Safety, and Bioenvironmental Engineering to identify and mitigate fire, explosion, and vapor hazards. **(T-1)** Report the release as provided in [paragraph 9.10.5](#).

9.10.3. Cleaning Up Releases for Petroleum or Hazardous Substance Tanks (does not apply in overseas locations).

9.10.3.1. For tanks with a RCRA hazardous waste permit, take corrective action in accordance with RCRA Subtitle C requirements (e.g., 40 CFR § 264.101, Corrective action for solid waste management units; 40 CFR § 264.552, Corrective Action Management Units (CAMU); and 40 CFR § 264.553, Temporary Units) and any applicable more stringent state hazardous waste regulations or permit requirements.

9.10.3.2. For tanks **without** a RCRA hazardous waste permit, take immediate corrective action in accordance with 40 CFR Part 280 Subpart F, *Release Response and Corrective Action for UST Systems Containing Petroleum or Hazardous Substances*, and any applicable more stringent state hazardous waste regulations. **(T-0)**

9.10.3.3. For ASTs, take corrective action to clean up releases and make notifications as required in paragraphs [9.10.5](#) and [9.10.6](#) and the SPCC Plan or the Facility Response Plan (FRP).

9.10.3.4. Ensure response resources and spill history are kept up to date in the SPCC Plan in accordance with 40 CFR Part 112. Spill response capabilities must be maintained in accordance with the SPCC Plan/FRP through in-house capability, support agreement, or contract, to ensure all levels of spill scenarios can be addressed. **(T-0)**

9.10.4. Site Remediation. Remediation of petroleum releases from underground or aboveground storage tanks and post emergency response to protect human health and the environment are managed and funded in accordance with DAFI 32-7020, *Environmental Restoration Program*. Site remediation uses Defense Environmental Restoration Account funds. **(T-0)**

9.10.4.1. For overseas installations, follow the remediation policy in DoDI 4715.08, *Remediation of Environmental Contamination Outside the United States*.

9.10.4.2. Fund overseas remediation requirements using Environmental Quality (O&M) funding, if valid. **(T-0)**

9.10.5. Reporting Releases to External Agency. The Civil Engineering Installation Management Flight must notify regulatory agencies consistent with applicable federal, state, and local requirements (see 40 CFR § 355.40(b)(1), *What Information Must I Provide?* or for overseas locations, FGS or OEBDGs, if any). **(T-0)** Notice to a regulatory agency or Host Nation of a release is required (the host nation regulatory agencies overseas must also be notified when the spill reaches open ground, water, or surface water).

9.10.5.1. Releases or discharges of oil or a hazardous substance equal to a regulatory reportable quantity or greater. Other internal DAF reporting is subject to AFI.G133: G134 or commands (e.g., NGB or AFRC). **(T-0)** CEI must report releases to the environment equal to or exceeding the Reportable Quantity to the appropriate regulatory agency. **(T-3)** LRS FMT must report to AFPET and the DLA P-40 *for Defense-Wide Working Capital Fund* (DWWCF) Class III bulk petroleum product releases greater than 25 gallons. **(T-1)**

It is imperative that these reports maintain consistency and that both organizations collaborate, each through separate reports.

9.10.5.2. Any spill or overfill from a UST of petroleum more than 25 gallons (or more stringent local requirements) or of a hazardous substance resulting in a release to the environment equal to or exceeding its reportable quantity. Notification also must be provided within 24 hours or other reasonable time to the appropriate regulatory agency. In accordance with DAFI 23-201, if discharge is over 25 gallons and fuel released DWWCF Class III bulk petroleum products, facilities must submit an incident report to AFPET, and the DLA P-40 spill report form to DLA in accordance with DLA Fuel Spill/Leak reporting policy. **(T-0)** See 40 CFR § 280.53(a), *Reporting and cleanup of spills and overfills*. These two reporting requirements are independent of each other. The responsible Air Force official will not delay a required report to an appropriate regulatory agency to file an appropriate report with DLA. **(T-0)**

9.10.5.3. Any spill or overfill from a UST of petroleum less than 25 gallons, or of a hazardous substance spill resulting in a release to the environment less than its reportable quantity where cleanup cannot be accomplished within 24 hours (or other time established by the implementing agency). Immediately notify the appropriate regulatory agency and submit an incident report to AFPET. **(T-0)** See 40 CFR § 280.53(b).

9.10.6. Notification internal to DAF.

9.10.6.1. The BCE must submit a notification of a confirmed release and provide to AFCEC, other USSF equivalents, and Headquarters, United States Air Force, Directorate of Civil Engineers, Energy and Environment Division according to AFMAN 10-206. **(T-0)** Report releases to Enforcement Actions, Spills, and Inspections Environmental Reporting (EASIER) within 24 hours. LRS FMT reports to AFPET and the DLA P-40 for DWWCF Class III bulk petroleum products more than 25 gal.

9.10.6.2. Overseas locations must report any spill or overfill of petroleum more than 25 gallons or that causes sheen on nearby surface water in EASIER. **(T-1)**

9.10.7. Abatement Action Reporting. Unless otherwise directed by the regulatory agency, Civil Engineering will promptly submit a report detailing initial abatement actions upon confirming a release, in accordance with federal, state, or local requirements. **(T-0)** Note: 40 CFR § 280.62(b), Initial abatement measures and site check mandates submission within 20 calendar days, while 40 CFR § 110, Discharge of Oil, and 40 CFR § 110.6, Notice, stipulate that reports to the National Response Center must be filed "as soon as he or she has knowledge of any discharge." **(T-0)** A detailed follow-up report consistent with federal, state, or local requirements must also be submitted. **(T-0)** Submission within 45 calendar days is required under 40 CFR § 280.63(b) and 40 CFR § 280.64. **(T-0)** This report should include.

9.10.7.1. Name of the installation point of contact.

9.10.7.2. Nature and estimated quantity of release.

9.10.7.3. Surrounding population, water quality, use and locations of potentially affected wells, subsurface soil conditions, locations of sewers, climatic conditions, and land use.

9.10.7.4. Results of initial site check.

9.10.7.5. Cause of release.

- 9.10.7.6. Results of free-product investigation.
- 9.10.7.7. Estimated quantity, type, and depth of any free product.
- 9.10.7.8. Type of recovery system.
- 9.10.7.9. Location of on-site or off-site discharges.
- 9.10.7.10. Type of treatment and effluent quality.
- 9.10.7.11. Steps taken to obtain the necessary permits.
- 9.10.7.12. Methods or plan to recycle, reclaim or dispose of any recovered free product, contaminated soil, or groundwater.

9.11. Record Keeping.

9.11.1. Manage records in accordance with Department of the Air Force standards including AFI 32-7001 and AFI 33-322. Civil Engineers will keep the following records available for inspection at the installation:

9.11.1.1. Tank Inventories. ASTs containing POL products 55 gallons or more subject to SPCC regulations in 40 CFR Part 112, must be entered into STAR. **(T-1)** This includes tanks which are Real Property, RPIE, and organizational equipment.

9.11.1.1.1. CE/CEI or CEIE will maintain the installation storage tank inventory for environmental compliance and make records available for inspection. **(T-0)**

9.11.1.1.2. The POL Storage Tank Compliance Program Manager will ensure STAR is updated when tank systems are added, removed, replaced, upgraded, or closed. **(T-0)**

9.11.1.1.3. Civil Engineering will maintain tank system asset information in Real Property and RPIE records for the installation and reconcile the records annually. **(T-2)**

9.11.1.2. Inspection and Assessment Records.

9.11.1.2.1. Monthly and annual inspection records will be entered into STAR by the responsible office (e.g., Tank Custodian, FMT, Civil Engineering, LRS, BCE) as determined by the POL Storage Tank Compliance CFT. Also, refer to [paragraph 9.8.5.1.1](#) regarding supporting documentation.

9.11.1.2.2. Civil engineers will keep records of cathodic protection system inspections required per AFI 32-1001, adhere to disposition schedule noted in 3.5.5. **(T-1)**

9.11.1.3. Tank repairs and upgrades.

9.11.1.3.1. Underground Storage Tanks. Civil engineers should keep records showing proper repair or upgrade of UST systems. The record of the repairs will be kept for the life of the storage tank, as per 40 CFR § 280.34(b)(4), Repairs allowed., or per disposition schedule noted in [paragraph 3.5.5](#) whichever is greater, Repairs Allowed. **(T-0)** Repairs will be annotated in STAR in addition to the NexGen IT work order. **(T-1)**

9.11.1.3.2. Aboveground Storage Tanks. Civil engineers must keep records showing proper repair or upgrade of Real Property or RPIE AST. **(T-0)** The record of the repairs will be kept for the life of the storage tank, **(T-0)** Tank Custodians will provide records

of any repair to Civil Engineering. Repairs will be annotated in STAR. **(T-1)** Real Property/RPIE work will be entered into NexGen IT.

9.11.1.4. Recent Compliance with Release Detection Requirements. Civil engineers should keep records of leak detection performance and maintenance including:

9.11.1.4.1. Prior year's monitoring results and the most recent tightness test for at least one (1) year, until the next test is performed or per disposition schedule noted in 3.5.5 whichever is greater.

9.11.1.4.2. Copies of performance claims, including third party certifications provided by leak detection equipment manufacturers, for up to 5 years after the useful life of the system, as per 40 CFR § 280.40, *General requirements for all UST systems*, or per disposition schedule noted in [paragraph 3.5.5](#) whichever is greater.

9.11.1.4.3. Records of the most recent maintenance, repairs, and calibration of on-site leak detection equipment for a minimum of 3 years or per disposition schedule noted in [paragraph 3.5.5](#) whichever is greater.

9.11.1.4.4. Monthly monitoring of release detection systems in log entry or annotation on site records such as Automatic Tank Gauging (ATG) printout.

9.11.1.4.5. Response to all leak detection alarms documented in site records.

9.11.1.4.6. Where tank leak detection is performed with an ATG, records of monthly inventory reconciliation should be kept for at least the previous year to demonstrate compliance with 40 CFR §280.43(d)(2) or per disposition schedule noted in 3.5.5 whichever is greater.

9.11.2. Installations will maintain all tank records for 25 years, the operational life of the tank (e.g., life cycle), whichever is longer or per disposition schedule noted in 3.5.5 whichever is greater. **(T-0)** These records should be available for official use.

9.11.3. After closing an underground storage tank, civil engineers must keep records of the site assessment results required for permanent closure for at least three years or per disposition schedule noted in 3.5.5 whichever is greater. **(T-0)**

9.12. Closing Storage Tanks.

9.12.1. Underground Storage Tanks.

9.12.1.1. Temporary Closure. When an underground storage tank system is temporarily closed, per 40 CFR § 280.70, installations must continue to operate and maintain corrosion protection systems. **(T-0)** If the UST is not empty, operation and maintenance of the release detection systems is also required. Monthly and annual inspections must be performed if the system remains connected or inactive. **(T-1)**

9.12.1.1.1. If the underground storage tank system is temporarily closed for three months or more, vent lines must be left open and other lines, pumps, manways, and equipment must be capped and secured. **(T-2)** Some state regulatory agencies may require permits for temporary closures of 3 months or longer. Verify state regulations promptly before proceeding, as permitting requirements can impact actions and can vary from state to state. When a UST system is temporarily closed for more than 12 months, it must undergo permanent closure unless one of the following occurs: **(T-2)**

9.12.1.1.1.1. The UST meets the standards in paragraphs 9.6 and 9.7, except that spill and overflow prevention are not required.

9.12.1.1.1.2. The regulatory agency approves an extension of the 12-month temporary closure period.

9.12.1.2. Permanent Closure. As per 40 CFR § 280.71, notify the regulatory agency before permanently closing a UST system or effecting a change in service consistent with federal, state, or local requirements (e.g., 40 CFR § 280.71(a) requires at least 30-day advance notice). **(T-0)** Determine if the UST system leaked by sampling for a release where fuel contamination was most likely to occur. Basic guidance pertaining to closure procedures is in UFC 3-460-01, Chapter 14, and API Recommended Practice 1604, *Closure of Underground Petroleum Storage Tanks*. **(T-0)**

9.12.1.2.1. If a release is discovered, corrective action must begin as provided in [paragraph 9.10.3](#). **(T-0)**

9.12.1.2.2. If no release is found, empty and clean the tank in accordance with UFC 3-460-03. Manage the materials in accordance with regulatory requirements, in consultation with CE/CEI.

9.12.1.3. Removal and Disposal.

9.12.1.3.1. UST systems must not be closed in place. A UST system subject to closure must be safely removed and disposed of consistent with federal, state, and local requirements. **(T-0)** Once removed and properly disposed of the tank status in STAR must be updated to reflect this action. The tank custodian's unit, whether a wing organization or tenant, is responsible for funding UST removal and disposal, including soil testing. Environmental Quality funds are not to be used for this purpose. In the event of fuel contamination, units will consult with the environmental restoration program (AFCEC, Environmental Management Directorate) for possible cleanup funding. **(T-1)** PFAS-impacted soils are the responsibility of the installation. DLA will fund handling/disposal of capitalized fuel-impacted soils. The removal and disposal cost must be an integrated cost of the closing unit, organization, or tenant. **(T-0)**

9.12.1.3.2. USTs may be closed in place only under extenuating circumstances (for example, a UST or associated piping located under a building, under an active runway, or similar) if regulatory and AFCEC approval is obtained. Closed in-place UST infrastructure will be properly documented, and via the web app in the Air Force Geospatial Information Management System Fuels Operational Status Layer at <https://maps.af.mil/geoportal/apps/webappviewer/index.html?id=fd15226aaea6466cae35f0ff6278233e>. Installations must manage USTs closed in-place in accordance with UFC 3-460-01, Chapter 14, 40 CFR § 280.71(b), state and local regulatory requirements. **(T-0)** Final closure documents will be uploaded to STAR for archiving tank system record in addition to the normal business practices. **(T-0)**

9.12.2. Installations ensure that aboveground Storage Tanks

9.12.2.1. Meet federal, state, and local regulatory requirements for temporary deactivation and permanent closure. Overseas ASTs inactivated for 12 months or longer must be disconnected to prevent loading or unloading of petroleum products. See UFC 3-460-01, Chapter 13, for temporary deactivation. **(T-0)**

9.12.2.2. Follow UFC 3-460-01, Chapter 14, for permanent removal and deactivation of ASTs. Once removed and properly disposing of the tank system (including piping), tank status in STAR must be updated to reflect this action. Retain records in STAR. **(T-0)**

TOM D. MILLER, Lieutenant General, USAF
DCS/Logistics, Engineering & Force Protection

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

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29 CFR Part 1910, *Occupational Safety and Health Act (OSHA)*

29 CFR Part 1928, *Safety and Health Regulations for Agriculture*

33 CFR Part 154, *Transferring Oil or Hazardous Material in Bulk*

16 U.S. Code §§ 1531 – 1544, *The Endangered Species Act (ESA)*

33 U.S. Code §§ 1251–1389 - *Clean Water Act (CWA)* and the *Safe Drinking Water Act (SDWA)*

33 U.S. Code §§ 1323, *Federal facilities pollution control*

33 U.S. Code §§ 2701 – 2762 et seq., *Oil Pollution Prevention Act (OPPA)*

42 U.S. Code §§ 300f – 300j-27, *Safe Drinking Water Act (SDWA)*

42 U.S. Code §§ 6901 – 6992k, *Resource Conservation and Recovery Act (RCRA)*

42 U.S. Code §§ 7401 – 7671q, *Clean Air Act, Oil Pollution Prevention Act, Resource Conservation and Recovery Act*

42 U.S. Code §§ 9601–9675, *Comprehensive Environmental Response, Compensation, and Liability Act*

42 U.S. Code §§ 11001 – 11050, *Emergency Planning and Community Right-to-Know Act*

42 U.S. Code § 17094, *Storm water runoff requirements for Federal development projects*

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40 CFR Part 60, *Standards of Performance for New Stationary Sources*

40 CFR Part 60, Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984*

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40 CFR § 112.7(a)(3), *General Requirements for Spill Prevention, Control, and Countermeasure Plans*

40 CFR § 112.7 (f), *Personnel, training, and discharge prevention procedures*

40 CFR Part 112, Appendix F, *Facility Response Plan*

40 CFR § 112.8, *Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities)*

40 CFR § 112.20 *Facility Response Plans*

40 CFR Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System*

40 CFR § 122.22, *Signatories to permit applications and reports*

40 CFR v 122.26, *Stormwater discharges*

40 CFR § 122.41, *Conditions applicable to all permits*

40 CFR § 123.25, *Requirements for permitting*

40 CFR § 141.84, *Lead service line replacement requirements*

40 CFR § 279.1, *Standards for the Management of Used Oil*

40 CFR § 130, *Water Quality Planning and Management*

40 CFR § 264.101, *Corrective action for solid waste management units*

40 CFR § 264.552, *Corrective Action Management Units (CAMU)*

40 CFR §v264.553, *Temporary Units*

40 CFR § 280 *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)*

40 CFR § 280 Subpart F, *Release Response and Corrective Action for UST Systems Containing Petroleum or Hazardous Substances*

40 CFR § 280 Subpart J, *Operator Training*

40 CFR § 280.242, *Requirements for operator training*

40 CFR § 280.12, *Definitions*

40 CFR § 280.33(f), *Repairs allowed*

40 CFR § 280.62(b), *Initial abatement measures and site check*

40 CFR § 280.35, *Periodic testing of spill prevention equipment and containment sumps used for interstitial monitoring of piping and periodic inspection of overfill prevention equipment*

40 CFR § 280.40, *General requirements for all UST systems*

40 CFR § 280.41, *Requirements for Petroleum UST systems*

40 CFR § 280.43(a), *Methods of release detection for tanks, Inventory control*

40 CFR § 280.50, *Reporting of suspected releases*

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40 CFR § 280.70, *Temporary closure*

40 CFR § 280.71, *Permanent closure and changes-in-service*

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40 CFR § 355.40(b)(1), *What Information Must I Provide?*

40 CFR § Chapter I, Subchapter N (Parts 401-471), *Effluent Guidelines and Standards*

40 CFR § 503, *Standards for the Use or Disposal of Sewage Sludge*

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40 CFR § 280.250, *Definitions, through 252, Additions, exceptions, and alternatives for UST systems with field-constructed tanks and airport hydrant systems*

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International Plumbing Code® (IPC®)

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NFPA 59, *Utility LP-Gas Plant Code*

NFPA 59A, *Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG)*

NFPA 407, *Standard for Aircraft Fuel Servicing*

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Unidirectional Flushing (UDF), *Guide for Water Distribution Systems*

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AFCEC, *Utilities Privatization Playbook*

AFCEC, *Clean Water Act Playbook*

AFCEC, *Department of Air Force POL Tank Management Playbook*

AFCEC, *Sustainment Management Systems (SMS) Playbook*

AFCEC, *Unidirectional Flushing (UDF) Program Guide*

Office of Primary Responsibility. AF/A4CF

Prescribed Forms

AF Form 843, *Backflow Prevention Device Inspection Data*

AF Form 845, *Cross Connection Information*

AF Form 848, *Inventory of Cross-Connection Control and Backflow Prevention Devices*

AF Form 997, *Daily Well Activity Record*

AF Form 998, *Daily Pumping Station Activity Record – Water*

AF Form 1460, *Water Utility Operating Log (Supplemental)*

AF Form 1461, *Water Utility Operating Log (General)*

AF Form 1462, *Water Pollution Control Utility Operating Log (General)*

Adopted Forms

AF Form 483, *Certificate of Competency*

AF Form 500, *Daily and Weekly Fuel Record*

DAF Form 847, *Recommendation for Change of Publication*

AFTO Form 39, *Fuel System Inspection and Discrepancy Report*

DD Form 1391, *FY__ Military Construction Project Data*

DD Form 2678, *Well Driller's Log*

DD Form 2679, *Piping and Casing Log*

DD Form 2680, *Military Water Well Completion Summary Report*
DLA P-40, *Fuel Spill Leak Release Reporting*

Abbreviations and Acronyms

AAFES—Army Air Force Exchange Service

AETC—Air Education and Training Command

AF—Air Force (as used on forms)

AFI—Air Force Instruction

AFIMSC—Air Force Installation and Mission Support Center

AFPD—Air Force Policy Directive

AFPET—Air Force Petroleum (Office)

AFRC—Air Force Reserve Command

AFSC—Air Force Specialty Code

API—American Petroleum Institute

ASME—American Society of Mechanical Engineers

ASSE—American Society of Sanitary Engineering

AST—aboveground storage tank

ATG—Automatic Tank Gauging

AWWA—American Water Works Association

BCE—Base Civil Engineer

BEE—Bioenvironmental Engineer

BMP—Best Management Practice

CE—Civil Engineer (Group/Squadron/Flight or Division)

CFR—Code of Federal Regulations

CFT—Cross Functional Team

CNG—compressed natural gas

CWA—Clean Water Act

DAF—Department of the Air Force

DAFI—Department of the Air Force Instruction

DAFMAN—Department of Air Force Manual

DCPH-D—Defense Centers for Public Health - Dayton

DLA—Defense Logistics Agency

DoDM—Department of Defense Manual

DOT—Department of Transportation
DWWCF—Defense-Wide Working Capital Fund
EASIER—Enforcement Actions, Spills, and Inspections Environmental Reporting
EPA—Environmental Protection Agency
FGS—Final Governing Standards
FMT—Fuels Management Team
FLDCOM—Field Command
FRP—Facility Response Plan
GIS—Geospatial Information System
IPC®—International Plumbing Code®
LFM—Liquid Fuels Maintenance
LNG—liquified natural gas
LPG—liquefied petroleum gas
LRS—Logistics Readiness Squadron
MAJCOM—Major Command
MDS—Mission Design Series
MILCON—military construction
MIL-STD—Military Standard
NFPA—National Fire Protection Association
NGB—National Guard Bureau
NPDES—National Pollutant Discharge Elimination System
O&M—Operation and Maintenance
OCONUS—Outside the Continental United States
OEBGD—Overseas Environmental Baseline Guidance Document
OPPA—Oil Pollution Prevention Act
OPR—Office of Primary Responsibility
OSHA—Occupational Safety and Health Act
PAMP—propane-air mix plants
PFAS—per and polyfluoroalkyl substances
POL—petroleum, oils, and lubricants
psi—pounds per square inch
RCRA—Resource Conservation and Recovery Act

RMMR—Routine Maintenance Minor Repair
RPIE—Real Property Installed Equipment
SDWA—Safe Drinking Water Act
SPCC—Spill Prevention, Control, and Countermeasures
SRM—Sustainment Restoration and Modernization
SSEA—System Safety Engineering Analysis
STAR—Storage Tank Accounting and Reporting
STI/SPFA—Steel Tank Institute/Steel Plate Fabricators Association
STC—Storage Tank Compliance
SWPPP—Stormwater Prevention Pollution Plans
TES—Tank Entry Supervisor
TMDL—Total maximum daily load
U.S.—United States
UDF—unidirectional flushing
UFC—Unified Facilities Criteria
UPC®—Uniform Plumbing Code®
USAFSAM—U.S. Air Force School of Aerospace Medicine
USSF—United States Space Force
UST—underground storage tank
WET—Water Enterprise Tracking

Office Symbols

AF/A3—Deputy Chief of Staff, Operations, Plans and Requirements
AF/A4—Deputy Chief of Staff, Logistics, Engineering and Force Protection
AF/A4C—Director, Civil Engineers
AF/JA—Air Force Judge Advocate General's Corps
AF/JAOE-ULFSC—The Judge Advocate General's Corps Utility Law Field Support Center
AF/JAOE—The Judge Advocate General's Corps Environmental Law and Litigation Division
AF/JAOE-FSC—The Judge Advocate General's Corps Environmental Law Field Support Center
AF/SG—Air Force Surgeon General
AFCEC—Air Force Civil Engineer Center
AFCEC/CFSD—AFCEC Strategic Design and Construction Execution Division
AFCEC/CIUU—AFCEC Utilities Privatization Branch

AFCEC/COSM—AFCEC—Engineer Division, Mechanical Electrical Branch, Subject Matter Expert

AFCEC/CZ—Air Force Civil Engineer Center, Environmental Directorate

AFMSA/SG3PB—Air Force Medical Support Agency, Bioenvironmental Engineering Branch

AF/SE—Air Force Chief of Safety

CE/CEI—Civil Engineer (Group/Squadron) Installation Management Flight

CE/CEIE—Civil Engineer (Group/Squadron), Installation Management Flight, Environmental Element

CE/CEO—Civil Engineer Group/Squadron), Operations Flight

CE/CEN—Civil Engineer (Group/Squadron), Engineering Flight

SAF/IE—Assistant Secretary of the Air Force Energy, Installations, and Environment

Terms

Aboveground Storage Tank—An unburied storage tank, such as a bulk storage tank, and includes any aboveground container containing oil, as provided in 40 CFR Part 112.1(b)(1), *General applicability*, current edition or bunkered tank or partially buried tank as defined in 40 CFR Part 112.2.

Asset Management—A way to translate the Air Force’s objectives into asset-related decisions and plans. Effective asset management requires understanding assets’ physical attributes, condition, usage, and performance as well as the realized and potential value to the mission. When applied correctly, asset management balances risk, current and future Air Force objectives, resource limitations, and lifecycle management.

Best Management Practices—Schedules of activities, prohibitions of practices, maintenance procedures, and adaptive management practices to prevent or reduce the discharge of pollutants to waters. Best management practices also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage, and the use of climate-appropriate landscaping (such as xeriscaping, rain gardens and low-impact development techniques) that help restore the natural hydrology of the land.

Bulk Storage Tank—Has the same meaning here as “bulk storage container” in 40 CFR Part 112.2. An aboveground storage tank, of 55 gallons or greater capacity, used to store oil, including the storage of oil prior to use, while being used, or prior to further distribution in commerce. Oil-filled electrical, operating, or manufacturing equipment is not a bulk storage container.

Class V Injection Well—A shallow well used to place a variety of fluids at shallow depths below the land surface, including a domestic onsite wastewater treatment system serving more than 20 people. EPA permits these wells to inject wastes below the ground surface, provided they meet certain requirements and do not endanger underground sources of drinking water.

Contingency Location—A non-enduring location outside of the U.S. that supports and sustains operations during named and unnamed contingencies or other operations as directed by appropriate

authority and is categorized by mission life-cycle requirements as initial, temporary, or semi-permanent.

Discharge Monitoring Report—The form used (including any subsequent additions, revisions, or modifications) to report self-monitoring results by a National Pollutant Discharge Elimination System (NPDES) permit holder. Reports are submitted to authorized states, territories, or the EPA.

Domestic Wastewater—Wastewater that contains human wastes and wastewater from food preparation, laundry, bathing, and similar activities. Domestic wastewater typically includes wastewater from housing units and wastewater from commercial or industrial facilities that is like that from housing units. Domestic wastewater does not include industrial process wastewater.

Enduring Location—A location is enduring when the Department of Defense (DoD) intends to maintain access and use of that location for the foreseeable future. The following types of sites are considered enduring for U.S. Government purposes: main operating base, forward operating site, and cooperative security location.

Enforcement Action—A formal, written notification by the EPA or other authorized federal, state, interstate, regional, or local environmental regulatory agency of violation of any applicable statutory or regulatory requirement.

Facility Response Plan—A plan required to be prepared IAW 40 CFR, Part 112.20 by an owner or operator of a non-transportation related facility that, because of its location, reasonably can be expected to cause substantial harm to the environment through the discharge of oil into or on navigable waters or adjoining shorelines.

Final Governing Standards—The primary definitive set of environmental criteria and standards applicable to DoD components located overseas at enduring installations and facilities. The Final Governing Standards are developed by the lead environmental component for a specific country and incorporate provisions of minimum standards established by DoD in the Overseas Environmental Baseline Guidance Document and those of the Host Nation where the U.S. installation or facility is located.

General Permit—A National Pollutant Discharge Elimination System (NPDES) permit that covers several facilities that have the same type of discharge and are in a specific geographic area. A general permit applies the same or similar conditions to all dischargers covered under the general permit. Using a general permit to cover numerous facilities reduces paperwork for permitting authorities and permit holders and ensures consistency of permit conditions for similar facilities.

Host Nation—A nation other than the U.S. that which receives the force or supplies of allied nations or North Atlantic Treaty Organization member or partners, the former force or supplies to be located on, to operate in, or to transit through its territories.

Individual Permit—A National Pollutant Discharge Elimination System (NPDES) permit specifically tailored to the types of discharges from an individual facility. Once a facility submits the appropriate application(s), the permitting authority develops a permit for that facility based on the information contained in the permit application (e.g., type of activity, nature of discharge, receiving water quality). **Note:** For individual permits, wastewater treatment plants can be found in the EPA's Electric, Gas, and Sanitary Services category.

Industrial Wastewater—Wastewater from industrial activities such as electroplating, metal finishing, aircraft maintenance, corrosion control, vehicle maintenance, and other industrial processes at Air Force installations.

Infiltration—Groundwater that leaks into wastewater collection systems due to leakage through pipe breaks or joints.

Inflow—Stormwater flow into wastewater collection systems.

Installation—An enduring location consisting of a base, camp, post, station, yard, center, or other DoD activity under the operational control of the Secretary of a Military Department or the Secretary of Defense.

Installation Support Section—The AFCEC Installation Support Section is part of Air Force Civil Engineer Center, located in San Antonio, Texas. The AFRC and NGB maintain their MAJCOM functions and responsibilities for environmental programs; no Installation Support Sections are assigned to AFRC and NGB commands.

Large-Capacity Cesspool—A cistern, well, or pit for retaining the sediment of a drain or for receiving untreated domestic sewage. A cesspool is not designed for receiving industrial wastewater. EPA regulations required all existing large-capacity (typically serving 20 or more persons) cesspools to be closed and replaced with an alternative wastewater system by April 5, 2005. Since 2000, the EPA has prohibited the construction of new large-capacity cesspools nationwide. The regulations do not allow an extension of the deadline.

Lift Station—A wastewater collection system component pumping wastewater from a gravity sewer to a sewer or treatment plant at a higher elevation.

Major Lift Station—A pump station that, if it fails to operate as designed, will cause non-compliance with wastewater regulations and degrade mission operations.

Municipal Separate Storm Sewer System—A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains), owned and operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the Clean Water Act that discharges to waters of the U.S. See 40 CFR Part 122.26(b) (8) for the complete definition.

National Pollutant Discharge Elimination System (NPDES)—A national program under Section 402 of the *Clean Water Act* for regulating pollutant discharges from point sources to waters of the U.S. Discharges are illegal unless authorized by a NPDES permit.

Non-point Source—A pollutant source that does not meet the definition of “point source.” Non-point source pollution generally results from land runoff, atmospheric deposition, drainage, or seepage.

Notice of Intent—An application to notify the permitting authority of a facility’s intention to be covered by a general permit.

Notice of Termination—An application used to notify the permitting authority of a facility’s termination of coverage under a general permit.

Oil—Has the meaning provided for “oil” in 40 CFR Part 112.2. It generally includes crude oil, fuel oil, gasoline, jet fuel, mineral oil, sludge, oil refuse, greases, oil mixed with wastes other than dredged spoil, or any other kind or form of oil. However, “oil” as used in this DAFMAN does include “animal oils” such as animal, fish, or marine mammal fats; oils, or greases; and “vegetable oils” such as oils from seeds, nuts, fruits, or kernels to the extent that the latter oils are stored in tanks on Air Force installations.

Overseas—Any geographic area outside the legal jurisdiction or exclusive management authority of the U.S.; any area outside the U.S. (e.g., foreign countries and territories).

Overseas Environmental Baseline Guidance Document (OEBGD)—The Overseas Environmental Baseline Guidance Document is a set of objective criteria and management practices developed by DoD, pursuant to DoDI 4715.05, *Environmental Compliance at Installations Outside the United States*. It specifies the minimum criteria for environmental compliance at DoD installations and other enduring locations overseas where no Final Governing Standards have been established. It is designed to protect human health and the environment and reflects generally accepted environmental standards applicable to DoD installations and activities in the United States. The Overseas Environmental Baseline Guidance Document is used to develop and update country-specific Final Governing Standards for all DoD components located in that Host Nation.

Oil/Water Separator—A device designed to separate gross amounts of oil and suspended solids from the wastewater effluents of oil refineries, petrochemical plants, and other industrial sources. Gravity oil/water separators are designed to separate free oil from waste streams and cannot remove non-petroleum materials, emulsified or soluble petroleum, and detergent solutions.

Point Source—Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant—Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the *Atomic Energy Act of 1954*, as amended (42 USC 2011 et seq.), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water (40 CFR Part 122.2, *Definitions*).

Pretreatment—The reduction of the amounts of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a treatment works (40 CFR Part 403.3(q)).

Publicly Owned Treatment Works—A treatment plant belonging to a state, county, regional agency, or municipality that treats domestic wastewater or pretreated industrial wastewater.

Responsible Official—The responsible official for National Pollutant Discharge Elimination System (NPDES) permits is the Air Force installation commander. All permit applications, reports,

and forms must be signed or certified by the installation commander except to the extent delegations are authorized under applicable federal or state requirements.

Septic System—A septic system is a septic tank and a trench or bed surface/subsurface wastewater infiltration system typically of a small scale. Septic systems are common in areas with no connection to main sewerage pipes. Air Force policy is to eliminate septic systems where practical and connect to sanitary treatment works via sewage collection pipes.

Spill Prevention, Control, and Countermeasures (SPCC) Plan—A plan that establishes protective measures and procedures to prevent and contain any accidental release of oil and oily materials into the waters of the U.S.

Stormwater—Stormwater runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground.

Stormwater Pollution Prevention Plan—A series of steps and activities to identify sources of stormwater pollution at an industrial or construction site, including actions to be taken that will prevent or control stormwater contamination.

Total Maximum Daily Load (TMDL)—The maximum amount of a pollutant that a water body can receive and still meet applicable water quality standards. It is the sum of allocations for point sources (i.e., waste load allocations (WLA)); nonpoint sources and background (i.e., load allocations (LA)); and the margin of safety (MOS) (CWA Section 303(d)(1)(c)). The TMDL can be described by the following equation: $TMDL = LC = WLA + LA + MOS$

Underground Storage Tank (UST)—Any tank or combination of tanks (including underground pipes connected to the tank) that contains an accumulation of regulated substances, where 10 percent or more of the volume (including underground pipes connected to the tank) lies beneath the ground surface. Definition and exclusions of USTs for regulatory purposes is provided in 40 CFR Part 280.12.

Watershed—A geographical area that drains to a specified point on a water course, usually a confluence of streams or rivers; also known as drainage area, catchment, or river basin.

Water Quality Compliance—Conformity with current federal, state, and local clean water laws and regulations. In overseas locations, maintain conformity with applicable international requirements and Final Governing Standards, or, if no Final Governing Standards exists, the Overseas Environmental Baseline Guidance Document.

Water Quality Standards—Written goals for state waters, established by each state and approved by the EPA.

Wetlands—Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in seasonally saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural or manmade ponds.

Attachment 2

IMPLEMENTING INSTRUCTIONS FOR AIR FORCE WATER RIGHTS DOCUMENTATION AND DATA RETENTION

A2.1. Implementation. Implementation requires all installations to complete the following three actions required by [paragraph 4.3.2.](#):

A2.1.1. Systematically locate and retain existing water rights documentation and data as described in [paragraph A2.4.](#)

A2.1.2. Create an index listing each record located, where it is being retained, and the point of contact for each record ([Table A2.1.](#)).

A2.1.3. Maintain this index in the installation civil engineer Real Property office, with copies provided to the installation Legal office. This index will serve as the official record of water rights information for the base. **(T-1)**

Table A2.1. Index of Retained Water Rights Documentation and Data.

Installation:				
Date:				
Document (including year)	Location on Base Where Document is Retained	POC, Organization, Contact Information	File Title	Table and Rule #
e.g., Public Land Order No. XX- XX, 1939	Bldg. 100, Room C	John Public, A4C Real Estate, DSN:555- 1234	Reports of Soil and Water Consolidated Reports	T 32 - 38 R 04.00

A2.2. Points of Contact.

A2.2.1. Form an informal or formal working group with members who will maintain water rights records (e.g., Civil Engineer Operations and Installation Management Flights, Bioenvironmental Engineering, historian, contracting, legal) to set out the course for this effort and assist with completing their portions of the index.

A2.2.2. The index is designed to be maintained as a spreadsheet, but the installation can use whatever suits their purpose if equivalent information is maintained. (Future data management systems will allow inclusion of water rights information).

A2.3. Process.

A2.3.1. Use the organization's file plan to label water rights records, making sure it is designated for permanent retention (*Retire as permanent*). Follow the procedures for establishing and managing permanent records as outlined in AFI 33-322.

A2.3.2. Include a statement in the file plan and on the file equivalent to, "This data is indexed as Water Rights Records. All activities and inquiries related to the disposition or use of this data must be referred to the installation legal office." (T-1)

A2.3.3. The Point of Contact should maintain a working copy of the index for updating.

A2.4. Retention of Water Rights Documentation and Data.

A2.4.1. The BCE or appointee should locate and retain the following documentation and data for each Air Force installation. While intended to be comprehensive, collecting the information below may not cover all necessary records. It is expected that data collection will not just be limited to the data described below but will involve the collection of additional data.

A2.4.2. Whenever possible, the BCE or appointee should preserve the original documents. If original documents are not available or are in poor condition, clean copies are acceptable. Organizations should also locate and retain documentation and data from the earliest available date or time frame, from the time the Air Force installation was established as a military facility up to the present, or as far back as historical records are available. To help assist installations to locate these documents, the BCE organization(s) likely to have the information are shown below, italicized in brackets. In some cases, the documentation may be in organizations outside the Civil Engineer organization, such as the base history office, installation legal office, and Bioenvironmental Engineering office. Questions from Civil Engineer offices about specific documentation and data to locate and retain should be directed to the installation Legal office.

A2.4.2.1. If Installation Purchases Water: Documents showing the name(s) of the water provider(s) and what percentage of water demand is met by the purchased water [*Operations*].

A2.4.2.2. If Installation Supplies Own Water.

A2.4.2.2.1. Real Property documents showing how the installation was acquired, including executive orders, withdrawal legislation, public land orders, purchase agreements, deeds, condemnation, gifts, and the date(s) of acquisition [*Installation Management*].

A2.4.2.2.2. Documents showing the names and locations of each diversion structure (e.g., well #1), the source of the water, depth of each well, and what percentage (or

range) of the water demand has been historically met by this water supply [*Operations, Programs*].

A2.4.2.2.3. Documents listing the priority date, if any has been assigned by the state or local water authority, of each diversion structure and the stated basis for that date [*Operations, Engineering, and Installation Management*].

A2.4.2.2.4. Documents that demonstrate current and historical water usage on the installation, such as waterlogs and meter records, diaries from infrastructure managers, and water purchase contracts. Specify the maximum diversion rate in cubic feet per second or acre-feet [*Operations*].

A2.4.2.2.5. Documents pertaining to the establishment of water sources, including well drilling/construction information, well maintenance records, and installation maps with water wells plotted [*Operations, Engineering, Installation Management*].

A2.4.2.2.6. Documents that show major uses of water at the installation (e.g., municipal, irrigation, training, recreational, industrial, firefighting, habitat enhancement), as well as documents showing anticipated future water use [*Operations*].

A2.4.2.2.7. Water consumption/withdrawal permits (including all closed and pending) and applications for permits and certificates [*Installation Management, Operations*].

A2.4.2.2.8. Documents of water being sold or supplied to others, including any Memorandums of Understanding. Identify each user as DoD, non-federal entities (e.g., credit unions or restaurants), or an off-base user [*Operations, Engineering, Installation Management*].

A2.4.2.2.9. Regulatory reporting documents to the state, including annual reports pursuant to Safe Drinking Water Act community water system reporting [*Installation Management*].

A2.4.2.2.10. Environmental reports that studied or contain information on the installation's hydrology [*Installation Management*].

A2.4.2.2.11. Documents showing any *Clean Water Act*, *Safe Drinking Water Act*, or Title 16 U.S. Code §§ 1531 – 1544, *Endangered Species Act*, issues which may affect or constrain water supply at the installation [*Installation Management*].

A2.4.2.2.12. Any other available records, documentation, or data relating to water use, water rights, or the installation's access to water resources.

A2.4.2.2.13. Documents showing any other issues that may affect the installation's ability to maintain an adequate water supply.

A2.4.2.3. If Installation Recycles Water for Re-Use: 1 Documents that show the volume of recycled water used, as well as what the recycled water is used for (e.g., municipal, irrigation, training, recreational, industrial, firefighting, habitat enhancement) [*Operations*].

Attachment 3

WATER CONTINGENCY RESPONSE PLAN

A3.1. Development and Update.

A3.1.1. Subject Matter Expert Team. Appointed by the BCE, each installation subject matter expert team must include, as a minimum, representatives from Civil Engineer Readiness, Operations, and Installation Management Flights, Bioenvironmental Engineering, and Security Forces. **(T-2)** Air Force Civil Engineer Center Readiness and Operations Directorates and Air Force Medical Support Agency, Bioenvironmental Engineering Branch (AFMSA/SG3PB) can provide technical support for plans development.

A3.1.2. Guidelines.

A3.1.2.1. Goal. The goal of each Water Contingency Response Plan is to provide adequate guidance to enable civil engineer personnel to effectively respond to credible threats and hazards, maintain or restore the installation's water system and support its peacetime and wartime missions. DAFI 48-144 and AFI 41-106, *Medical Readiness Program*, contain additional criteria.

A3.1.2.2. Objectives. Specific objectives include planning for credible threats and hazards, identifying the infrastructure's critical control points, and providing emergency procedures to lessen the impact of intentional and non-intentional water contamination or supply (service) disruption. For overseas criteria, reference DoD Manual 4715.05, Volume 3, *Overseas Environmental Baseline Guidance Document: Water*.

A3.1.2.3. Format. A Water Contingency Response Plan may be developed as a standalone planning document and include response guides ([paragraph A3.2](#)), or be divided to include appropriate existing base response, contingency, or recovery plans (e.g., a provides guidance for ensuring the continuity of mission essential operations and functions of the Air Force in DAFI 10-208, *Continuity of Operations (COOP)*; a civil engineer contingency response plan and an installation emergency management plan as mandated by DAFI 10-2501, *Emergency Management Program*; or a terrorism incident response plan as mandated by DoDIO-2000.16V1_DAFI31-145-O, *Antiterrorism (AT) Program Implementation*, . Alternatively, a Water Contingency Response Plan may be an addendum or appendix to one of these plans. For further antiterrorism security engineering criteria, refer to UFC 4-020-01, *DOD Security Engineering Facilities Planning Manual*; UFC 4-020-02FA, *Security Engineering: Concept Design for Official Use Only, (FOUO) (CUI)*; and UFC 4-020-03FA, *Security Engineering: Final Design (CUI)*.

A3.1.2.4. Content.

A3.1.2.4.1. Minimum Contingencies. A Water Contingency Response Plan will address these potable water system-related contingencies as a minimum:

A3.1.2.4.1.1. Intentional and non-intentional water contamination and water service disruption threats and hazards.

A3.1.2.4.1.2. Failure, misrepresentation, and manipulation of the water system's utility monitoring and control system refer to the UFC 4-010-06, *Cybersecurity of Facility-Related Control Systems (FRCS)*.

A3.1.2.4.1.3. Water system related inventory elements listed in references to the plans containing those elements' information.

A3.1.2.4.2. Required Inventory Elements.

A3.1.2.4.2.1. Descriptive inventory and selection rationale of credible intentional and non-intentional contamination and service disruption threats and hazards the Water Contingency Response Plan is intended to address.

A3.1.2.4.2.2. Descriptive inventory of existing installation-specific Emergency Response Plans, checklists, and other guidance documents.

A3.1.2.4.2.3. Description of water purveyor-owned water systems and any critical control points supplying potable water to the installation.

A3.1.2.4.2.4. Descriptive inventory of installation-owned water system components and critical control points needed for responding to water system-related contingencies (paragraphs [A3.1.2.4.2.4.1](#) through [A3.1.2.4.2.4.7](#)):

A3.1.2.4.2.4.1. Raw water supply, water treatment, water storage, and water distribution system critical components and control point elements.

A3.1.2.4.2.4.2. Water system critical control and monitoring point elements; supporting water system electrical components, equipment resources, and system elements.

A3.1.2.4.2.4.3. Initial threat warning and evaluation plan.

A3.1.2.4.2.4.4. Immediate operational response action, characterization, and sampling plan. **Note:** Sampling tasks must be cross-referenced with the medical contingency response plan.

A3.1.2.4.2.4.5. Bioenvironmental Engineering response and sample analysis plan.

A3.1.2.4.2.4.6. Remediation and recovery plan.

A3.1.2.4.2.4.7. Demand reduction plan and priority facility return-to-service plan.

A3.2. Response Guide Development.

A3.2.1. Guidelines. Develop individual response guides for each water system serving a population of 25 or more users. Response guides will include response actions for water contamination or service disruption based on likely hazards and threat scenarios identified in the Water Vulnerability Assessment.

A3.2.2. Required Elements.

A3.2.2.1. A list of response organizations, functional positions, telephone numbers, and designated areas of responsibility or assistance.

A3.2.2.2. Initial threat warning tasks and evaluation tasks.

A3.2.2.3. Immediate operational response actions, characterization, and sampling tasks (cross-reference sampling tasks with the Medical Contingency Response Plan).

A3.2.2.4. Public health response and sample analysis tasks.

A3.2.2.5. Remediation and recovery tasks.

A3.2.2.6. Drawings and photographs of critical components to implement identified tasks.

A3.3. Classification. Most Water Contingency Response Plan will bear “Controlled Unclassified Information” labeling. However, the level of detail in a Water Contingency Response Plan could warrant a more restrictive classification. Each base should review its draft Water Contingency Response Plan to determine the appropriate classification level prior to the Water Contingency Response Plans publication. **Note:** Water Contingency Response Plans are more accessible when marked “CUI.” When possible, classified content should be removed or published in a separate classified volume.

Attachment 4

PROCESS TO DESIGNATE FACILITIES APPROPRIATE FOR AIRCRAFT FUEL SERVICING

A4.1. Recent design and construction activities for aircraft hangar facilities enabling the large-scale bed down of new weapons systems identified a lack of process to determine when the military unique application for servicing of aircraft inside facilities is appropriate prior to the System Safety Engineering Analysis (SSEA) which occurs after facility construction is complete.

A4.2. Since the late 1960's the USAF has allowed limited, mission critical, exceptions to National Fire Protection Association (NFPA) 407 requirement that all aircraft fuel servicing, also called fueling/defueling in the USAF, will be performed outdoors. This variance from the NFPA prohibited activity is unique to the USAF within the DoD and performed by accepting risk using uniformed members to perform the military essential tasks. These exceptions are typically located at hardened/protective aircraft shelters (HAS/PAS) in United States Air Forces in Europe and Pacific Air Forces or for hangars with limited mission weapons systems at Whiteman AFB. Certain air sovereignty alert facilities were also approved for this exception. Use of hot pit/concurrent servicing staffing, operational instructions and safety protocols were baseline assumptions included as part of the decision process when these facilities were constructed in the 1970 – 2000 period. After construction and weapons system delivery SSEA was performed to assess, the specific weapons system, facilities, and procedures to ensure risks are responsibly managed. The approved SSEA remains a requirement of DAFMAN 91-203 prior to any fueling or defueling (aircraft fuel servicing) in a facility.

A4.3. To ensure aircraft fuel servicing inside facilities is limited to only those specific structures where it is mission critical to meet military unique requirements, AFIMSC, AFCEC and installations must validate or initiate requests where aircraft will be fuel serviced inside structures.

A4.4. New hangars, or facilities renovated to allow aircraft fuel servicing in the hangar bay, require approval by AF/A4, with coordination by AF/A3 and AFSEC/SE, as to be designated as a required military unique application. This designation must be approved prior to inclusion into DD Form 1391 for final programming approval. For projects not in construction phase, this designation will be required prior to completion of design process.

A4.5. Existing approved hangars and facilities must have the documented SSEA for the current weapons system(s) used in the structure. Table 4-2. in T.O. 00-25-172 lists previously approved specific structures.

A4.5.1. The recent SAF policy change to remove foam as part of most hangar fire protection systems significantly alters mitigation actions from the facility, which drives a new SSEA for those facilities.

A4.5.2. With various restructures of MAJCOM staff over many years, there is no documented record of DAF review of and acceptance of mission critical, exceptions to NFPA 407 requirement for aircraft fuel servicing.

A4.5.3. All existing facilities will submit a request for designation to validate current operations, MDS, and facility construction, and mission requirements.

A4.5.4. Primary and Alternate fuel systems repair facilities, as defined by T.O. 1-1-3, require approval by AF/A4, with coordination by AF/A3 and AFSEC/SE, to be designated as a required military unique application to perform aircraft fuel servicing (a.k.a. fueling/defueling) in those facilities.

A4.6. Requests for designation will come from the wing commander, with coordination through MAJCOM A3/A4 and process through appropriate AFIMSC/Detachment, for coordination with AFCEC/COSM for facility review, and input for Headquarters Air Force coordination and approval.

A4.6.1. The following items will be discussed by the request.

A4.6.1.1. MAJCOM.

A4.6.1.2. Installation.

A4.6.1.3. Mission Type (combat, strategic airlift, training).

A4.6.1.4. MDS that could be housed in the facility and if SSEA exists for that airframe.

A4.6.1.5. Type of Facility Planned (constructed to General SSEA Facility requirements identified in T.O. 00-25-172 or T.O. 1-1-3). General floor plan and listing any Electrical Hazard Areas.

A4.6.1.6. Unclassified reason it is critical for the Air Force to perform aircraft fuel servicing inside that facility.

Attachment 5

FUELS SYSTEM MAINTENANCE CAREER FIELD FUNDAMENTAL ENHANCEMENT VENUES

A5.1. Personnel working fuels systems maintenance in 3E4X1/A and WG/WL 4255 positions require updates on system maintenance, repair, and construction practices, in addition to best practices to properly manage LFM tasks. AFCEC/CO develops agenda topics, identifies SMEs required to participate, and 3E4X1 training competency behaviors for the Career Field Fundamental Enhancement Venues. These venues also provide Career Field Fundamental Training for the AFSC 2F0X1, Fuels personnel per DAFI 23-201.

A5.2. NPMC PETRO Seminar. NPMC PETRO hosts AF fueling operations and maintenance experts and DLA-E partners coupled with a diverse group of commercial fuel industry manufacturers, distributors, retailers, training programs and publishing companies that use this annual venue to show and demonstrate new fueling technologies. The accompanying EXPO represents and demonstrates new and emerging technologies, tools and equipment products from the global fueling market. This is held bi-annually in the National Capital Region

A5.2.1. Required attendees AF/A4C, AFCEC/CO, AFIMSC DET 2 Fuels Engineer, AFIMSC DET 4 Fuels Engineer, NGB and SMEs identified by AFCEC/CO, LFM representatives from active component bases.

A5.2.2. Recommend attendees AFCEC/CZ, AFCEC/CFSD, ARC 3E4X1 personnel interested in LFM topics, Fuels SubAMP Managers, 32E engineers working fuels systems projects, CE Operations and Engineering Flight personnel who manage programming, construction, maintenance and repair of fuels systems.

A5.3. DLA-E World-Wide Energy Seminar. This event is designed for fuels managers, subject matter experts, DLA-E procurement specialists, analysts, liquid fuels maintenance foreman, civil engineers and others who work with fueling activities. Attendees receive fuels-specific training geared toward their specific needs, connect with peers in the fueling community and discuss daily challenges and solutions and get hands-on with the latest fueling, quality and maintenance technologies for the industry. This is held bi-annually in the National Capital Region.

A5.3.1. Required attendees AF/A4C, AFCEC/CO, AFIMSC DET 2 Fuels Engineer, AFIMSC DET 4 Fuels Engineer, NGB and SMEs identified by AFCEC/CO, LFM representatives from active component bases.

A5.3.2. Recommend attendees AFCEC/CZ, AFCEC/CFSD, ARC 3E4X1 personnel interested in LFM topics, Fuels SubAMP Managers, 32E engineers working fuels systems projects, CE Operations and Engineering Flight personnel who manage programming, construction, maintenance and repair of fuels systems.