

11.0 FUEL TREATMENT UNIT (FTU) CLOSURE PLAN

The closure plan in this Attachment includes the steps necessary to clean close the FTU hazardous waste operating unit as required by 40 CFR §264.112(b)(1). Copies of the closure plan shall be maintained in the Facility Operating Record. The plan shall be updated as necessary in accordance with 40 CFR §264.112(c). The Permittee shall conduct a review of the Facility Operating Record to assess whether there have been documented spills or releases of hazardous waste at these units. Prior to the closure of the unit, all operations at the unit will cease in accordance with 40 CFR §264.113(a) and (b).

11.1 Schedule for Closure

Table 11.1 sets forth the steps that will occur during closure in accordance with §264.112(b)(6).

Table 11.1 – FTU Closure Schedule							
DAYS	0	45	90	135	180	225	285
Closure Notification to NMED §264.112 (d)(1)	*						
Final Receipt of Hazardous Waste §264.112(d)(2)		*					
Closure Activities Begin §264.113(a)		*					
All Hazardous Wastes Removed §264.113(a)		*---90 days---					
Disposal and Decontamination and Sampling Activities §264.114		*-----180 days-----*					
Certification of Closure §264.115						*--60 days--*	

Notification of closure shall be submitted to NMED at least 45 days prior to beginning final closure. An amended closure plan must be submitted in accordance with 40 CFR §264.112(c) if the structural assessment and records review indicate that the closure plan needs to be revised.

11.2 FTU Closure

11.2.1 Records Review and Structural Assessment

The Permittee shall conduct a records review for, and a structural assessment of, the FTU upon closure. The Permittee shall, during the records review, update the list of hazardous wastes managed and all hazardous constituents contained within those wastes in Section 11.2.2 of this Attachment to accurately reflect the hazardous wastes managed at the unit.

The Permittee shall remove the FTU tanks and all ancillary equipment including aboveground and underground piping. Removal activities shall include assessment and removal of the concrete pad and associated curbing that support the FTU and appurtenances.

The review must include inspection of all FTU tanks and piping for evidence of corrosion and leakage such as odors, staining or other discoloration. The Permittee shall develop a SAP in

accordance with Section 11.2.5 of this Attachment and shall include these areas in the SAP as sample locations for release assessment purposes in accordance with 40 CFR §270.32(b).

The Permittee shall review the permitted unit's Operating Record, including but not limited to, inspection and contingency plan implementation records, to determine if any spills, defects, deterioration, damage, or hazards affecting waste containment occurred or developed during the life of the unit. If the records indicate any such problems (e.g., spills or releases, damage to the structures or other building materials) the Permittee shall include these sites in the SAP as sample locations for the purpose of demonstrating achievement of the closure performance standards included in this Attachment and 40 CFR §264.111 and 40 CFR §264.197.

The Permittee shall notify NMED a minimum of 45 calendar days prior to conducting the structural assessment of the unit to be closed to provide NMED the opportunity to participate in inspecting the unit's physical condition. If the assessment reveals any evidence of release (e.g., pitting, corrosion, staining) to the underlying soil, subsurface soil or building materials, the Permittees must also incorporate these sample locations into the SAP in accordance with 40 CFR §270.32(b).

Within 30 days of completion of the structural assessment and records review, the Permittee shall submit an updated SAP in the Closure Plan for the FTU that includes proposed sampling locations, sampling methods, laboratory analytical methods, management of generated wastes and a schedule for implementation of the proposed activities in accordance with the requirements in this Attachment and 40 CFR §264.112(c).

11.2.2 Maximum Waste Inventory

The estimate of the maximum inventory of hazardous wastes ever on-site over the active life of the FTU, due to extreme circumstances, would be 830,000 gallons in accordance with 40 CFR §264.112(b)(3)). This inventory would include the maximum operating capacity of the treatment tank, storage tank(s) and a transport vehicle. During normal operations, the maximum amount of waste at the facility will be about 3,600 gallons. The contents of the storage tanks will be disposed off-site as required. Removal of wastes from the FTU, prior to closing, will be conducted in accordance with normal FTU manifest and shipping procedures.

The following list of wastes is managed at the unit:

- a. Hydrazine;
- b. Methyl hydrazine;
- c. 1,1-unsymmetrical dimethylhydrazine; and,
- d. Aqueous mixtures of the above constituents.

The Permittee shall establish a comprehensive list in the FTU SAP that identifies the following:

1. all hazardous wastes managed within the permitted unit; and
2. all hazardous constituents contained within those wastes.

The comprehensive list shall be used to select analytical methods capable of detecting all potential contaminants associated with the FTU.

11.2.3 Schedule for Closure

The FTU is scheduled for closure in the year 2025. Closure activities may be initiated prior to the scheduled date if NASA or NMED determines closure is necessary. WSTF will notify NMED 45 days prior to the expected date that closure activities are to begin at the unit. A modified closure plan will be submitted with the closure notification. Removal and disposal of waste inventory is estimated to take 6 weeks. Table 11.1 sets forth the steps that will occur in the closing of the FTU in accordance with 40 CFR §264.112(b)(6). Notification of closure shall be submitted to NMED at least 45 days prior to beginning final closure. An amended closure plan shall be submitted in accordance with 40 CFR §264.112(c) if the structural assessment and records review indicate that the closure plan needs to be revised.

11.2.4 Disposal of FTU Waste Inventory and Decontamination of Equipment

All accumulated fuel waste will be transported to a RCRA permitted facility for off-site disposal. WSTF qualified hazardous waste handlers will decontaminate the facility with a steam cleaner producing 185°F water with biodegradable detergent at between 700 and 1,000 pounds per square inch, gauge (psig). After the third application, all rinsates will be collected using pumps, drums, and tanks available on-site. All equipment used in the closure will be triple rinsed and/or steam cleaned at the decontamination station used for the closure and the rinsates added to the rinsate from the facility decontamination. All rinsate shall be evaluated, characterized and disposed of in compliance with 40 CFR §264.112(b)(4). All rinsate(s) analyzed and reported as non-detected will be transferred to one of the site wastewater treatment ponds if not in conflict with other NMED program or permit requirements.

Any potential contaminated tanks, process lines, or materials which can not be decontaminated at the closure site will be transported to the precision cleaning facility in the 200 Area and decontaminated, or will be characterized and disposed of in compliance with 40 CFR §264.112(b)(4).

11.2.5 FTU Sampling and Analyses Plan

The Permittee's SAP shall describe:

1. verification sampling to ensure that all equipment and structures are decontaminated and to determine whether there has been a release of hazardous constituents to environmental media;
2. investigative sampling if a release of hazardous constituents to environmental media is identified in step a. above in order to determine the nature and extent of the release; and
3. confirmatory sampling to confirm completion of clean-up of media affected by any such release.

The SAP shall, at a minimum, include:

4. The rationale for the number and locations of samples proposed that will confirm achievement of the closure performance standard and a site plan depicting the boundaries of the regulated unit as well as sampling locations (e.g., sumps, lift stations, piping, pipe joints, catch basins, conveyance systems, and other potential

- release locations, and locations of spills or other releases of hazardous waste or hazardous constituents during operation of the unit);
5. The type of samples to be collected (e.g., swipe, core, chip, sludge, soil) and the rationale for the selection of sample types;
 6. A description of the methods and procedures that will be used to collect each type of sample;
 7. A description of the quality assurance/quality control procedures that include, but are not limited to:
 - a. duplicates, trip blanks, equipment blanks;
 - b. a description of methods for decontamination of re-usable sampling equipment; and,
 - c. a description of all sample preservation, handling, labeling, and chain-of-custody procedures;
 - d. provide a list of hazardous constituents, including metals, VOCs, SVOCs, hydrazine, methyl hydrazine and 1,1-unsymmetrical dimethylhydrazine, the Permittee must evaluate and sample.
 8. A list of all proposed cleaning solutions to be used during closure.

Closure of the FTU will include removal and decontamination of all tanks, valves and other control structures, above ground- and below-ground piping and the concrete slabs and curbing materials associated with use of the FTU. The SAP must provide for sampling and analyses of subsurface materials below the FTU concrete slab and associated curbing to determine whether a release of hazardous constituents to environmental media has occurred. At a minimum, the SAP must include proposing one or more sampling grids for undisturbed soil beneath the removed FTU slab and curbing to demonstrate contamination is not present in underlying soil as a result of unit operations. The grid(s) shall provide for collection at zero to one foot below the removed slab at a rate which will result in one sample location per 500 square feet of slab area within the former FTU footprint. The SAP must also provide for one sample location to a depth of 25 feet below the removed slab. The shallow FTU samples and sample intervals at five, 15 and 25 feet below the former FTU slab shall be analyzed for the hazardous constituents identified by the Permittee under Section 11.2.5 of this Attachment.

In the event post-removal inspections reveal evidence of a release to sub-base materials or underlying soil below the former FTU, the SAP must propose those suspected release areas for sampling at multiple depths to determine whether a release of hazardous wastes or constituents to environmental media has occurred.

11.3 Verification Sampling

After decontamination and removal activities are completed at a unit undergoing closure, the Permittee shall conduct verification sampling activities, as described in this Section, and include

them in each permitted unit's SAP. Such verification sampling activities will ensure the documentation of decontamination of equipment and structures and assist the Permittee in determining whether a release of hazardous constituents to environmental media has occurred.

Unless specified elsewhere in this Attachment, the Permittee shall collect one sample every 250 square feet in loading and unloading zones, and one sample every 500 square feet beneath the rest of the permitted unit as applicable. The Permittee shall collect samples beneath all sumps, catch basins, drains, pipe intersections and joints and at 25 foot intervals beneath all buried piping. The type of sample collected (e.g., wash-water, swipe, chip, core, sludge, soil) will depend on the material being sampled and the constituents being analyzed. The Permittee shall provide the rationale for proposing the types of samples to be collected.

The Permittee shall collect samples at locations identified during the records review and structural assessment where stains, cracks, gaps, or other damaged conditions are present as well as where the Facility Operating Record indicates any instances of spills or releases.

If samples collected from any equipment or surfaces indicate the presence of contamination above NMED approved closure performance standards included in this Attachment, the contaminated area must be re-washed and re-sampled. The Permittee shall continue this process until decontamination is achieved or it is determined that standards in Section 11.5 cannot be attained.

If verification samples on floors, slabs or in sumps detect hazardous constituents, the Permittee shall follow the release investigation procedures identified in Section 11.4 of this Attachment.

The Permittee's verification samples in zones constructed of soil, granular fill, asphalt or asphaltic concrete shall consist of collecting soil samples from the subgrade and soils beneath the material at intervals approved by NMED. If verification soil samples detect contamination, the Permittee shall remove all of the soil, granular fill, asphalt (or asphaltic concrete) and follow the soil contamination investigation procedures identified in Section 11.4 of this Attachment.

11.4 Investigative Sampling to Determine the Extent of a Release

The Permittee must determine the extent of any releases of contamination detected during closure activities if contamination is discovered. If contamination is discovered at any sampling point, the Permittee shall determine the extent of the contamination by collecting and analyzing samples of the surrounding and underlying soils. The Permittee shall collect additional samples, if soil contamination in these samples is detected, in order to determine both the lateral and vertical extent of contamination of any release from the permitted unit in accordance with 40 CFR §270.32(b).

11.5 Confirmatory Sampling to Confirm Clean-Up

The Permittee shall remove all contaminated media if samples collected from beneath any permitted unit indicate the presence of hazardous constituents above levels established in Attachment 15. After removal, the Permittee shall demonstrate via confirmatory sampling that clean-up levels have been achieved in accordance with 40 CFR §264.114.

11.6 Closure Performance Standards

At the cessation of hazardous waste management operations at a permitted unit, or portion of a permitted unit, the Permittee shall clean close the unit, or portion of a unit, by performing the following:

1. removing all waste and waste residues;
2. minimizing or eliminating the need for further maintenance;
3. controlling, minimizing, or eliminating, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, surface waters, or atmosphere;
4. complying with all applicable closure requirements of 40 CFR Part §264, Subparts F, G, I, J, K, N, and X ;and
5. complying with all applicable post-closure requirements of 40 CFR Part §264, Subparts F, G, J, K, N, and X. in accordance with 40 CFR §264.111.

Clean closure for permitted units will be achieved when all structures, equipment, and media associated with the permitted unit have been decontaminated or removed in accordance with this Attachment.

If the Permittee can not achieve clean closure standards as defined above for 40 CFR Part §264, Subparts K, N, and X units, the Permittee shall submit a Post-Closure Care Plan according to 40 CFR §264.117, which is incorporated herein by reference. The Post-Closure Care Plan shall be submitted to NMED as part of a permit modification request.

Clean closure for 40 CFR Part §264, Subparts I and J units is attained when sampling and analysis results of equipment and structures associated with the permitted unit demonstrate that hazardous waste, hazardous waste residues, and hazardous waste constituents are not present on equipment and structures and that contaminated environmental media does not contain concentrations of hazardous constituents greater than the clean-up levels specified in Attachment 15

11.7 Closure Reports

The Permittee shall submit a closure report summarizing the results of all actions conducted to complete closure within 180 days after completion of field activities. The report shall document all waste disposal activities and the procedures and results of all sampling, laboratory analyses and remedial actions conducted during closure. NMED may require interim reports that document the progress of closure.

11.8 Certification of Closure

The Permittee shall submit all analytical data with the Closure Report for NMED review and concurrence. Data sets will contain results, reporting limits, method detection limits, quality assurance/quality control (QA/QC) results and appropriate soil screening levels (SSLs). Within

60 days of closure completion, a certification by an independent, registered, New Mexico professional engineer stating the unit has been closed in accordance with this plan shall be submitted to NMED.