State of Tennessee
Department of Environment and Conservation
Division of Solid Waste Management

Hazardous Waste Management Program
5th Floor, L & C Tower
401 Church Street
Nashville, Tennessee 37243-1535

HAZARDOUS WASTE MANAGEMENT PERMIT

Permittee: Milan Army Ammunition Plant
Facility: Milan Army Ammunition Plant
Owner U.S. Army Department of Defense
Co-Operator: American Ordnance LLC
Location: 2280 Highway 104 West, Milan, TN 38358
Type: Subpart X Open Burning Open Detonation Treatment
Units: Open Burn, Open Detonation Units
EPA Identification Number: TN0210020582
Permit Number: TNHW- **153**

Pursuant to the Tennessee Hazardous Waste Management Act, as amended (Tennessee Code Annotated (TCA) 68-212-101 et seq.) and regulations (Chapter 0400-12-01) promulgated there under by the Tennessee Solid Waste Disposal Control Board, a permit is issued to Milan Army Ammunition Plant (hereinafter called the permittee), to operate hazardous waste treatment units, located in Milan, Tennessee, Carroll and Gibson counties at latitude 35° 52' 88" and longitude 88° 41' 54". The permittee shall be allowed to treat hazardous waste by open burning and open detonation in accordance with the terms of this permit. This permit does not allow the permittee to operate this facility in a manner defined by TCA 68-212-104(2) as a "commercial facility".

This permit is issued under the authority of §68-212-108. The permittee shall be required to investigate any releases of hazardous waste or hazardous constituents pursuant to this permit at the facility regardless of the time at which waste was placed in a unit and to take appropriate corrective action for any such releases. The permit also requires the permittee to comply with all land disposal restrictions and air emission standards applicable to this facility and to certify annually that on-site generation of hazardous waste is minimized to the extent practicable.

The permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any Attachments) and the applicable regulations contained in Chapter 0400-12-01, or 0400-12-02, as specified in the permit. Applicable regulations are those from Tennessee Rule (Rule) 0400-12-01-.06, or from Rule 0400-12-02-.03 which are in effect on the date of issuance of the permit; for all other rules in Chapter 0400-12-01 and 0400-12-02, applicable regulations are those in effect on the date of the issuance of this permit and any subsequent modifications to those rules as they become effective.

Continuation, Transfer, Modification, Revocation and Reissuance, and Termination of this permit shall comply with and conform to Rule 0400-12-01-.07(9).

This permit is based on the premise that the information and reports submitted by the permittee prior to issuance of this permit or prior to any subsequent modification to this permit are accurate. Any inaccuracies found in this information or information submitted as required by this permit may be grounds for termination or modification of this permit and enforcement action. The Commissioner may modify this permit if information is received which was not available at the time

of permit issuance and which justifies the application of different permit conditions at the time of issuance. The permittee must notify the Commissioner of any deviation from or changes in the information in the application, which would affect the permittee's ability to comply with the applicable regulations or permit conditions.

Any inaccuracies found in this information or information submitted as required by this permit may be grounds for termination or modification of this permit and enforcement action. The Commissioner may modify this permit if information is received which was not available at the time of permit issuance and which would have justified the application of different permit conditions at the time of issuance. The permittee must notify the Commissioner of any deviation from or changes in the information in the application, which would affect the permittee's ability to comply with the applicable regulations or permit conditions.

This permit is effective as of September 27, 2012 and shall remain in effect until September 27, 2022, unless revoked and reissued, or terminated, or continued.

_____ _____

Patrick J. Flood, PE Date
Director

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I. STANDARD CONDITIONS

A. EFFECT OF PERMIT

The Permittee is allowed to treat hazardous waste in accordance with the condition of this permit. The permittee is also required to conduct corrective action for any release of hazardous waste or hazardous constituents in accordance with conditions of this permit. Any receipt or handling of hazardous waste not authorized in this permit is prohibited, unless such management is not subject to a permit as set forth at Tennessee Rule 0400-12-01-.07(1)(b), is operating under interim status as set forth in Tennessee Rule 0400-12-01-.07(3)(a), or is subject to a separate hazardous waste management permit issued by the Tennessee Division of Environment and Conservation. Compliance with this permit during its term constitutes compliance, for the purposes of enforcement, with the Tennessee Hazardous Waste Management Act of 1977, as amended, as it applies to the permitted activities, except for those requirements not included in the permit which: (1) become effective by statute; or (2) are promulgated under Tennessee Rule 0400-12-01-.10 restricting the placement of hazardous waste in or on the land. However, this permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in this permit and paragraph (9) of Tennessee Rule 0400-12-01-.07. Issuance of this permit does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of other State or local laws or regulations. This permit does not convey any property rights of any sort or any exclusive privilege. Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under Section 3013 or Section 7003 of the Resource Conservation and Recovery Act of 1976 as amended (42 U.S.C. 6901 et seq., commonly referred to as RCRA), Sections 104, 106(a) and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq., commonly known as CERCLA), Sections 68-212-206(a), 207, and 215(c) of the Tennessee Hazardous Waste Management Act of 1983, as amended, or any other law providing for protection of public health or the environment.

B. SEVERABILITY

The provisions of this permit are severable, and if any provisions of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

C. DEFINITIONS

For the purpose of this permit, terms used herein shall have the same meaning as those in Rules 0400-12-01-.01, .02, .06, .07, and .10, unless this permit specifically provides otherwise. Where terms are not defined in the regulations, the permit, or U.S. Environmental Protection Agency (EPA) guidelines or publications, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

1. "Area of concern" (AOC) includes any area having a probable release of a hazardous waste or hazardous constituent that is not from a solid waste management unit and is determined by the Commissioner to pose a current or potential threat to human health or the environment. Such areas of concern may require investigations and remedial action as required by this permit and Rule 0400-12-01-.07(8)(b)2(ii) in order to ensure adequate protection of human health and the environment.

2. "Contamination" refers to the presence of any hazardous constituent in a concentration, which exceeds the naturally occurring concentration of that constituent in the immediate vicinity of the unit (i.e., having higher concentrations of a constituent as compared to nearby areas that have not been affected by the unit).

3. "Corrective action management unit" (CAMU) includes any area within a facility that is designated by the Commissioner under Rule 0400-12-01-.06(22) for the purpose of implementing corrective action requirements under Rule 0400-12-01-.06(6)(l). A CAMU shall only be used for the management of remediation wastes pursuant to implementing such corrective action requirements at the facility.

4. "Corrective measures" include all corrective action necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in the unit, as required under Rule 0400-12-01-.06(6)(l). Corrective measures may address releases to air, soil, surface water or groundwater.

5. "Extent of contamination" is defined as the horizontal and vertical area in which the concentrations of hazardous constituents in the environmental media being investigated are above detection limits or background concentrations indicative of the region, whichever is appropriate as determined by the Commissioner.

6. "Facility" includes all contiguous land and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them). For the purposes of implementing corrective action under Rule 0400-12-01-.06(6)(l), a facility includes all contiguous property under the control of the owner or operator seeking a permit under the Tennessee Hazardous Waste Management Act.

7. “Hazardous constituent(s)” or “hazardous waste constituent(s)” are those substances listed in Rule 0400-12-01-.02(5), Appendix VIII, including hazardous constituents released from any waste and hazardous constituents that are reaction by-products.

8. “Interim measures” are actions necessary to minimize or prevent the further migration of contaminants and limit actual or potential human and environmental exposure to contaminants while long-term corrective action remedies are evaluated and, if necessary, implemented.

9. “Land disposal” means placement in or on the land, except for a “corrective action management unit,” and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine or cave, or concrete vault or bunker intended for disposal purposes.

10. “Landfill” includes any disposal facility or part of a facility where hazardous waste is placed in or on the land and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit.

11. “Military munitions” means all ammunition products and components produced or used by or for the U.S. Department of Defense or the U.S. Armed Services for national defense and security, including military munitions under the control of the Department of Defense, the U.S. Coast Guard, the U.S. Department of Energy (DOE), and National Guard personnel. The term military munitions includes: confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries used by DOD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. Military munitions do not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components thereof. However, the term does include non-nuclear components of nuclear devices, managed under DOE's nuclear weapons program after all required sanitization operations under the Atomic Energy Act of 1954, as amended, have been completed.

12. “Miscellaneous unit“ means a hazardous waste management unit where hazardous waste is treated, stored, or disposed of and that is not a container, tank, surface impoundment, pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, underground injection well with appropriate technical standards under 40 CFR Part 146, containment building, corrective action management unit eligible for a research, development and demonstration permit under Rule 0400-12-01-.07(6)(g), or staging pile.

13. Open Burning means the combustion of any material without the following characteristics: (1) Control of combustion air to maintain adequate temperature for efficient combustion, (2) Containment of the combustion-reaction in an

enclosed device to provide sufficient residence time and mixing for complete combustion, (3) Control of emission of the gaseous combustion products.

14. "Open Detonation" means the explosion in which chemical transformation passes through the material faster than the speed of sound (0.33 kilometers/second at sea level) and which produces the uncontrolled emission of the gaseous detonation products. Open detonation in this permit is the treatment of energetic wastes (typically bulk explosive munitions) or bulk waste explosives in pits by detonation.

15. "Point of compliance" refers to the vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated unit..

16. "Registered engineer" or "registered professional engineer" shall mean a person authorized to perform engineering in Tennessee pursuant to Tennessee Code Annotated, Title 62, Chapter 2.

17. "Release" includes any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of any hazardous waste or hazardous constituents.

18. "Remediation waste" includes all solid and hazardous wastes, all media (including groundwater, surface water, soil, and sediment), and all debris which contain listed hazardous waste or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing the corrective action requirements of Rule 0400-12-01-.06(6)(l). For a given facility, remediation wastes may originate only from within the facility boundary but may include waste managed for releases beyond the facility boundary.

19. "Screening levels" are health-based concentrations of hazardous constituents determined to be indicators for the protection of human health and/or the environment.

20. "Solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, or agricultural operations, or from community activities, but does not include solid or dissolved materials in domestic sewage or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permits under Section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).

21. "Solid waste management unit" (SWMU) includes any unit that has been used for the treatment, storage, or disposal of solid waste at any time, irrespective of whether the unit is or ever was intended for the management of solid waste. Permitted or interim status hazardous waste management units are also solid waste management units. Solid waste management units include areas that have been contaminated by routine and systematic releases of hazardous waste

or hazardous constituents, excluding one-time accidental spills that are immediately remediated and cannot be linked to solid waste management activities (e.g., product or process spills).

22. “Temporary unit” (TU) includes any temporary tanks and/or container storage areas used solely for treatment or storage of hazardous remediation wastes during specific remediation activities. Designated by the Commissioner, such units must conform to specific standards and may only be in operation for a period of time as specified in this permit.

23. "Thermal treatment" means the treatment of hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste. Examples of thermal treatment processes are incineration, molten salt, pyrolysis, calcination, wet air oxidation, microwave discharge, open burning, and open detonation.

24. “Unit” includes, but is not limited to, any Open Burn, Open Detonation unit, landfill, surface impoundment, waste pile, land treatment unit, incinerator, injection well, tank, container storage area, septic tank, drain field, wastewater treatment unit, elementary neutralization unit, transfer station, or recycling unit.

D. GENERAL DUTIES AND REQUIREMENTS

1. Duty to Comply: The permittee shall comply with all conditions of this permit, except that the permittee need not comply with the conditions of the permit to the extent and for the duration that such noncompliance is authorized in an emergency permit. Any permit noncompliance, except under the terms of an emergency permit, constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Duty to Reapply: If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The permittee must submit a new application at least 180 days before the expiration date of the effective permit, unless permission for a later date has been granted by the Commissioner. The Commissioner shall not grant permission for applications to be submitted later than the expiration date of the existing permit.

3. Need to Halt or Reduce Activity Not a Defense: It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. Duty to Mitigate: In the event of noncompliance with the permit, the permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

5. Proper Operation and Maintenance: The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

6. Permit Actions: This permit may be modified, revoked and reissued, or terminated for cause as specified in Rule 0400-12-01-.07(9)(c). The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes under Subparagraph I.D.11(a) or anticipated noncompliance under Subparagraph I.D.11(b) does not stay any existing permit condition.

7. Duty to Provide Information: The permittee shall furnish to the Commissioner, within a reasonable time, any relevant information which the Commissioner may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Commissioner, upon request, copies of records required to be kept by this permit.

8. Inspection and Entry: The permittee shall allow the Commissioner, or any authorized representative, upon presentation of credentials and other documents as may be required by law, to:

   (a) Enter, at reasonable times, upon the permittee's premises where a regulated unit(s) or activity is located or conducted, or where records must be kept under the conditions of this permit;

   (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

   (c) Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit;

   (d) Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location; and

   (e) Make photographs for the purpose of documenting items of compliance or noncompliance at waste management units or, where appropriate to protect legitimate proprietary interests, make such photographs for him or her.

   "At reasonable times" shall mean, for the purposes of this permit condition, at least but not limited to, any time the facility is in operation.

9. Monitoring and Records

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The permittee shall perform all monitoring in accordance with the methods described in this permit, including the Attachments. If not specified in this permit, the method used to obtain a representative waste sample to be analyzed must be the appropriate method from Appendix I of Rule 0400-12-01-.02(5); the most recent version of the USEPA, Region 4, Science and Ecosystem Support Division's (SESD) Field Branches Quality System and Technical Procedures; or an equivalent method approved by the Commissioner. If not specified in this permit, procedures for sampling media must be those identified in the latest edition of the Field Branches Quality System and Technical Procedures or an equivalent method approved by the Commissioner. Laboratory methods must be those specified in the most recent edition of Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, or an equivalent method approved by the Commissioner.

(b) The permittee shall retain at the facility, as provided for under Rule 0400-12-01-.06, or other location approved by the Commissioner, records of all monitoring information required under the terms of this permit, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, records of all data used to prepare documents required by this permit, copies of all reports and records required by this permit, the certification required by Subparagraph II.K.1(i), and records of all data used to complete the application for this permit, for a period of at least five (5) years from the date of the sample, measurement, report, certification, or application, or until corrective action is completed, whichever date is later. As a generator of hazardous waste, the permittee shall retain a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced pursuant to Rule 0400-12-01-.10 for at least five (5) years from the date that the waste which is the subject of such documentation was last sent to on-site or off-site treatment, storage or disposal, or until corrective action is completed, whichever date is later. The permittee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations, for the active life of the facility, and, for disposal facilities, for the post-closure care period as well. These periods may be extended by request of the Commissioner at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility.

(c) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;

(ii) The individual(s) who performed the sampling or measurements;

(iii) The date(s) analyses were performed;

(iv) The name of the laboratory that performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

10. Signatory Requirement: All applications, reports, or information submitted to the Commissioner shall be signed and certified. All signatures and certifications shall satisfy the requirements of Rule 0400-12-01-.07(2)(a).

11. Reporting Requirements

(a) Planned changes: The permittee shall give written notice to the Commissioner as soon as possible of any planned physical alterations or additions to the permitted facility, including permittee-intiated Interim Measures under Subparagraph V or other activities that impact known or suspected contamination, including the areas off-site from the facility. The notice shall include, at a minimum, a summary of the planned change, the reason for the planned change, a discussion of the impacts(s) the planned change will have on the ability to investigate contamination, and a discussion of the impact(s) the planned change will have on the known or suspected contamination.

(b) Anticipated noncompliance: The permittee shall give advance notice to the Commissioner as soon as possible of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. For a new facility, the permittee may not commence treatment, storage, or disposal of hazardous waste; and for a facility being modified, the permittee may not treat, store, or dispose of hazardous waste in the modified portion of the facility except as provided in Rule 0400-12-01-.07(9)(c)5, until:

(i) The permittee has submitted to the Commissioner by certified mail or hand delivery a letter signed by the permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the permit; and

(ii) (I) The Commissioner has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or

(II) Within 15 days of the date of submission of the letter in Part I.D.11(b)(i) above, the permittee has not received notice from the Commissioner of his or her intent to inspect, prior inspection is waived and the permittee may commence treatment, storage, or disposal of hazardous waste.

(iii) It is recognized that minor deviations from exact design specifications may occur during construction. These must be noted in the engineer's statement accompanied with an evaluation

of the impact of the deviation on facility performance. The Commissioner may modify the permit accordingly, without following the procedures of Rules 0400-12-01-.07(7) and (9), if he determines that the deviations are indeed minor and will not adversely impact the permittee's ability to comply with the regulatory requirements.

(c) Transfers: This permit is not transferable to any person except after notice to the Commissioner. The Commissioner may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act. (See Rule 0400-12-01-.07(9)(b); in some cases, modification or revocation and reissuance is mandatory.)

(d) Monitoring reports: Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(e) Compliance schedules: Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Submittal of a required item according to the schedule constitutes notification of compliance.

(f) Twenty-four hour reporting:

(i) The permittee shall report any noncompliance or any imminent or existing hazard from a release of hazardous waste or hazardous constituent that may endanger health or the environment orally within 24 hours from the time the permittee becomes aware of the circumstances, including but not limited to:

(I) Information concerning release of any hazardous waste or hazardous constituent that may cause an endangerment to public drinking water supplies.

(II) Any information of a release or discharge of hazardous waste or hazardous constituent, or of a fire or explosion from the hazardous waste management facility, which could threaten the environment or human health outside the facility.

(ii) The description of the occurrence and the cause shall include:

(I) Name, address, and telephone number of the owner or operator;

(II) Name, address, and telephone number of the facility;

(III) Date, time, and type of incident;

(IV) Name and quantity of material(s) involved;

(V) The extent of injuries, if any;

(VI) An assessment of actual or potential hazards to the environment and human health outside the facility; and

(VII) Estimated quantity and disposition of recovered material that resulted from the incident.

(iii) A written submission shall also be provided within five 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Commissioner may waive the five-day written notice requirement in favor of a written report within 15 days.

(g) Manifest discrepancy report: If a significant discrepancy in a manifest is discovered, the permittee must attempt to reconcile the discrepancy. If not resolved within 15 days, the permittee must submit a letter report, including a copy of the manifest, to the Commissioner. (See Paragraph II.J.5.)

(h) Unmanifested waste report: Such report must be submitted to the Commissioner within 15 days of receipt of unmanifested waste. (See Paragraph II.K.3.)

(i) Annual report: An annual report must be submitted covering facility activities during the previous calendar year as outlined in Paragraph II.K.4.

(j) Other noncompliance: The permittee shall report all instances of noncompliance not reported under Subparagraph I.D.11(d), (e), or (f) above, at the time monitoring reports are submitted. The reports shall contain the information listed in Subparagraph I.D.11(f) as appropriate.

(k) Other information: Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any document to the Commissioner, it shall promptly submit such facts or information. In addition, upon request, the permittee shall furnish to the Commissioner any information related to compliance with this permit.

12. Continuation of Expiring Permit: When the permittee has made timely and sufficient application for a new permit, the existing permit does not expire until the application has been finally determined by the Commissioner and, in case the application is denied, or the terms of the new permit limited, until the last day for

seeking review of the Commissioner's order or a later date fixed by order of the reviewing court.

13. Obligation for Corrective Action: Pursuant to the requirements of Section IV, "Specific Conditions for Corrective Action," the permittee is required to select and implement corrective actions as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in such unit. The permittee is required to continue this permit for any period necessary to comply with the corrective action requirements of this permit. If corrective action is expected to continue beyond the expiration date of this permit, the permittee is required to meet the reapplication requirement under Paragraph I.D.2.

E. CONFIDENTIAL INFORMATION

In accordance with Rules 0400-12-01-.01(7) and .07(1)(h), the permittee may claim for confidential handling any proprietary information required to be submitted by this permit.

F. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The permittee shall maintain at the facility, until closure is completed and certified by an independent registered professional engineer, the following documents and amendments, revisions and modifications to these documents:

1. A copy of this permit;

2. Waste analysis plan(s) required by this permit;

3. Personnel training documents and records required by this permit, except that training records on former employees are not required to be kept for more than three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company;

4. Contingency plan required by this permit;

5. Closure plan(s) required by this permit;

6. All corrective action work plans, reports and other documents as specified by the Commissioner and Section V, "Specific Conditions for Corrective Action."

7. Operating and other applicable administrative records as required by this permit and Chapter 0400-12-01; and

8. Monitoring information and inspection records in accordance with Subparagraph I.D.9(b) and Paragraph II.E.3, except that inspection records need only be kept for five (5) years after the date of the inspection.

G. ANNUAL MAINTENANCE FEES

The permittee shall submit to the Commissioner annual maintenance fees as required by Rule 0400-12-01-.08.

H. REQUIRED NOTICES

1. If the permittee has arranged to receive hazardous waste from a foreign source, he must notify the Commissioner in writing at least four weeks in advance of the date the waste is expected to arrive at the facility. Notice of subsequent shipments of the same waste from the same foreign source is not required.

2. If the permittee receives hazardous waste from an off-site source (except where the permittee is also the generator), he must inform the generator in writing that he has the appropriate permit(s) for, and will accept, the waste the generator is shipping. The permittee must keep a copy of this written notice as part of the operating record.

3. Before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure care period, the permittee must notify the new owner or operator in writing of the requirements of this permit and Rule 0400-12-01-.07. However, the permittee's failure to notify the new owner or operator of the requirements of this permit condition in no way relieves the new owner or operator of his obligation to comply with all applicable requirements.

I. ORDER OF PRECEDENCE

In the event of any inconsistency between the permit conditions and the material contained in any Attachment to this permit, the permit conditions shall take precedence.

J. PERMIT STRUCTURE

This permit is organized, numbered, and referenced according to the following outline form:

I. Section

A. Subsection

1. Paragraph

(a) Subparagraph

(i) Part

(I) Subpart

(A) Item

EPA Identification Number: TN0210020582
Permit Number: TNHW-

II. GENERAL FACILITY CONDITIONS

A. **HAZARDOUS WASTES TO BE MANAGED:** The hazardous wastes to be managed in the unit(s) authorized by this permit are identified in section III, and Attachment 1. The permittee shall not manage any other hazardous wastes identified by Rule 0400-12-01-.02 in the unit(s) authorized by this permit, until this permit has been appropriately modified.

B. **MAINTENANCE OF THE FACILITY:** The permittee shall construct or maintain the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment outside the parameters of this permit.

C. **SAMPLING, ANALYSIS, AND MONITORING**

1. General Waste Analysis: Before the permittee treats, any hazardous waste, he shall obtain a detailed chemical and physical analysis of a representative sample of the waste. At a minimum, this analysis shall contain all the information which must be known to manage the waste in accordance with this permit and Rule 0400-12-01-.10.

2. Waste Analysis Plan

   (a) The permittee shall follow the procedures described in the Waste Analysis Plan found in Attachment 1. However, use of the exact forms included in Attachment 1 is not mandatory. The permittee may change the format and content of those forms as deemed necessary to provide the information he needs to properly manage the facility. Any deletion of information from such forms, however, must be approved in advance in writing by the Commissioner as a modification to this permit.

   (b) The permittee shall ensure that the Waste Analysis Plan, required by Subparagraph II.C.2(a) above, at a minimum, specifies:

      (i) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters;

      (ii) The test methods which will be used to test for these parameters;

      (iii) The sampling method which will be used to obtain a representative sample of the waste to be analyzed;

      (iv) The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date;

(v) For off-site facilities, the waste analysis the hazardous waste generators have agreed to supply; and;

(vi) Where applicable, the methods that will be used to meet the additional waste analysis requirements for specific waste management methods as specified in Paragraph II.G.3 and Subsections II.O, II.P, II.Q, and II.R.

(c) For off-site facilities, the permittee shall also ensure that the Waste Analysis Plan, required by Subparagraph II.C.2(a) above, at a minimum, specifies the procedures to be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan shall describe:

(i) The procedures which will be used to determine the identity of each movement of waste managed at the facility; and

(ii) The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

3. Frequency of Analysis: The analysis shall be repeated as necessary to ensure that it is accurate and up-to-date. At a minimum, the analysis shall be repeated no less frequently than the frequency specified in the Waste Analysis Plan (Attachment 1) and shall be repeated:

(a) When the permittee is notified or has reason to believe that the process or operation generating the hazardous waste has changed; and

(b) For off-site facilities, when the results of the inspection required in Subparagraph II.C.4(a) below indicate that the hazardous waste received at the facility does not match the waste designated on the accompanying manifest or shipping paper.

4. Additional Analysis

(a) The permittee shall inspect and, if necessary, analyze each hazardous waste shipment received from off-site at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper. The procedure which shall be followed is described in the Waste Analysis Plan, Attachment 1.

(b) The permittee shall inspect and, if necessary, analyze all standing liquid in the secondary containment system(s) prior to its release from the facility. Sampling and analysis shall be performed as necessary to determine whether the liquid is a hazardous waste and how to properly manage it.

5. Sampling and Monitoring: Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to

obtain a representative sample of the waste to be analyzed must be the appropriate method from Rule 0400-12-01-.02(5), Appendix I, the most recent version of the EPA Region 4 Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), or an equivalent method. Laboratory methods must be those specified in the most recent edition of Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846) or Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), or the methods as specified in the attached Waste Analysis Plan, Attachment 1.

D. SECURITY

1. The permittee shall prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the facility. The permittee shall maintain security for the facility in the manner described in Attachment 4.

2. The permittee shall post a sign with the legend, "Danger - Unauthorized Personnel Keep Out," at each entrance to any active portion of the facility, and at other locations, in sufficient numbers to be seen from any approach to the active portion. The legend must be written in English and in any other language predominant in the area surrounding the facility, and must be legible from a distance of at least 25 feet.

E. GENERAL INSPECTION REQUIREMENTS

1. Inspections: The permittee shall inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing or may lead to (1) a release of hazardous waste or hazardous constituents to the environment or (2) a threat to human health. The permittee shall inspect each listed item on the inspection form(s) in Attachment 3. The inspection type and frequency shall be in accordance with Attachment 3.

2. Remedies: The permittee shall remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

3. Inspection Records: The permittee shall record inspections in an inspection log or summary. The permittee shall keep these records for at least five (5) years from the date of inspection. At a minimum, these records shall include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions. The permittee may change the format and content of the inspection form(s) in Attachment 3 as deemed necessary to provide the information he needs to properly manage the facility. Any deletion of information from such form(s), however, must be approved in advance, in writing, by the Commissioner as a modification to this permit.

F. PERSONNEL TRAINING

The permittee shall ensure that facility personnel successfully complete a program of classroom instruction and/or on-the-job training that teaches them to perform their duties in a way that ensures the permittee's compliance with this permit and the Tennessee Hazardous Waste Management Regulations. The permittee shall ensure that the training program is directed by a person(s) trained in hazardous waste management procedures and shall include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed.

1. Training Program: The training program shall at least conform to the personnel training included in this subsection and Attachment 2. The permittee shall ensure that the training program is, at a minimum, designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including where applicable:

   (a) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

   (b) Key parameters for automatic waste feed cut-off systems;

   (c) Communications or alarm systems;

   (d) Response to fires or explosions;

   (e) Response to groundwater contamination incidents; and

   (f) Shutdown of operations.

2. Timing: Facility personnel shall successfully complete the program within six months after the date of their employment or assignment to the facility, or to a new position at the facility, whichever is later. Untrained personnel shall not work in unsupervised positions until they have completed the training requirements of this permit.

3. Annual Review: Facility personnel shall take part in an annual review of the initial training required by this permit.

4. Training Documents and Records: The permittee shall maintain the following documents and records at the facility:

   (a) The job title for each position at the facility related to hazardous waste management, and the name of the employee(s) filling each job;

   (b) A written description for each position listed in Subparagraph II.F.4(a) above. This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, but must include the requisite skill, education, or other qualifications, and duties of employees assigned to each position;

(c) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under Subparagraph II.F.4(a) above; and

(d) Records that document that the training or job experience required under Paragraphs II.F.1, 2 and 3 above has been given to, and completed by, facility personnel.

5. Retention of Training Records: Training records on current personnel shall be kept until closure of the facility; training records on former employees shall be kept for at least five (5) years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

G. GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

1. The permittee shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste shall be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat producing chemical reactions), and radiant heat. While ignitable or reactive waste is handled, the permittee shall confine smoking and open flames to specially designated locations. "No smoking" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

2. Where specifically required by this permit, the permittee that treats, stores or disposes of ignitable or reactive waste, or mixes incompatible waste or incompatible wastes and other materials, shall take precautions to prevent reactions which:

(a) Generate extreme heat or pressure, fire or explosions, or violent reactions;

(b) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;

(c) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(d) Damage the structural integrity of the device or facility; or

(e) Through other like means threaten human health or the environment.

3. When required to comply with Paragraph II.G.1 or 2 above, the permittee shall document that compliance. This documentation may be based on references to published scientific or engineering literature, data from trial tests (e.g., bench scale or pilot scale tests), waste analyses, or the results of the treatment of similar wastes by similar treatment processes and under similar operating conditions.

H. PREPAREDNESS AND PREVENTION

1. Operation/Maintenance of the Facility: The facility shall be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous constituents to air, soil, or surface water which could threaten human health or the environment outside the parameters of this permit.

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2. Required Equipment: At a minimum, the permittee shall equip the facility with the equipment listed in the Contingency Plan, Attachment 5, and with the following:

   (a) An internal communications system or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;

   (b) A device, such as a telephone (immediately available at the scene of operations) or a hand-held two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams;

   (c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and

   (d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

3. Testing and Maintenance of Equipment: The permittee shall test and maintain all facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, as necessary to assure its proper operation in time of emergency.

4. Access to Communications or Alarm Systems: The permittee shall ensure that:

   (a) Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation shall have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee.

   (b) If there is ever just one employee on the premises while the facility is operating, he shall have immediate access to a device, such as a telephone (immediately available at the scene of operation) or a hand-held two-way radio, capable of summoning external emergency assistance.

5. Required Aisle Space: The permittee shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation in an emergency.

6. Arrangements with Local Authorities

(a) The permittee shall attempt to make the following arrangements, as appropriate for the type of waste authorized to be managed by this permit and the potential need for the services of these organizations:

(i) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes;

(ii) Where more than one police or fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(iii) Arrangements with State emergency response teams, emergency response contractors, and equipment suppliers; and

(iv) Arrangements to familiarize local hospitals with the properties of hazardous wastes handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

(b) If State or local authorities decline to enter into such arrangements, the permittee shall document this refusal in the operating record.

7. Unloading Operations: Prevention of hazards at the container unloading (storage) area shall be accomplished by several means.

(a) Hazardous waste received shall be received in the Shipment/Receiving Area, where the conveyance will be surveyed, inspected and prepared for off-site loading. After the initial receiving procedures are completed, the waste will then be moved to an area where it will be unloaded, bar-coded, and put into storage by trained operations personnel.

(b) Containers of hazardous waste shall be checked for proper closure, labeling, and proper placement prior to unloading.

(c) Operational equipment (fork-lift trucks, straps, etc.) shall be properly maintained to prevent the occurrence of a spill or release of hazardous waste due to equipment malfunctions.

(d) The unloading area shall be checked prior to use for potential hazards due to aisle space obstructions, for improper container management practices, and for cleanliness.

I. CONTINGENCY PLAN:

1. Purpose of the Contingency Plan: The Contingency Plan, contained in this permit as Attachment 5, shall, at all times, be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

2. Implementation of Plan(s): The permittee shall immediately carry out the provisions of the Contingency Plan, Attachment 5, whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which threatens or could threaten human health or the environment.

3. Content of the Contingency Plan

   (a) The Contingency Plan, Attachment 5, shall accurately describe the actions facility personnel must take to comply with Paragraphs II.I.1 and 2 above and Paragraph II.I.7 below in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

   (b) The Contingency Plan, Attachment 5, shall accurately describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to Paragraph II.H.6.

   (c) The Contingency Plan, Attachment 5, shall list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see Paragraph II.I.6), and this list must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates. For new facilities, this information must be supplied to the Commissioner at the time of certification.

   (d) The Contingency Plan, Attachment 5, shall include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the Contingency Plan, Attachment5, shall include the location and a physical description of each item on the list, and a brief outline of its capabilities.

   (e) The Contingency Plan, Attachment 5, shall include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This evacuation plan shall describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires).

4. Copies of Plan: The permittee shall maintain at the facility a copy of the Contingency Plan, Attachment 5, and its subsequent revisions. In addition, the Contingency Plan and all revisions to the plan shall be submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

5. Amendments to Plan(s): The permittee shall review and immediately amend the Contingency Plan(s) whenever one or more of the following occur:

   (a) This permit is revised;

   (b) The Contingency Plan fails in an emergency;

   (c) The facility changes - in its design, construction, operation, maintenance, or other circumstances - in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous constituents, or changes the response necessary in an emergency;

   (d) The list of emergency coordinators changes; or

   (e) The list of emergency equipment changes.

6. Emergency Coordinator: There shall be, at all times, at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator shall be thoroughly familiar with all aspects of the facility's Contingency Plan, all operations and activities at the facility, the location and characteristics of waste(s) handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the Contingency Plan.

7. Emergency Procedures

   (a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:

      (i) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

      (ii) Notify appropriate State or local agencies with designated response roles if their help is needed.

   (b) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any released materials. He may do this by observation or review of facility records or manifests, and, if necessary, by chemical analysis.

(c) Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions).

(d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he must report his findings as follows:

(i) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

(ii) He must immediately notify the Tennessee Emergency Management Agency (using their 24-hour toll free number 800/262-3300) and/or the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include:

(I) Name and telephone number of reporter;

(II) Name and address of facility;

(III) Time and type of incident (e.g., release, fire);

(IV) Name and quantity of material(s) involved, to the extent known;

(V) The extent of injuries, if any; and

(VI) The possible hazards to human health, or the environment, outside the facility.

(e) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing release waste, and removing or isolating containers.

(f) If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(g) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste,

contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

(h) The emergency coordinator must ensure that, in the affected area(s) of the facility:

(i) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(ii) All emergency equipment listed in the Contingency Plan is cleaned and fit for its intended use before operations are resumed.

(i) The permittee shall note in the operating record the time, date, and details of any incident that requires implementing the Contingency Plan. Within 15 days after the incident, he shall submit a written report on the incident to the Commissioner. The report must include:

(i) Name, address, and telephone number of the owner or operator;

(ii) Name, address, and telephone number of the facility;

(iii) Date, time, and type of incident (e.g., fire, explosion);

(iv) Name and quantity of material(s) involved;

(vi) The extent of injuries, if any;

(vi) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

(vii) Estimated quantity and disposition of recovered material that resulted from the incident.

J. MANIFEST SYSTEM

1. Use of the Manifest System

(a) If a facility receives hazardous waste accompanied by a manifest, the permittee or his agent must sign and date the manifest as indicated in Subparagraph II.J.1(b) to certify that the hazardous waste covered by the manifest was received, that the hazardous waste was received except as noted in the discrepancy space of the manifest, or that the hazardous waste was rejected as noted in the manifest discrepancy space.

(b) If a facility receives a hazardous waste shipment accompanied by a manifest, the permittee or his agent must:

(i) Sign and date, by hand, each copy of the manifest;

(ii) Note any discrepancies (as defined in Subparagraph II.J.5(a)) on each copy of the manifest;

(iii) Immediately give the transporter at least one copy of the manifest;

(iv) Within 30 days of delivery, send a copy of the manifest to the generator; and

(v) Retain at the facility a copy of each manifest for at least five (5) years from the date of delivery.

(c) If a facility receives hazardous waste imported from a foreign source, the receiving facility must mail a copy of the manifest to the following address within 30 days of delivery: International Compliance Assurance Division, OFA/OECA (2254A), U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW, Washington, DC 20460.

2. Bulk Shipments: If a facility receives, from a rail or water (bulk shipment) transporter, hazardous waste which is accompanied by a shipping paper containing all the information required on the manifest (excluding the installation identification numbers, generator's certification, and signatures), the permittee, or his agent, shall:

(a) Sign and date each copy of the manifest or shipping paper (if the manifest has not been received) to certify that the hazardous waste covered by the manifest or shipping paper was received;

(b) Note any significant discrepancies (as defined in Subparagraph II.J.5(a) below) on each copy of the manifest or shipping paper;
(Note: The Department does not intend that the permittee whose procedures under Subparagraph II.C.2(c) include waste analysis must perform that analysis before signing the shipping paper and giving it to the transporter. Subparagraph II.J.5(b) below, however, requires reporting an unreconciled discrepancy discovered during later analysis.)

(c) Immediately give the rail or water (bulk shipment) transporter at least one copy of the manifest or shipping paper (if the manifest has not been received);

(d) Within 30 days after the delivery, send a copy of the signed and dated manifest or a signed and dated copy of the shipping paper (if the manifest has not been received within 30 days after delivery) to the generator; and

(e) Retain at the facility a copy of the manifest and shipping paper (if signed in lieu of the manifest at the time of delivery) for at least five (5) years from the date of delivery.

3. Initiating a Shipment: Whenever a shipment of hazardous waste is initiated from a facility, the permittee shall comply with the manifesting requirements of Rule 0400-12-01-.03, except for Rule 0400-12-01-.03(4)(e), applicable to the on-site accumulation of hazardous waste by generators. The provisions of Rule 0400-

12-01-.03(4)(e) only apply to owners or operators who are shipping hazardous waste which they generated at that facility.

4. A facility must determine whether the consignment state for a shipment regulates any additional wastes (beyond those regulated Federally) as hazardous wastes under its state hazardous waste program. Facilities must also determine whether the consignment state or generator state requires the facility to submit any copies of the manifest to these states.

5. Manifest Discrepancies

(a) Manifest discrepancies are:

(i) Significant differences (as defined by Subparagraph II.J.5.(b)) between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity and type of hazardous waste a facility actually receives;

(ii) Rejected wastes, which may be a full or partial shipment of hazardous waste that the TSDF cannot accept; or

(iii) Container residues, which are residues that exceed the quantity limits for "empty" containers set forth in Rule 0400-12-01-.02(1)(g)2.

(b) Significant differences in quantity are: for bulk waste, variations greater than 10 percent in weight; and for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload. Significant differences in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper.

(c) Upon discovering a significant difference in quantity or type, the permittee must attempt to reconcile the discrepancy with the waste generator or transporter (e.g., with telephone conversations). If the discrepancy is not resolved within 15 days after receiving the waste, the permittee must immediately submit to the Commissioner a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue.

(d) (i) Upon rejecting waste or identifying a container residue that exceeds the quantity limits for "empty" containers set forth in Rule 0400-12-01-.02(1)(g)2, the permittee must consult with the generator prior to forwarding the waste to another facility that can manage the waste. If it is impossible to locate an alternative facility that can receive the waste, the permittee may return the rejected waste or residue to the generator. The permittee must send the waste to the alternative facility or to the generator within 60 days of the rejection of the container residue identification.

(ii) While the permittee is making arrangements for forwarding rejected wastes or residues to another facility, the permittee must ensure that either the delivering transporter retains custody of the waste, or the permittee must provide for secure, temporary custody of the waste, pending delivery of the waste to the first transporter designated on the manifest prepared under Rule 0400-12-01-.06(5)(c)5 or 6.

(iii) If a facility rejects a waste or identifies a container residue that exceeds the quantity limits for "empty" containers set forth in Rule 0400-12-01-.02(1)(g)2 after it has been signed, dated, and returned a copy of the manifest to the delivering transporter or to the generator, the permittee must follow Rule 0400-12-01-.06(5)(c)7.

K. RECORDKEEPING AND REPORTING

The permittee shall keep a written operating record at the facility.

1. Operating Record: The following information shall be recorded by the permittee, as it becomes available, and maintained in the operating record for five (5) years unless noted as follows:

(a) A description and the quantity of each hazardous waste received and the method(s) and date(s) of its treatment, storage, or disposal at the facility as required by Rule 0400-12-01-.06(57), Appendix I. This information must be maintained in the operating record until closure of the facility;

(b) The location of each hazardous waste within the facility and the quantity at each location. This information shall include cross-references to specific manifest document numbers if the waste was accompanied by a manifest. This information must be maintained in the operating record until closure of the facility;

(c) Records and results of waste analysis and waste determinations performed as specified in Subsections II.C, II.G, II.O, II.P, II.Q, and II.R;

(d) Summary reports and details of all incidents that require implementing the Contingency Plan as required by Subparagraph II.I.7(i);

(e) Records and results of inspections required by Paragraph II.E.3;

(f) Monitoring, testing or analytical data, and corrective action where required by Sections III, IV, and subsection II.P, II.Q, and II.R. Maintain in the operating record for five (5) years, except for records and results pertaining to groundwater monitoring and cleanup, which must be maintained in the operating record until closure of the facility;

(g) For off-site facilities, notices to generators as required by Paragraph I.H.2;

(h) All closure cost estimates as required by Subsection II.N. This information must be maintained in the operating record until closure of the facility;

(i) A certification by the permittee no less often than annually, that the permittee has a program in place to reduce the volume and toxicity of hazardous waste that he generates to the degree determined by the permittee to be economically practicable; and the proposed method of treatment, storage or disposal is that practicable method currently available to the permittee which minimizes the present and future threat to human health and the environment;

(j) For an off-site treatment facility, a copy of the notice, and the certification and demonstration, if applicable, required by the generator or the owner or operator under Rule 0400-12-01-.10(1)(g) or (h);

(k) For an on-site treatment facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under Rule 0400-12-01-.10(1)(g) or (h);

(l) For an off-site storage facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator under Rule 0400-12-01-.10(1)(g) or (h);

(m) For an on-site storage facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under Rule 0400-12-01-.10(1)(g) or (h);

(n) Any records required under Rule 0400-12-01-.06(1)(b)9(xiii), and

(o) Certifications as required by Rule 0400-12-01-.06(10)(g)6, if applicable, must be maintained in the operating record until closure of the facility.

2. Availability, Retention, and Disposition of Records

(a) All records, including plans, required by this permit shall be furnished upon request, and made available at all reasonable times for inspection, by any officer, employee, or representative of the Department who is duly designated by the Commissioner.

(b) The retention period for all records required under this permit is extended automatically during the course of any unresolved enforcement action regarding the facility or as requested by the Commissioner.

3. Unmanifested Waste Report:

If a facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest, or without an accompanying shipping paper (bulk shipments) as described in Rule 0400-12-01-.04(3)(a)5(ii), and if the waste is not excluded from the manifest requirement by

Rule 0400-12-01-.02(1)(e) (conditionally exempt small quantity generators), then the permittee shall prepare and submit a single copy of a letter to the Commissioner within 15 days after receiving the waste. The unmanifested waste report must be submitted on EPA Form 8700-13B. Such report shall be designated "Unmanifested Waste Report" and include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The date the facility received the waste;

(c) The EPA identification number, name, and address of the generator and the transporter, if available;

(d) A description and the quantity of each unmanifested hazardous waste the facility received;

(e) The method of treatment, storage, or disposal for each hazardous waste;

(f) The certification signed by the permittee or his authorized representative; and

(g) A brief explanation of why the waste was unmanifested, if known.

4. Annual Report

(a) The permittee shall prepare and submit a single copy of an annual report to the Commissioner by March 1 of each year.

(b) Annual reports shall be submitted on forms provided by the Department and in accordance with the instructions accompanying the form.

(c) The annual report shall cover facility activities during the previous calendar year and shall include the following information:

(i) The EPA identification number, name, and address of the facility;

(ii) The calendar year covered by the report;

(iii) For off-site facilities, the EPA identification number of each hazardous waste generator from which the facility received a hazardous waste during the year; for imported shipments, the report shall give the name and address of the foreign generator;

(iv) A description and the quantity of each hazardous waste the facility received during the year. For off-site facilities, this information shall be listed by EPA identification number of each generator;

(v) The method of treatment, storage or disposal for each hazardous waste;

(vi) For generators who treat, store, or dispose of hazardous waste on-site, a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated;

(vii) For generators who treat, store, or dispose of hazardous waste on-site, a description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent such information is available for the years prior to 1984; and

(viii) The certification signed by the permittee or his authorized representative.

5. Additional Reports In addition to submitting unmanifested waste reports and the annual report required by Paragraphs II.K.3 and 4, the permittee shall also report to the Commissioner:

(a) Releases, fires, and explosions as specified by Subparagraph II.I.7(j), and Attachment 5,

(b) Facility closures as required by Paragraph II.L.7; and

(c) As otherwise required by groundwater monitoring and Subsections II.P, II.Q, and II.R.

L. CLOSURE

1. Performance Standard:

(a) The permittee shall close the facility in a manner that:

(i) Minimizes the need for further maintenance; and

(ii) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere.

(b) The permittee shall close the facility in accordance with the Closure Plan, Attachment 6.

2. Amendment to Closure Plan(s): The permittee shall submit a written notification of or request for a permit modification to authorize a change in operating plans, facility design, or the approved Closure Plan in accordance with the procedures in Rule 0400-12-01-.07(9). The written notification or request shall include a copy of the amended Closure Plan for review or approval by the Commissioner.

(a) The permittee may submit a written notification or request to the Commissioner for a permit modification to amend the Closure Plan(s) at any time prior to the notification of partial or final closure of the facility.

(b) The permittee shall submit a written notification of or request for a permit modification to authorize a change in the approved Closure Plan whenever:

(i) Changes in operating plans or facility design affect the Closure Plan, or

(ii) There is a change in the expected year of closure, if applicable, or

(iii) In conducting partial or final closure activities, unexpected events require a modification of the approved Closure Plan.

(c) The permittee shall submit a written request for a permit modification including a copy of the amended Closure Plan for approval at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected the Closure Plan. If an unexpected event occurs during the partial or final closure period, the permittee shall request a permit modification no later than 30 days after the unexpected event. The Commissioner will approve, disapprove, or modify this amended plan in accordance with the procedures in Rule 0400-12-01-.07(9). The modified Closure Plan, when approved, will become a condition of this permit.

(d) The Commissioner may request modification to the plan under the conditions described in Subparagraph II.L.2(b). The permittee shall submit the modified plan within 60 days of the Commissioner's request, or within 30 days if the change in facility conditions occurs during partial or final closure. Any modifications requested by the Commissioner will be approved in accordance with the procedures in Rule 0400-12-01-.07(9).

3. Notification of Partial and Final Closure

(a) The permittee shall notify the Commissioner in writing at least 45 days prior to the date on which he expects to begin final closure of the facility.

(b) The date when he "expects to begin closure" must be no later than 30 days after the date on which any hazardous waste management unit receives the known final volume of hazardous waste or, if there is a reasonable possibility that the hazardous waste management unit will receive additional hazardous waste, no later than one year after the date on which the unit received the most recent volume of hazardous waste. If the permittee can demonstrate to the Commissioner that the hazardous waste management unit or facility has the capacity to receive additional hazardous wastes and he has taken all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirements, the Commissioner may approve an extension to this one-year limit.

(c) Notification of closure is not required, if the permit is terminated or the facility is otherwise ordered, by judicial decree or final order under the

Act, to cease receiving hazardous wastes or to close. However, the permittee shall close the facility in accordance with the deadlines established in Paragraph II.L.5 below.

4. Removal of Wastes and Decontamination or Dismantling of Equipment: Nothing in this subsection (II.L) of the permit shall preclude the permittee from removing hazardous wastes and decontaminating or dismantling equipment in accordance with the approved partial or final Closure Plan at any time before or after notification of partial or final closure.

5. Time Allowed For Closure

(a) Within 90 days after receiving the final volume of hazardous wastes at a hazardous waste management unit or facility, the permittee shall treat, remove from the unit or facility, or dispose of on-site, all hazardous waste in accordance with the approved Closure Plan, Attachment 6. The Commissioner may approve a longer period if the permittee complies with all applicable requirements for requesting a modification to the permit and demonstrates that:

(i) (I) The activities required to comply with Subparagraph II.L.5(a) above will, of necessity, take longer than 90 days to complete; or

(II) (A) The hazardous waste management unit or facility has the capacity to receive additional hazardous wastes;

(B) There is a reasonable likelihood that he or another person will recommence operation of the hazardous waste management unit or the facility within one year; and

(C) Closure of the hazardous waste management unit or facility would be incompatible with continued operation of the site; and

(ii) He has taken and will continue to take all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirements.

(b) The permittee shall complete partial and final closure activities in accordance with the approved Closure Plan, Attachment 6, and within 180 days after receiving the final volume of hazardous wastes at the hazardous waste management unit or facility. The Commissioner may approve an extension to the closure period if the permittee complies with all applicable requirements for requesting a modification to the permit and demonstrates that:

(i) (I) The partial or final closure activities will, of necessity, take longer than 180 days to complete; or

(II) (A) The hazardous waste management unit or facility has the capacity to receive additional hazardous wastes;

(B) There is a reasonable likelihood that he or another person will recommence operation of the hazardous waste management unit or the facility within one year; and

(C) Closure of the hazardous waste management unit or facility would be incompatible with continued operation of the site; and

(ii) He has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed but not operating hazardous waste management unit or facility, including compliance with all applicable permit requirements.

(c) The demonstrations referred to in Subparagraphs II.L.5(a) and (b) above shall be made as follows:

(i) The demonstration in Subparagraph II.L.5(a) above shall be made at least 30 days prior to the expiration of the 90-day period in Subparagraph II.L.5(a); and

(ii) The demonstration in Subparagraph II.L.5(b) above shall be made at least 30 days prior to the expiration of the 180-day period in Subparagraph II.L.5(b).

6. Disposal or Decontamination of Equipment, Structures, and Soils: During the partial and final closure periods, all contaminated equipment, structures and soils shall be properly disposed of or decontaminated, unless otherwise specified in the approved Closure Plan, Attachment 6. By removing any hazardous wastes or hazardous constituents during partial or final closure, the permittee may become a generator of hazardous waste and, if so, must handle that hazardous waste in accordance with all applicable requirements of Rule 0400-12-01-.03.

7. Certification of Closure: Within 60 days of completion of final closure, the permittee shall submit to the Commissioner, by registered mail, at least 4 copies of a certification that the hazardous waste management unit or facility, as applicable, has been closed in accordance with the specifications in the approved Closure Plan Attachment 6. The certification shall be signed by the permittee and by a Qualified Professional Engineer. Documentation supporting the Qualified Professional Engineer certification shall be furnished to the Commissioner upon request until he releases the permittee from the financial assurance requirements for closure as required by Subparagraph II.N.6(d).

M. CO-MANAGEMENT OF OTHER MATERIALS: The permittee shall not treat, store, or dispose of other wastes or other materials along with hazardous waste in any hazardous waste management unit or facility covered by this permit unless:

1. The other waste or other material is labeled, marked, or otherwise clearly identifiable as to what it is;

2. The permittee is able to demonstrate that the other waste or other material is not a hazardous waste; and

3. The other waste or other material is managed in a manner that does not adversely impact compliance with the conditions of this permit.

N. FINANCIAL REQUIREMENTS: State and federal government are exempt from the requirements of subsection II.N.

O. LAND DISPOSAL RESTRICTIONS

1. Tennessee Rule 0400-12-01-.10 identifies hazardous wastes that are prohibited from land disposal and defines those limited circumstances under which an otherwise prohibited waste may continue to be placed in a land treatment, storage or disposal unit. The permittee shall comply with all applicable requirements of Rule 0400-12-01-.10. Where the permittee has applied for an extension, waiver or variance under Rule 0400-12-01-.10, the permittee shall comply with all applicable restrictions of Rule 0400-12-01-.10 pending final approval of such application.

2. A restricted waste identified in Rule 0400-12-01-.10(2) may not be placed in a land disposal unit without further treatment unless the requirements of Rule 0400-12-01-.10(2) and/or Rule 0400-12-01-.10(3) are met.

3. The storage of hazardous waste restricted from land disposal under Rule 0400-12-01-.10 is prohibited unless the requirements of Rule 0400-12-01-.10(4) are met.

P. AIR EMISSION STANDARDS FOR PROCESS VENTS

1. The permittee shall comply with the requirements of Rule 0400-12-01-.06(30) for all process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous waste with organic concentrations of at least 10 ppmw, if these operations are conducted in hazardous waste management units subject to this permit and in any on-site hazardous waste recycling unit.

2. To show that a process vent associated with a hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation is not subject to the requirements of Paragraph II.P.1, the permittee shall make an initial determination that the time-weighted, annual average total organic concentration of the waste managed by the hazardous waste management unit is less than 10 ppmw using one of the following two methods:

   (a) Direct measurement of the organic concentration of the waste using the following procedures:

(i) The permittee shall take a minimum of four grab samples of waste for each waste stream managed in the affected unit under process conditions expected to cause the maximum waste organic concentration.

(ii) For waste generated on-site, the grab samples shall be collected at a point before the waste is exposed to the atmosphere such as in an enclosed pipe or other closed system that is used to transfer the waste after generation to the first affected distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation. For waste generated off-site, the grab samples shall be collected at the inlet to the first waste management unit that receives the waste provided the waste has been transferred to the facility in a closed system such as a tank truck and the waste is not diluted or mixed with other waste.

(iii) Each sample shall be analyzed and the total organic concentration of the sample shall be computed using Method 9060 of SW-846 (Rule 0400-12-01-.01(2)(b)).

(iv) The arithmetic mean of the results of the analyses of the four samples shall apply for each waste stream managed in the unit in determining the time-weighted, annual average total organic concentration of the waste. The time-weighted average is to be calculated using the annual quantity of each waste stream processed and the mean organic concentration of each waste stream managed in the unit.

(b) Using knowledge of the waste to determine that its total organic concentration is less than 10 ppmw. Documentation of the waste determination is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to generate a waste stream having a total organic content less than 10 ppmw, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.

3. The determination that distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations manage hazardous wastes with time-weighted, annual average total organic concentrations less than 10 ppmw shall be made as follows:

(a) By the effective date that the facility becomes subject to the provisions of Subsection II.P or by the date when the waste is first managed in a waste management unit, whichever is later, and

(b) For continuously generated waste, annually, or

(c) Whenever there is a change in the waste being managed or a change in the process that generates or treats the waste.

4. When the permittee and the Commissioner do not agree on whether a distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation manages a hazardous waste with organic concentrations of at least 10 ppmw based on knowledge of the waste, the procedures in Method 8260 of SW-846 (Rule 0400-12-01-.01(2)(b)) may be used to resolve the dispute.

Q. AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

The permittee shall comply with the requirements of Rule 0400-12-01-.06(31) for all equipment that contains or contacts hazardous waste with organic concentrations of at least 10 percent by weight that are managed in units that are subject to this permit or in any on-site hazardous waste recycling unit. Emissions from any hazardous waste facility shall not violate the Tennessee Air Pollution regulations.

R. ORGANIC AIR EMISSION STANDARDS

1. Applicability:

   (a) Rule 0400-12-01-.06(32) applies to all tanks, containers, and miscellaneous units identified in this permit, except as provided for in Rule 0400-12-01-.06(1)(b) and Rule 0400-12-01-.06(32)(a)2.

   (b) The conditions of this subsection apply to hazardous waste management units identified in this permit for which required control equipment has been installed and is operational.

2. Emission Control Technology: The permittee shall install and maintain all regulated units and associated emission control technology in accordance with the detailed plans, schedules, information and reports as contained in this permit.

3. General Standards: The permittee shall comply with the applicable requirements of Rule 0400-12-01-.06(32). If the organic air emission control equipment is not installed and operational by December 6, 1996, the permittee is required to submit a Schedule for Implementation in accordance with Rule 0400-12-01-.05(29)(c). The Schedule for Implementation shall indicate that the organic air emission control equipment be installed and operational as soon as possible, but no later than December 8, 1997 for units subject to Rule 0400-12-01-.06(32), except controls on tanks used for stabilization, and June 8, 1998 for tanks used for stabilization that are subject to Rule 0400-12-01-.06(32). The permittee shall comply with Rule 0400-12-01-.05(29) until such time the organic air emission control equipment is installed and operational. Upon approval of the final organic air emissions control option, this permit will be modified in accordance with Rule 0400-12-01-.07(9)(c)5.

4. Reporting Requirements:

(a) For each tank, container or miscellaneous treatment unit which manages hazardous waste that is exempted from using air emission controls, a written report shall be submitted to the Division Director within fifteen (15) days of each occurrence when hazardous waste is placed in the waste management unit in noncompliance with the conditions of Rule 0400-12-01-.06(32)(c)3(i) or (ii), as applicable. The written report shall contain the EPA identification number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent reoccurrence of the noncompliance.

(b) For tanks listed in Subparagraph II.R.1(b), which use air emission controls in accordance with the requirements of Rule 0400-12-01-.06(32)(e)3, a written report shall be submitted to the Division Director within 15 days of each occurrence when hazardous waste is managed in the tank in noncompliance with the conditions specified in Rules 0400-12-01-.06(32)(e)3(i) through (iv). The written report shall contain the EPA identification number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent reoccurrence of the noncompliance.

(c) For control devices used in accordance with the requirements of Rule 0400-12-01-.06(32)(h), a semiannual written report shall be submitted to the Division Director except as provided for in Subparagraph II.R.4(d). The report shall describe each occurrence during the previous 6-month period when a control device is operated continuously for 24 hours or longer in noncompliance with the applicable operating values defined in Rule 0400-12-01-.06(30)(f)3(iv) or when a flare is operated with visible emissions for 5 minutes or longer in a two-hour period, as defined in Rule 0400-12-01-.06(30)(d)4. The written report shall include the EPA identification number, facility name and address, and an explanation why the control device could not be returned to compliance within 24 hours, and actions taken to correct the noncompliance.

(d) A report to the Division Director in accordance with the requirements of Subparagraph II.R.4(c) is not required for a 6-month period during which all control devices subject to Rule 0400-12-01-.06(32) are operated by the permittee such that during no period of 24 hours or longer did a control device operate continuously in noncompliance with the applicable operating values defined in Rule 0400-12-01-.06(30)(f)3(iv) or a flare operate with visible emissions for 5 minutes or longer in a two-hour period, as defined in Rule 0400-12-01-.06(30)(d)4.

(e) All reports shall be signed and dated by an authorized representative of the permittee as per Rule 0400-12-01-.07(2)(a)8.

5. Notification of New Units: Prior to installing any tank, container, surface impoundment, or miscellaneous unit subject to Rule 0400-12-01-.06(32) or

modifying an existing process handling waste in tanks or containers, such that the unit(s) will become subject to Rule 0400-12-01-.06(32), the permittee shall apply for a permit modification under Rule 0400-12-01-.07(9)(c)5, and provide specific Part B application information required under Rules 0400-12-01-.07(5)(a) through .07(5)(b)3 and Rule 0400-12-01-.07(5)(b)13, as applicable, with the modification request.

S. RESTRICTION ON OWNERSHIP OF THE FACILITY

No person who has been convicted of any felony or has been convicted of a misdemeanor for the unlawful storage, treatment, or disposal of hazardous waste may, at any time, be the legal or beneficial owner of ten percent (10%) or more of the stock of the facility.

III. SPECIFIC CONDITIONS FOR TREATMENT OF ENERGETIC HAZARDOUS WASTES

A. APPLICABILITY

The permittee shall comply with this permit including Section I, Standard Conditions, Section II, General Facility Conditions, and Section III, Specific Conditions for Treatment of Energetic Hazardous Wastes by Open Burning and Open Detonation (OB/OD).

B. WASTE IDENTIFICATION

1. Only hazardous wastes that have explosive characteristics of reactivity (EPA Hazardous Waste Code D003, D030, K044, and K045 are allowable for treatment by open burning and open detonation. Specifically, these explosive reactivity definitions are specified in Tennessee Rule 0400-12-01-.02(3)(d) as follows:

   (a) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

   (b) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

   (c) It is forbidden explosive as defined in Tennessee Rule 0400-12-01-.02(3)(d), or a Class A explosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173.88.

2. The permittee is limited to treat annually:

EPA Hazardous Waste Code	Amount
D003 and/ or D030	2,096,500 lb
K044 and/ or D003	40,000 lb
K045 and D003	150,000 lb

3. Wastes generated off-site from material manufactured by the permittee, generated only at a site or sites owned or operated by the permittee, or subsidiaries of permittee, or product distribution sites under contract to the permittee, provided that the volume of hazardous waste received from such sites to be treated by open burning and open detonation does not exceed ten percent (10%) of the permitted treatment volume at the facility, and provided that during no annual period more than ten (10%) of the total hazardous waste treated or disposed at the facility be from such sites.

C. UNIT DESIGN AND VOLUME

1. The permittee may treat only energetic and energetic contaminated hazardous wastes by open burn and open detonation treatment, described in Attachment 1 subject to the terms and conditions of this permit.

OPEN BURN UNIT DESIGN AND CAPACITY

Number of Pans	Dimension of Pans	Maximum Capacity of Reactive Waste Treated Per Burn
9 Small	Approximately 100" long x 52" wide x 12" high	333.3 pounds NEW* each pan per burn
2 Large	149" long x 60" wide x 12" high	500 pounds NEW each pan per burn
1 Large	149" long x 60" wide x 12" high	Spare to be used if another pan requires maintenance or becomes un-operational
Total Maximum Daily Allowed Treatment Quantity is 24,000 lb NEW* 5 days a week		

[*NEW – Net Explosive Weight]

OPEN DETONATION TREATMENT

Maximum OD Pits	Maximum Capacity/Pit	Maximum Treatment Capacity
20 Pits	500 NEW	10,000 lb NEW*/day

ABOVE GROUND TREATMENT

Aboveground detonation is only conducted on an emergency basis and is limited to six times per day with a maximum amount of 15 pounds NEW for both the munitions item and the donor charge.

The permittee is limited for treating hazardous waste to five (5) days per week.

D. PROHIBITED

1. The permittee is prohibited from treating hazardous waste that is not identified in this permit.

2. The permittee is not allowed to act as a commercial facility as defined by Tennessee Rule 0400-12-02.

3. Open burning and open detonation of hazardous waste is prohibited except for the Treatments of waste explosives. Waste explosives include propellants, explosives, and pyrotechnics (PEP) waste, which has the potential to detonate and bulk military propellants, which cannot safely be disposed of through other modes of treatment. Owner or operators choosing to open burn open detonation waste explosive must do so in a manner that does not threaten human health or the environment.

4. The permittee is prohibited from treating hazardous waste within (1,730 feet) from the facility boundary.

E MONITORING REQUIREMENT

1. The permittee must conduct at a minimum, the following monitoring to verify that the operating requirements in the permit do achieve the performance standards: temperatures, wind direction, wind speed, sky condition, etc. (The permittee shall inspect any such related equipment visually prior to treatment to verify operability).

2. The permittee shall maintain, calibrate, and operate process monitoring, control, and recording equipment as specified in Attachment 8 of this permit, while treating hazardous waste.

3. Hazardous waste shall not be placed in the miscellaneous units if any of the monitoring instruments fail to operate properly.

4. The permittee shall keep on file at the facility the assessments of each hazardous waste miscellaneous burn unit's integrity and suitability for handling hazardous waste, until such time that the permitted unit(s) are certified and closed in accordance with this permit.

5. The permittee shall maintain at the facility record of the results of leak tests and integrity tests conducted.

6. In the event that a hazardous waste miscellaneous unit exceeds the maximum allowable capacity designated for that unit this permit, the permittee shall document in the operating record, and notify the commissioner as required by this permit, the following information:

   (a) The date and time of occurrence;

   (b) Identification of the unit;

   (c) Identification of the person causing the incident, why it happened, and what action is taken to stop it from happening in the future.

7. The permittee must conduct a soil sampling semi-annually throughout the waste management area (WMA) to demonstrate that soil has not been contaminated by OB/OD units operation in accordance with the approve sampling plan, and submit the result to the commissioner.

F. OPERATING REQUIREMENTS

The permittee shall comply with the following requirements prior to thermal treatment:

1. Open burning and open detonation shall not occur whenever any of the following meteorological conditions are present or reasonably expected to occur during thermal treatment.

(a) Precipitations; rain, thunderstorms, or lightning.

(b) Additional meteorological conditions (air pollution episodes, inversions, overcast sky).

(c) Restricted visibility (dense fog, blowing snow, or dust)'

(d) Low, overcast sky.

(e) Air pollution stagnation advisories.

(f) Ozone advisory alert.

(g) Wind speeds greater than 15 miles per hour (mph).

2. Open burning open and detonation treatment shall take place during daylight hours after 6:00 A.M. and before 7:30 P.M. hours, local times, 5 days a week.

3. All of the hazardous waste destined for thermal treatment shall be collected, and treated in accordance with the instructions listed in Attachment 8 of the permit.

4. On the day of each scheduled thermal treatment event the permittee shall:

   (a) Verify and record the meteorological conditions on the forms.

   (b) Inspect the burn pan area for hot spots or cracks.

   (c) Inspect burn pans and covers for any rusted spot or hole (before and after each operation).

   (d) All operator personnel are evacuated to a minimum distance of 1,250 feet or a safe location.

   (e) Maintain written records of all of the information observed per the requirements of this specific condition and keep them as part of the operating records.

5. If unexpected meteorological conditions arise or if technical difficulties develop, the permittee may allow the material to remain in the pan under the following conditions:

   (a) The pan is covered as soon as safety conditions allow.

   (b) The waste is treated, in compliance with Attachment 8, and paragraph 1 of this section, as soon as the conditions become safe.

   (c) If the permittee determines that meteorological conditions or technical difficulties will prevent the treatment on the same day. The cause for the postponement shall be recorded daily in the operating record.

   (d) No additional waste is placed in the pan.

6. The permittee shall remove spilled or leaked waste from the burn pan(s), or concrete pads, and from surrounding soils immediately after placement of material on the burn pan(s) in accordance with Attachment 8 of this permit.

7. The permittee shall manage ash and other residues, removed from the burn pan(s), in accordance with the procedures described in this permit.

8. Thermal treatment of the hazardous waste shall be conducted by qualified personnel, experienced in handling explosive hazardous waste material.

9. The permittee shall provide adequate fire protection to ensure confinement and control of any fire resulting from the operation, as specified in the Attachment 5. The permittee shall notify the on-site fire department of the on-going nature of on-site thermal treatment of explosive waste, and shall allow local fire officials to observe and provide additional fire protection.

10. All the burn pans that are determined by the permittee to be no longer usable for the thermal treatment shall be decontaminated and disposed of, within 30 days of such determination, in accordance with the decontamination and disposal procedures for the clean debris as described in the Closure Plan of the Permit Application. A report describing all the decontamination activities must be submitted to the Division, within 15 days of completion of decontamination.

11. The permittee shall conduct inspections of the miscellaneous unit including the covers, on each day of the thermal treatment and weekly when the unit is not in operation, in accordance with inspection check list in Attachment 3 of this permit, to detect precipitation, stains, residues from incomplete combustion, accumulation of storm water and integrity of burn pans and concrete bumpers including berms. If a significant deterioration of the concrete pads or joint sealant material is noted during inspections, the permittee shall re-evaluate the need for repairing the facility and the need for a protective coating on the burn pad. All the inspection reports including corrective actions must be recorded and kept as part of the operating records.

12. The permittee shall implement appropriate remedial actions for the problems discovered during the inspections conducted pursuant to subsection II.E. The remedial actions taken shall be included as part of the operating record.

    (a) Location of each hazardous waste within the accumulation areas and quantity at each location at the end of the reporting period.

    (b) Copies of manifests showing disposition of burn residues and/or the quantity of burn residues onsite at the end of the reporting period.

13. The permittee shall maintain compliance with the environmental performance standards listed in Tennessee Rule 0400-12-01-.6(27) at all times.

14. Any new/replacement of unit before operating must obtain and submit to the commissioner a written assessment, renewal and certify by a qualified professional engineer attesting that the OB unit has structural integrity and is acceptable for the storing and treating hazardous waste.

15. The permittee must bury the munitions under 4 to 15 feet of soil before they are detonated.

16. At the completion of each detonation series, the Permittee must visually inspect the active portion of the detonation area for the presence of shrapnel (metal fragments). Any fragments/shrapnel that are (1) observable on the soil and (2) measure 4 inches or greater in any dimension shall be collected and removed. Any shrapnel found meeting these requirements should be visually inspected to verify that the energetic component of the waste munitions has been successfully treated. If shrapnel is observed or suspected to contain unreacted energetic, it shall be retreated.

G. RISK ASSESSMENTS

1. As part of environmental assessment, permittee shall conduct a risk assessment to demonstrate that releases from the Subpart X units will not pose unacceptable risks. The risk assessment shall include, but not be limited to, evaluations of risks to human health (that is, a human health risk assessment), and to plants and animals (that is an ecological risk assessment). The primary goal of risk assessments for an OB unit is to provide a means to communicate the risk caused by the operation of the unit during the permit life of the unit.

   The risk assessment must include but not be limited to the following:

   (a) Information on the physical and chemical characteristic of hazardous waste constituents released from the unit.

   (b) Identification and location of potential human and environmental receptors.

   (c) An estimate of the concentrations of hazardous waste constituents at receptor locations.

   (d) An estimate of the rate of uptake of each hazardous waste constituent by each human and environmental receptor.

   (e) An estimate of the rate uptake of each hazardous waste constituent by each receptor.

2. The permittee must sufficiently analyze any waste, which has not been previously treated in this thermal process to enable him to establish appropriate operating conditions and to determine the type of the pollutants, which might be emitted.

H. MISCELLANEOUS UNITS

The requirements in this section apply to owners and operators of facility that treat or dispose of hazardous waste in miscellaneous units.

A miscellaneous unit must be located, designed, constructed, operated, maintained, and closed in a manner that will insure protection of human health and the environment. Permits for miscellaneous units are to contain such terms and provisions including, but not limited to, as appropriate, design and operating requirements, detection and monitoring requirements, and requirements for responses to releases of hazardous waste or hazardous constituents from the units. Protection of human health and the environment includes, but is not limited to:

1. Prevention of any releases that may have adverse effects on human health or the environment due to migration of waste constituents in the ground water or subsurface environment, considering:

    (a) The volume and physical and chemical characteristics of the waste in the unit, including its potential for migration through soil, liners, or other containing structures;

    (b) The hydrologic and geologic characteristics of the units and surrounding area;

    (c) The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground water;

    (d) The quantity and direction of ground water flow;

    (e) The proximity to and withdrawal rates of current and potential ground-water users;

    (f) The patterns of land use in the region;

    (g) The potential for deposition or migration of waste constituents into subsurface physical structures, and into the root zone of food-chain crops and other vegetation;

    (h) The potential for health risks caused by human exposure to waste constituents; and

    (i) The potential for damage to domestic animals, wildlife, corps, vegetation, and physical structures caused by exposure to waste constituents.

2. Prevention of any releases that may have adverse effects on human health or the environment due to the migration of waste constituents in surface water, or wetlands or on the soil surface considering;

    (a) The volume and physical and chemical characteristics of the waste in the unit;

    (b) The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing migration;

    (c) The hydrologic characteristics of the unit and surrounding area, including the topography of the unit;

(d) The patterns of precipitation in the region; and

(e) The quantity, quality, and direction of ground-water flow.

I. CLOSURE OF THE UNIT

In accordance with Tennessee Rule 0400-12-01-.06(9)(i), the permittee must remove all hazardous waste and hazardous waste residues from the unit. Remaining burn pans, and soil containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed.

The permittee shall complete the closure operation in accordance with the closure plan in Attachment 6 of the Permit.

J. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

1. In accordance with Tennessee Rule 0400-12-01-.06(9)(h) the permittee must ensure that:

   (a) Incompatible wastes, or incompatible wastes and materials, are not placed into the same burn pan.

   (b) Hazardous wastes are not placed in a damaged or rusted burn pan that is not safe to hold hazardous waste nor incompatible waste or material.

K. OPEN BURNING BEST MANAGEMENT PRACTICES

1. The permittee shall comply with the following requirements for best management practices of OB treatments:

   (a) Burn pans (or the other containment devices) must be operated to avoid contact with the soil surface.

   (b) Pans must be made of material sufficient to withstand the burning process and be sufficient size and depth to contain residues.

   (c) The depth of energetic waste to be treated must be 4 inches, or less (to avoid the potential for detonation and facilitate effective treatment.

   (d) The pans must be elevated to enhance cooling and to facilitate routine inspections.

   (e) The pans must be covered when not in use to prevent entry of precipitation.

   (f) Collected precipitation should not be discharged onto the ground unless the pan was decontaminated after its last use, or unless determined not to contain hazardous constituents based on sampling and analysis.

   (g) A minimum of 30 minutes wait time is observed between OB events for pan reuse to allow the burn pans surface to cool off.

(h) Prior to removing any treated residues from the burn pans any residue is managed as hazardous waste until determined otherwise based on waste analyses.

(i) The permittee must analyze the ash generated from OB treatment for LDR compliance before disposal.

(j) Explosive and reactive hazardous waste residue and ash must be verified through sampling and analyses prior to classification as non-hazardous. The permittee must sample for all analyses listed in Tennessee Rule 0400-12-01-.10(3) unless otherwise proven that constituents are not waste being burned as specified in Tennessee Rule 0400-12-01-.10(3)(i) Universal Treatment Standards.

(k) Emissions from any hazardous waste facility shall not violate the Tennessee Air Pollution regulations.

(l) Water Discharges from any hazardous facility shall not violate the Tennessee Water Quality Control Act regulations.

Additional OB best management practices may be appropriate on a case-by-case basis in the future.

L. OPEN DETONATION BEST MANAGEMENT PRACTICES

Open detonation is the treatment of energetic wastes (typically intact munitions and bulk explosives) in pits by detonation. The OD Unit is approximately 40 acres with two adjacent shooting fields (referred to as the East Shooting Field and West Shooting Field) containing earthen pits.

1. The permittee shall comply with the following requirements for best management practices of OD treatments:

   (a) Search surrounding area for unexploded ordnances after each treatment day (retreat as necessary).

   (b) OD pits, trenches, and or craters should be filled in (or alternative protective measure) when they will not be used for some length of time such as at the end of summer and before winter when it gets to wet to use the site. This is done to prevent the accumulation of precipitation and run-on (i.e., potential sources for migration to groundwater).

   (c) For subsurface detonation the minimal charge burial depth needed to mitigate fragmentation hazards and noise impacts should be used (since burial depth may adversely impact treatment effectiveness).

   (d) Routine housekeeping of the OD unit (i.e., collection and removal of shrapnel from the unit).

(e) The scrap metal shall be collected, sorted according to type (light metal, heavy metal, aluminum, brass, etc.), loaded onto trucks, and for recycling or disposal.

(f) The permittee must inspect the ADA silt basins area semi-annually.

Additional OD best management practices may be practical on case-by-case basis.

IV. SPECIFIC CONDITIONS FOR GROUNDWATER MONITORING

In accordance with Rule 0400-12-01-.06(6)(a)6, the permittee shall implement the following Commissioner-approved alternative groundwater monitoring program. The alternative monitoring program requires the permittee to maintain the detection monitoring well systems as installed, and perform groundwater sampling and analysis as specified in this permit section and Attachment 9. In order to detect any new contribution to groundwater contamination from the current operation of the open burning and open detonation regulated hazardous waste management units (HWMUs), the permittee shall perform statistical evaluations of groundwater monitoring analytical data. The data will be gathered from upgradient and downgradient monitoring wells of the designated waste management area (WMA), which includes both HWMUs. A point of compliance, as defined by Paragraph I.C.15, has been established down gradient of the WMA. The point of compliance and the designated WMA are shown on Figure 9-1 of Attachment 9.

A. MAINTENANCE OF GROUNDWATER MONITORING SYSTEMS

1. The permittee shall maintain the alternate groundwater monitoring systems at the two HWMUs as described in this subsection and in accordance with the monitoring well construction details in Table 9D-1, Appendix 9D of Attachment 9, Sampling and Analysis Plan, at the well locations shown on Figure 9-1 of that attachment.

   (a) Point of Compliance Wells: The following monitoring wells will serve as the point of compliance wells for the designated units.

      (i) Open Burning Unit: MI-250 and MI-252

      (ii) Open Detonation Unit: MI-263 and MI-296

   (b) Background Wells: The following wells will serve as background wells for the designated units.

      (i) Open Burning Unit: MI-259

      (ii) Open Detonation Unit: MI-019b

2. The Permittee shall conduct inspections on the monitoring wells identified in Paragraphs IV.A.1 and IV.A.2. The inspections shall be performed at least semi-annually. At the time of the inspection, the permittee shall complete and sign a Monitoring Well Inspection Form, an example of which is presented in Appendix 9A of Attachment 9.

3. At such time that closure is necessary, the permittee shall close the wells identified in Paragraphs IV.A.1 and IV.A.2 in accordance with the well decommissioning procedures detailed in the most recent version of the EPA, Region 4, Science and Ecosystem Support Division's (SESD) Field Branches Quality System and Technical Procedures, or an equivalent method that has been approved by the Commissioner. The EPA, Region 4, SESD's monitoring well decommissioning

procedure can be found online at: epa.gov/region4/sesd/fbqstp/Design-and-Installation-of-Monitoring-Wells.pdf. The method chosen for well decommissioning (abandonment) must be protective of human health and the environment and in compliance of state and local requirements. The Commissioner shall be notified, in writing, thirty (30) calendar days prior to implementing well closure procedures. No well shall be closed unless prior written approval is granted. The permittee shall submit written certification of the completion of closure action to the Commissioner within thirty (30) days of completing the abandonment procedures.

B. ELEVATION OF THE GROUNDWATER SURFACE

Prior to sampling/evacuating the wells identified under Paragraphs IV.A.1 and IV.A.2, the Permittee shall measure the depth to the static water level and determine the groundwater surface elevation each time the monitoring wells are sampled per Subsection IV.D. The depth to the static water level in these wells will be measured using the procedures described in Attachment 9, or according to procedures and requirements specified in the most recent version of the USEPA, Region 4, SESD's Field Branches Quality System and Technical Procedures, which can be found online at: epa.gov/region4/sesd/fbqstp/Groundwater-Level-Measurement.pdf. The water depth information shall be recorded on the Monitoring Well Parameter Information Sheet.

C. MONITORING WELL EVACUATION (PURGING) PROCEDURES

Prior to sampling the wells identified under Paragraphs IV.A.1 and IV.A.2, the permittee shall evacuate the stagnant water within the wells using the procedures described in Attachment 9, or according to procedures and requirements specified in the most recent version of the USEPA, Region 4, SESD's Field Branches Quality System and Technical Procedures, which can be found online at: epa.gov/region4/sesd/fbqstp/Groundwater-Sampling.pdf. To verify that each well was properly evacuated and stabilized prior to sampling, the permittee shall complete and sign the Monitoring Well Parameter Information Sheet.

D. GROUNDWATER MONITORING SAMPLING PROCEDURES

The permittee shall sample the monitoring wells listed under Paragraphs IV.A.1 and IV.A.2 by using the procedures listed below, or according to procedures and requirements specified in the most recent version of the USEPA, Region 4, SESD's Field Branches Quality System and Technical Procedures, which can be found online at: epa.gov/region4/sesd/fbqstp/Groundwater-Sampling.pdf.

1. Samples shall be collected on a semi-annual basis using the techniques and procedures described in Attachment 9, Sampling and Analysis Plan. Samples will be collected for the list of parameters in Table 3-1 of that attachment and will include the required collection and/or handling of the replicate samples, the trip blanks and the equipment/field blanks described in that attachment.

2. All samples shall be preserved using the techniques and procedures described in Attachment 9. Table 9B-1 in Appendix 9B of that attachment provides the number, type and size of containers for each parameter, the methods of preservation, and other sample preparation requirements.

3. All samples shall be prepared, labeled, sealed and shipped to the laboratory using the techniques and procedures described in Attachment 9.

4. Samples shall be tracked and controlled using the chain-of-custody procedures described in Attachment 9. To verify that sample integrity was maintained throughout the field collection and shipping process, the permittee shall complete and sign the Chain of Custody Form in Appendix 9A of Attachment 9.

E. ANALYTICAL PROCEDURES

To ensure that quality data is acquired from chemical analyses of the samples collected in accordance with Subsection D, laboratory handling and analyses of those samples shall comply with the following laboratory procedures.

1. After sample receipt by the laboratory, sample integrity shall be maintained as described in Attachment 9, Sampling and Analysis Plan, and by adhering to internal laboratory sample security procedures.

2. Laboratory analyses of the samples shall be performed within sixty (60) days of sample collection and shall not exceed any lesser holding times as detailed for each parameter in Table 9B-2 of Appendix 9B in Attachment 9.

3. The laboratory shall analyze the samples using the methods specified in the most recent edition of Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846. These methods are listed in Table 3-1 in Attachment 9.

4. Analysis of groundwater samples shall comply with the method detection limits as listed in Tables 9C-1 and 9C-2 of Appendix 9C in Attachment 9.

F. GROUNDWATER MONITORING DATA EVALUATION AND RESPONSE

The permittee shall perform intrawell statistical evaluations of the groundwater monitoring analytical data acquired under Subsection IV.E. Separate analyses using the Mann-Kendall statistical method will be performed for the two main constituents of concern at the site: RDX and TNT. The Mann-Kendall statistical test and/or the seasonal Mann-Kendall will be used to determine if a statistically significant upward trend in groundwater contamination has occurred.

If the Mann-Kendall procedure indicates a statistically significant upward trend in any well, the permittee shall use the Theil-Sen method to determine the magnitude of the trend slope for that well. The Theil-Sen line will estimate the change in the *median* concentration of that constituent in that well over time. The permittee shall perform the statistical evaluations required within forty-five (45) days of receipt of the analytical results of groundwater sampling.

The Mann-Kendall, the seasonal Mann-Kendall and the Theil-Sen procedures are detailed in EPA 530/R-09-007, “Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance March 2009,” which can be found at epa.gov/osw/hazard/correctiveaction/resources/guidance/sitechar/gwstats/unified-guid.pdf.

If the statistical procedures indicate that a potential groundwater impact from current OB/OD unit practices has occurred, the permittee shall report the statistical information to the Commissioner within fourteen (14) days of the determination. The notification to the Commissioner shall include recommendations for further action to mitigate releases.

G. RECORDKEEPING, REPORTING AND RESPONSE

1. In accordance with Paragraph I.F.8, the permittee shall enter all completed groundwater monitoring and inspection forms, sampling and analysis data, and statistical evaluations into the facility operating record.

2. The permittee shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually. A narrative shall be included in the annual report that describes how flow rates and directions were calculated and document that the point of compliance wells are located hydraulically downgradient of their respective HWMU.

3. The permittee shall submit to the Commissioner, as part of the annual report required per paragraph II.K.4, copies, or as appropriate, summaries of all the groundwater monitoring, testing, analytical data and statistical evaluations obtained pursuant to subsection IV.F. The groundwater portion of the annual report should contain all the data and evaluations from the previous calendar year's sampling events and may be submitted as a separate document. Copies of laboratory analytical data shall be forwarded to the Commissioner upon receipt by the permittee.

H. ASSURANCE OF COMPLIANCE

As an additional part of the facility's reporting requirements, the Permittee shall assure the Commissioner, at least annually, that the groundwater detection monitoring program will continue to adequately identify a release to the environment during the term of the permit. If the permittee determines that the groundwater monitoring no longer satisfies this requirement, he or she must, within ninety (90) days, submit an application for a permit modification to make any appropriate changes to the program.

V. SPECIFIC CONDITIONS FOR CORRECTIVE ACTION

A. APPLICABILITY

Milan is on the National Priority List (NPL). It also has an October 16, 1989 Federal Facility Agreement that ensures that the environmental impacts associated with past and present activities at the site thoroughly investigated and appropriate cleanups developed.

Corrective Action at Solid Waste Management units and Area of Concern at the facility are currently being addressed by the Tennessee Department of Environment and Conservation's Division of Remediation and the U.S Environmental Protection Agency's Superfund Division.

EPA Identification Number: TN0210020582
Permit Number: TNHW- **153**

VI. SCHEDULE OF COMPLIANCE

1. To comply with Tennessee Rule 0400-12-01-.07(5)(b)9(i)(II) within 60 days of the effective date of this Permit, the permittee must submit a detailed Sampling & Analysis Plan to monitor the effect the OB/OD operations is having on surrounding soils. Specifically, to demonstrate that the units have not contaminated surrounding soils. Upon DSWM approval of the Sampling & Analysis plan, the permittee must sample twice a year (semi annually) and send the resulting sampling report to the Director of DSWM.

Facility: Milan Army Ammunition Plant
EPA Identification Number: TN0210020582
Permit Number: TNHW-153

ATTACHMENT 1. WASTE ANALYSIS PLAN

Attachment 1 consists of two separate sections as follows:

- Attachment 1.1 Waste Characteristics
- Attachment 1.2 Waste Analysis Plan

ATTACHMENT 1.1
WASTE CHARACTERISTICS

Site Location

The WMA is in the east-central portion of the MLAAP, entirely within Carroll County. The MLAAP is a 22,540-acre site located in Gibson and Carroll Counties in western Tennessee. The longitude of MLAAP is divided by the counties along Highway 104. Most of MLAAP's boundary neighbors are private citizens in a rural setting. Figure 1-1 is a vicinity map depicting the general location of the MLAAP.

Site History

The Milan Army Ammunition Plant (MLAAP) is a government-owned, contractor-operated (GOCO) military industrial installation currently operated by American Ordnance LLC (AO), with a mission that includes loading, assembling, packaging, storing, and shipping small and medium caliber ammunition, as well as reconditioning and demolition of munitions. Milan Army Ammunition Plant was constructed between January 1941 and January 1942 and has been in operation for 70 years.

Owner/Operator

The contact persons responsible for hazardous waste management activities at MLAAP are:

Army Environmental Coordinator
Milan Army Ammunition Plant
2280 Highway 104 West, Suite 1
Milan, Tennessee 38358-3176

And

Contractor Environmental Manager
Milan Army Ammunition Plant
2280 Highway 104 West, Suite 2
Milan, Tennessee 38358-3177

Hazardous wastes are generated at (MLAAP) as a result of the manufacture or Load, Assemble, and Pack of explosive containing munitions; and as a result of subsequent treatment of explosive-contaminated wastes. These hazardous wastes are described below and summarized in Table 1.1-1.

PHYSICAL AND CHEMICAL CHARACTERISTCS OF WASTES AND RESIDUES

MLAAP generates, treats, and stores waste munitions including Propellants, Explosives and Pyrotechnics (PEP). Propellants used, stored, and treated at MLAAP include: single based propellants (chiefly nitrocellulose); double-based propellants (usually nitrocellulose); and nitroglycerine and triple based or complex propellants (typically consisting of nitrocellulose, nitroglycerine and one or more additional nitrated compounds such as dinitrotoluene or nitroguanidine). These propellants also contain stabilizers to reduce the risk of self-ignition, along with other additives to enhance serviceability, such as flash suppressants.

MLAAP processes explosive compounds during the manufacture of ammunition. Each type of ammunition varies in type and quantity of explosive. The types of explosive compounds processed include cyclotetramethylene tetranitramine (HMX), cyclotrimethylene trinitramine (RDX), and trinitrotoluene (TNT); or complex blends of these explosives. Additionally, munitions stored at MLAAP may include ammonium nitrate mixtures, tetryl, or primary explosives such as

lead azide or styphnate. PEP generated, stored, and treated at MLAAP are small tracers, incendiaries containing explosive with metals such as aluminum, magnesium and/or iron, some types of flares, and illumination rounds.

Waste Munitions and Munitions Components
Waste munitions and munitions components are rejected ammunition and ammunition components; meaning, they no longer meet MLAAP and/or Department of Defense (DOD) standards. These wastes munitions are collected in containers of various types and stored prior to thermal treatment. The waste munitions (and components) are generally Department of Transportation (DOT) Class 1.

Explosives are therefore assumed to be reactive (THWMR Rule 0400-12-01-.02) without any analysis requirements.

Other hazardous wastes generated and stored at MLAAP include: explosive-contaminated solvents and rags, and non-explosive contaminated solvents. Clean-up and decontamination of process equipment generates an explosive-contaminated waste containing the solvents acetone, alcohol, and/or toluene. The waste solvents and solvents rags are accumulated at the point of generation and transferred to permitted storage. Non-explosive-contaminated solvents (acetone, toluene, alcohol and etc.) may be stored in Building J-137. The contaminated solvents and rags are stored at one or more of the 14 magazines. These wastes are hazardous because they contain solvents (F002, F003, F005) and are ignitable (D001). These wastes do not contain free liquids.

The estimated quantities of hazardous waste treated based upon the previous at the OB/OD units are 2,096,000 pounds per year of waste explosive and propellant (D003 and/or D030) and 40,000 pounds per year of explosive sump scrap (K044), and 150,000 pounds per year of spent carbon from the treatment of the wastewater containing explosives (K045and/or D003).

Explosive-Contaminated Process Waters
Work areas throughout MLAAP are periodically washed/rinsed with water to remove residual explosives. Waste munitions are also washed out to remove the explosives during demil. The explosive-contaminated rinse water (K047) is collected by gravity fed into settling sumps as an initial treatment step followed by activated carbon treatment. The treated wastewater is discharged per National Pollutant Discharge Elimination System permit requirements and is therefore exempt from a Resource Conservation and Recovery Act hazardous waste treatment and storage permit.

Sludge from Settling Sumps
The explosive sludge from settling sumps is oven or air dried and collected in containers prior to thermal treatment or stored for re-use. Explosive sludge stored for thermal treatment is a United States Environmental Protection Agency listed reactive hazardous waste (K044).

Spent Carbon
Wastewater (K047) from the settling sumps is pumped to activated carbon treatment units for removal of residual explosives. Spent carbon is periodically removed, partially dewatered, and stored in containers prior to disposal at a permitted facility. This waste stream is listed (K045) with a basis for listing as reactivity.

Table 1.1-1
Hazardous Wastes Currently Registered with TDEC

TDEC Waste Stream Number	Waste Name	EPA Waste Codes	Treatment Location	Onsite Treatment Area
No. 1	Explosive Sludge	K044	Onsite	Area W Ammunition Destruction Area
No. 2	Spent Carbon	K045	*Offsite	Treated at Area W Ammunition Destruction Area only if failed Card Gap/DDT Test
No. 3	Non-listed Reactive	D003, D030	Onsite	Area W Burning Pans or Ammunition Destruction Area
No. 7	Ash	D004, D005, D006, D007, D008	Offsite	Area W Burning Pans
No. 8	Explosive/Solvent Contaminated Rags	D001, F005, F003	Offsite	NA
No. 9	Pinkwater	K047	Onsite	Permit Exempt Totally Enclosed Treatment Units with discharge to CWA permitted system.
No. 10	Mixed Thinner Waste	D001, D007, D008, F003, F005	Offsite	NA
No. 11	Paint Sludge and Thinner	D001, F003, F005	Offsite	NA
No. 38	Waste Fluorescent Bulbs	D009	Offsite	NA
No. 40	Waste Lab Pack (Laboratory Chemicals)	LABP	Offsite	NA
No. 43	Waste Corrosives and Metals	D002, D006, D007, D008, D009	Offsite	NA
No 44	Water Soluble Oil	D004, D006, D007, D008	Offsite	NA
No. 45	Waste Toluene Diisocyanate	U223	Offsite	NA
No. 47	Waste Laboratory Solvents	D001, F003, F005	Offsite	NA
No 50	Waste Lead Foil & Cloth Bags	D008	Offsite	NA
No. 51	Waste Fixer Solution from X-Ray	D011	Onsite	Permit Exempt Totally Enclosed Treatment Units with discharge to CWA permitted system.
No. 54	Waste Paint & Adhesive	D001, F003, F005	Offsite	NA
No. 58	Waste Adhesive/Cement	D001, F003, F005	Offsite	NA

No. 59	Waste Chlorinated Laboratory Solvents	F002, D028, D039, U080	Offsite	NA
No. 61	Waste Ash from OB that fails reactivity Test.	D003	Onsite	Area W Burning Ground
No. 62	Waste Bituminous Compound	D001	Offsite	NA
No. 63	Waste Thinner from Stores	D001, D035, F003, F005, U154	Offsite	NA
No. 64	Waste Ink, Out of Specification or Excess	D001, F003, F005	Offsite	NA
No. 65	Waste Dispersant with Lead	D008	Offsite	NA
No. 66	Waste Lab Pack, Chlorinated Solvent	U080	Offsite	NA
No. 67	Polysulfide, cured	D008	Offsite	NA
No. 68	Richmold	D001	Offsite	NA
No. 69	Gasoline Spill Residue	D001	Offsite	NA
No. 70	Cosomoline	D001	Offsite	NA
No. 71	Gasoline Spill Residue, Contaminated Vermiculite	D001	Offsite	NA
No. 72	Ethanol	D001, F003, F005	Offsite	NA
No. 73	Red Varnish	D001	Offsite	NA
No. 74	Varsol	D001	Offsite	NA
No. 75	Isopropyl Alcohol	D001	Offsite	NA
No. 76	Waste Toluene	U220, D001	Offsite	NA
No. 81	Flammable Liquid, Corrosive	D001, D002	Offsite	NA
No. 82	Waste Paint Chips and Debris	D008, D006	Offsite	NA
No. 83	PQ-56 Antimicrobial Preservative	D002	Offsite	NA
No. 84	Portable Toilet Chemical	D001	Offsite	NA
No. 85	Calcium Hypochlorite	D001	Offsite	NA

Ash from Burning Ground
The burning of explosive and explosive-contaminated waste streams generates a residual ash that may be Extraction Procedure (EP) — Toxic hazardous waste. Waste PEP is open burned in elevated burn pans. Any metal parts generated from open burning of these wastes is transported to the explosive-contaminated burn pan and re-burned. Solid waste that is explosive-contaminated is open burned in burn pans. All ash from open burning is analyzed in accordance with the Toxicity Characteristic Leaching Procedure (TCLP) for EP-Toxic metals and explosive nitrobodies. If analytical results show that the waste is not EP-Toxic, then the ash is non-hazardous, and is disposed of in MLAAP's onsite permitted landfill under a Special Solid Waste Permit. If analytical results show the ash is EP-Toxic, it is managed and stored as hazardous waste in the hazardous waste container storage units.

Lab Acid Containing Trace Metals
MLAAP's Chemical and Environmental Laboratories use inorganic acids, such as hydrochloric, nitric, and sulfuric acids to analyze material and waste for RCRA metals (metals that are listed as EP-Toxic). These lab acids containing trace metals are collected at the laboratory in satellite accumulation plastic containers. When the container is filled, a sample is collected and analyzed for EP-Toxic metals. The container is transferred to Building J-137. This waste is typically characteristic for corrosivity (D002) and any of the eight EP-Toxic metals (D004-D011).

Laboratory Solvents
MLAAP's Chemical and Environmental Laboratories use solvents, such as acetone, methyl ethyl ketone, toluene, methyl alcohol, and others for various laboratory testing. These solvents are collected in satellite accumulation containers. Full containers are picked up, managed, and stored as hazardous waste in Building J-137. This waste contains solvents that are listed as F002, F003, and F005 and are characteristically hazardous for ignitibility (D001). The laboratories also generate "Lab Packs" resulting from out-of-date or expired laboratory chemicals. These Lab Packs may carry any number of waste codes. Lab Packs are properly packed, labeled, and stored in Building J-137.

Waste Paint-Related Material
MLAAP production lines often use paints, hardeners, and thinners for finishing ammunition and ammunition items. Wastes generated from the use of these materials are collected at the point of generation and are transferred to permitted storage, typically Building J-137 when containers are filled. This waste typically has the following waste codes: D001, F003, and F005.

Mixed Thinner Waste
Thinners are used to thin, clean and/or remove inks, markings, adhesives and other materials. Waste thinners typically contain acetone, various alcohols, toluene, and xylenes. These wastes are accumulated in satellite accumulation containers at the point of generation and are moved to Building J-137 when the containers are filled. Mixed thinner waste carries the following waste codes: D001, F003, and F005. If yellow ink is present it may also carry D007 and D008 waste codes due to the presence of lead chromate.

Waste Fluorescent Bulbs
This waste stream is generated from crushing fluorescent bulbs (tubes) generated from within MLAAP. Intact bulbs are sent from many plant locations to the BG where they are sent through a crushing unit designed for destruction of fluorescent tubes. The waste is collected in drums and filtered to prevent dust escaping to the atmosphere. When the drum is filled to its capacity, it is moved to Building J-137 or a permitted storage magazine. The fluorescent bulbs carry a waste code for mercury (D009).

Waste Munitions

Military munitions designated as hazardous waste are defined as "all ammunition products and components produced or used by or for the U.S. DOD or the U.S. Armed Services for national defense and security, including military munitions under the Department of Defense, the U.S. Coast Guard, the U.S. Department of Energy (DOE), and National Guard Personnel." The term military munitions includes: confined gases, liquid and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries used by DOD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunitions, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof."

Military munitions, as defined above, are manufactured to exacting standards, with all components and chemical compositions well identified at the point of manufacture and assembly. The composition of all materials as well as the assembly of completed munitions must meet Military standards. Military Standard 1167C provides for a Data Card to be generated for each lot of material used in a munition and a Data Card to be generated for each lot of munitions produced from these materials. This Data Card identifies the lot (batch) of munitions produced, the manufacturer of the material, the part number (which also identifies the material), and other information concerning that lot of munitions.

This system allows a site receiving these munitions as a hazardous waste to meet all the requirements of Tennessee Rule 0400-12-01-.06(2)(d), General Waste Analysis for waste received from offsite.

In addition to the above discussion of identification of composition of military munitions, the DOD has developed a Munitions Items Disposition Action System (MIDAS) database or information system that details all materials, including the chemical composition, of all munitions manufactured for the DOD. MIDAS is available for use at MLAAP. MIDAS could be used to determine the composition of any waste munition received from offsite for which the composition was undetermined.

Due to the nature of many types of munitions, traditional test methods are not applicable due to the design and configuration of the subject. In many cases, testing would be unsafe, potentially damaging to equipment, and could result in injury or death to analytical personnel. In cases dealing with these types of munitions, waste analysis would be obtained from the Data Cards, manufacturer's information, military Technical Manuals, MIDAS, and/or Material Safety Data Sheets (MSDS's).

Waste Storage

Waste munitions and munitions components, sludge from the settling sumps, spent carbon, ash from open burning, and other hazardous wastes are typically stored in 14 magazines in Area D. Other wastes outlined above are typically stored in Building J-137. In addition, MLAAP stores de-energized electrical equipment containing Polychlorinated Biphenyl's (PCB's), PCB spill debris, and waste friable asbestos in Building J-137. No waste munitions are stored in Building J-137.

Munitions awaiting thermal treatment at the Ammunition Destruction Area (ADA) are transferred from the 14 magazines to the Explosive Waste Transfer Facility (EWTF). The EWTF is also the location where munitions are configured for treatment.

MLAAP is permitted to receive waste munitions from offsite from DOD facilities, DOD contractor facilities, DOD associated facilities or agents of the DOD, and consist of "Military Munitions" as

defined in the February 3, 1997 "Military Munitions Rule" (Tennessee Rule 0400-12-01-.08(13)) (266 Subpart M).

CHEMICAL ANALYSIS

EP-Toxicity analysis via TCLP for metals and explosive constituents are performed on explosives-contaminated ash, spent carbon, lab acids, and other wastes. These analyses are performed at MLAAP's Chemical and Environmental Laboratories. Test methods followed are listed in Table 1.1-2.

MLAAP can accept waste munitions from DOD offsite locations. These munitions are manufactured, stored, and managed in the same manner as the waste munitions now handled at MLAAP. Analysis and test methods other than those outlined in Table 1.1-2 will not be required. MLAAP has well-equipped and staffed Chemical and Environmental Laboratories, Military ammunition assembly and chemical composition are well defined and must meet military standards. Any waste munitions received from offsite will be properly managed and tracked as outlined in the "Munitions Rule," and will be readily identifiable as to the manufacturer, date of manufacture, nature and composition of the materials contained in the munitions.

WASTE ANALYSIS PLAN

The Waste Analysis Plan (WAP) is designed to describe the procedures used to obtain chemical and physical information and data on wastes to ensure proper transportation, treatment, and disposal. The WAP details parameters for analysis and supporting rationale, test methods, sampling methods, and frequency of analysis, along with other documentation for additional requirements, as pertinent to the OB/OD units.

Parameters and Rationale

Safety hazards are posed by handling and testing waste munitions, which contain relatively high levels of explosives; and explosive-contaminated wastes, since they are assumed to be reactive. Ash resulting from the treatment of waste munitions and explosive-contaminated wastes may require testing to determine other hazardous waste characteristics and constituents.

A copy of the MLAAP's complete WAP is included in Attachment 1-1.

Analytical Methods

Table 1.1-2 identifies the test methods to be employed in MLAAP's WAP. In all cases, analytical data will be generated under Quality Assurance procedures specified for the method in SW-846 or other EPA analytical methods.

Sampling Methods

Information provided in Table 1.1-2 and Attachments 1.2 provides more information on the sampling methods selected for the wastes generated or received at MLAAP.

Frequency of Analysis

Information provided in Sections Sample Equipment Decontamination Methods and SELECTING WASTE RE-EVALUATION FREQUENCIES of the Waste Analysis Plan in Attachment 1.2 provide adequate information on the sampling frequency for the wastes generated or received at MLAAP.

Procedure to Determine the Identity of Each Movement of Waste Managed at the Facility
Procedures for Receiving Wastes from Offsite Generators

As a DOD facility, non-DOD waste cannot be disposed of on a DOD site. Only waste generated from production of munitions for the DOD may be treated at MLAAP. Additionally, MLAAP is a non-

commercial facility. This limits the amount of off-site waste that can be treated at MLAAP to 10% of the total amount treated.

The Sampling Method, which will be used to obtain a Representative Sample of the Waste to be identified

In most cases, sampling of waste munitions for laboratory analysis will not be required. Military munitions are manufactured to exacting standards, and all components and chemical compositions of materials are well-identified at the point of manufacture and assembly. The composition of all materials must meet military standards as does the assembly of completed munitions. Military Standard 1167C provides for a Data Card to be generated for each lot of material used in an ammunition item and for each lot of ammunition produced from these materials. The Data Card identifies the lot (batch) of ammunition produced, the manufacturer of the material, the part number (which also identifies the material), and other information concerning that lot of ammunition. This system allows a site receiving these munitions as hazardous waste to meet all the requirements of Tennessee Rule 0400-12-01-.06(2)(d), General Waste Analysis for waste received from offsite. In addition, the DOD has developed MIDAS, an electronic database or information system, that details all materials including chemical composition of all munitions manufactured for or by the DOD. MIDAS is available for use at MLAAP and may be used to determine the composition of any waste munition received from off-site for which the exact composition was undetermined. An Offsite Waste Profile Sheet is required for each waste stream from each DOD facility shipping waste to MLAAP.

In any case if actual sampling and analysis of waste munitions received from offsite is required, MLAAP will employ the following methodology: before sampling and analysis is performed, every avenue available to determine waste composition will be exhausted. In many cases, due to the nature of the waste, sampling and analysis may not be possible. In this case, the generator site will be contacted for possible return of the waste munitions.

Bulk Packaged Explosive, Propellants, and/or Pyrotechnics

Bulk packaged hazardous waste (explosives, propellants and or pyrotechnics) are typically packed in cardboard boxes with water proof liners, paperboard drums with a water proof or anti-static liner or non-sparking metal containers. The waste would be assumed to meet the definition of a reactive waste (waste code D003); therefore the minimum number of samples and amount of sample that would provide a representative composite would be collected. In the case of bulk materials, the minimum representative number of a sample would be one complete item representative of that group (lot or part (DoDAC) number), while a minimum amount of bulk material would be 250 grams. It must be noted that the safety of site sampling personnel and property will be of major concern. Prior to sampling, all waste munitions will be moved to a remote, safe location. All explosive ordnance items to be sampled would be moved to a remote, safe location prior to sampling.

Analysis of military munitions, including sump scrap (K044) may be performed on bulk material such as bulk explosives or propellants. This would only be performed prior to treatment of an item to determine if any trace materials were leachable (EP toxic), such as lead, that would not be identified in normal munitions data.

Table 1.1-2
Waste Sample Analysis Requirements

TDEC Waste Stream Number	Waste Name	Minimum Sample Parameter(s)	Analytical Method	Comments
No. 1	Explosive Sludge	Explosives, Card Gap/DDT	EPA 8330A, ASTM	
No. 2	Spent Carbon	Explosives, Card Gap/DDT, RCRA Metals	EPA 8330A, EPA 6010B, EPA 7470A, 9095B, ASTM	Spent carbon wastes are also listed for reactivity and are therefore always assumed to be reactive unless tested and determined to be non-hazardous. Spent carbon undergoes both total nitrobodies testing and reactivity testing.
No. 3	Non-listed Reactive	Explosives, Reactivity	EPA 8330A, ASTM	The chemical composition of waste munitions and munition components is known and the munitions are also known to be reactive. In most cases no laboratory analyses are needed to determine physical or chemical characteristics. Before sampling and analysis is performed, every avenue available to determine the waste composition will be exhausted. In many cases, due to the nature of the waste, sampling and analysis may not be possible. In this case the generator site will be contacted for possible return of the waste munitions.
No. 7	Ash	Explosives, RCRA Metals, Card Gap/DDT, Paint Filter	EPA 8330A, EPA 6010C, EPA 7470A, ASTM, EPA 9095B	
No. 8	Explosive/Solvent Contaminated Rags	Explosives, Volatiles	EPA 8330A, EPA 8260B	
No. 9	Pinkwater	pH, Explosives	EPA 9040B, EPA 8330A	
No. 10	Mixed Thinner Waste	Ignitibility, Volatiles, BTU's/lb.	EPA 1010, EPA 8260B,	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 11	Paint Sludge and Thinner	Volatiles	EPA 8260B	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 38	Waste Fluorescent Bulbs	RCRA Metals	EPA 6010C	
No. 40	Waste Lab Pack (Laboratory Chemicals)	Various Reagents, etc.	NA	Determined by Content Solvent or solvent-like wastes are defined from the MSDS's that are on file for the products added to the container.
No. 43	Waste Corrosives and Metals	pH, RCRA Metals	EPA9040B, EPA 6010C, EPA7470A	

Table 1.1-2
Waste Sample Analysis Requirements

TDEC Waste Stream Number	Waste Name	Minimum Sample Parameter(s)	Analytical Method	Comments
No 44	Water Soluble Oil	Flashpoint, RCRA Metals		
No. 45	Waste Toluene Diisocyanate	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 47	Waste Laboratory Solvents	Volatiles, Semi-Volatiles, RCRA Metals	NA	Determined by Content. Waste is usually defined from the MSDS's that are on file for the products added to the container.
No 50	Waste Lead Foil & Cloth Bags	Lead	EPA 6010B	
No. 51	Waste Fixer Solution from X-Ray	pH, Silver	EPA 9040B, EPA 6010C	
No. 54	Waste Paint & Adhesive	Flashpoint, BTU's/lb, Volatiles	EPA 1010, EPA 8260B,	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 58	Waste Adhesive/Cement	Flashpoint, BTU's/lb, Volatiles	EPA 1010, EPA 8260	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 59	Waste Chlorinated Laboratory Solvents	Flashpoint, BTU's/lb, Volatiles, RCRA Metals	EPA 1010, EPA 8260, EPA 6010C, EPA 7470A,	Determined by Content
No. 61	Waste Ash from OB that fails reactivity Test.	Explosives, RCRA Metals, Card Gap/DDT	EPA 8330A, EPA 6010C, EPA 7470A,	
No. 62	Waste Bituminous Compound	Flashpoint, BTU's/lb.	EPA 1010,	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 63	Waste Thinner from Stores	Flashpoint, BTU's/lb, Volatiles	EPA 1010,	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 64	Waste Ink, Out of Specification or Excess	Flashpoint, BTU's/lb, Volatiles, RCRA Metals	EPA 1010, EPA 8260B, EPA 6010C	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 65	Waste Dispersant with Lead	Lead	EPA 6010C	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 66	Waste Lab Pack, Chlorinated Solvent	Flashpoint,	EPA 1010,	Determined by Content of the Lab Pack.

Table 1.1-2
Waste Sample Analysis Requirements

TDEC Waste Stream Number	Waste Name	Minimum Sample Parameter(s)	Analytical Method	Comments
		BTU's/lb, Volatiles, RCRA Metals	EPA 8260, EPA 6010C, EPA 7470A,	
No. 67	Polysulfide, cured	Lead	EPA 1311/6010C	
No. 68	Richmold	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 69	Gasoline Spill Residue	Flashpoint, BTEX	EPA 1010	
No. 70	Cosomoline	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 71	Gasoline Spill Residue, Contaminated Vermiculite	Flashpoint, BTEX	EPA 1010	
No. 72	Ethanol	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 73	Red Varnish	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 74	Varsol	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 75	Isopropyl Alcohol	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 76	Waste Toluene	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 81	Flammable Liquid, Corrosive	Flashpoint, BTU's/lb pH	EPA 1010 EPA 9040B	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 82	Waste Paint Chips and Debris	RCRA Metals Explosives	EPA 8330A EPA 6010C	
No. 83	PQ-56 Antimicrobial Preservative	pH	EPA 9040B	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 84	Portable Toilet Chemical	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 85	Calcium Hypochlorite			Waste is usually defined from the MSDS's that are on file for the products added to the container.

Note: The most recent revision to the analytical methods will be used per permit condition II.C.5.

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SURFACE WATER, WETLANDS, AND SOIL SURFACE PROTECTION

OB Unit

Surface drainage at the OB Unit is provided by local swales, sediment basins, and ditches. Selected areas around the OB Unit have been contoured to allow construction and aid in storm water run-off. The four concrete pads containing the elevated burn pans are provided with a 6-inch concrete dike on three sides to eliminate run-on. The dikes are placed on the upgradient side and the adjacent sides of the pads. The elimination of run-on also reduces the runoff from the pads.

Annual stormwater sampling events take place at surface water (SW) points throughout the MLAAP. SW4 is a sampling point in the northeast portion of the OB Unit. The sample is taken during a rain event and is tested for total suspended solids (TSS), pH, nitrobodies, and grease. The sampling event also provides records of rainfall and flow. The analytical results are in Attachment 1.2.

OD Unit

Storm water run-on/runoff controls are not necessary for the OD Unit. Earth ejected by the blast during detonation is spread thinly over a large area. Most of the soil is recovered and used to reform the next pit. Surface drainage from the West Shooting Field at the OD Unit is controlled via two engineered silt/sedimentation basins and generally flows to the west along unnamed wet weather conveyance to Wolf Creek. Four 12-inch upright corrugated PVC pipes at the lowest elevation of each silt basin have small holes that prevents the flow of sediment while allowing water to flow through. The pipes carry the water to a creek or ditch. The water then flows to the north into the Rutherford Fork of the Obion River. Runoff from the East Shooting Field is controlled by a engineered silt basin and flows to the east to Halls Branch.

All explosive charge preparation activities associated with OD Unit are conducted on a concrete slab equipped with a metal cover to prevent unexpected precipitation from contacting the material. If inclement weather is possible, all OD Unit activities are secured and any explosive waste is placed inside trailers to prevent contact with precipitation.

SOIL SAMPLING

Soil sampling is conducted semi-annually throughout the WMA to demonstrate that soil has not been contaminated by OB/OD unit operation. Soil is analyzed for Total Explosives, RCRA metals, total petroleum hydrocarbons (TPH), and perchlorate. Perchlorate is being analyzed at the request of DOD. The analytical results are kept on file at MLAAP and are available for review.

Due to the size of the OD Unit, three soil samples are collected from the East Shooting Field and three from the West Shooting Field. Multiple burn pans are placed on a single concrete burn pad, which will be considered one sampling location; therefore, three soil samples are collected near each concrete burn pad at the OB Unit, for a total of twelve (12) samples.

Only the OB Unit soil samples are analyzed for TPH due to the fuel oil used to stabilize some waste pyrotechnics prior to treatment.

ATTACHMENT 1.2
Waste Analysis Plan

The Milan Army Ammunition Plant (MLAAP) is a Government-Owned, Contractor-Operated (GOCO) military industrial installation. The MLAAP facility was constructed and operations started between January 1941 and January 1942. MLAAP's general mission has been the manufacture, storage, and shipment of explosive ordnance, including both large and small-caliber military ammunition. MLAAP is assigned the following general responsibilities:

- Load, assemble and pack ammunition items;
- Handle and store strategic and critical materials;
- Production quality assurance functions in support of procurement and production;
- Operation and maintenance of active facilities in support of current operations. Maintenance and/or lay-a-way of stand-by facilities (including machinery and package lines received from industry or other Government installations) in condition to permit rehabilitation and resumption of production within prescribed time limitations;
- Receipt, surveillance, maintenance, renovation, storage, physical inventory, issue, demilitarization and salvage of field service stocks, items of industrial stocks and international logistics requirements stocks;
- Procurement, receipt, storage and issue of necessary supplies, equipment, components and essential materials;
- Industrial readiness planning and emergency mobilization planning, including preparation, review and revision of prescribed plans;
- Production engineering and process engineering;
- Support service for tenants;
- Custodial maintenance and administrative functions of sub-installations.

Facility and Processes that Generate Hazardous Waste

Hazardous wastes generated at all MLAAP include waste propellants, explosives, pyrotechnics (PEP; waste munitions and munitions components, explosive-contaminated solvents and rags from

clean-up of manufacturing equipment, spent carbon from the treatment of wastewater containing explosives, contaminated ash from the thermal treatment of waste explosives and explosive contaminated materials, and explosive sludge from wastewater generated during the manufacture and processing of ammunition. MLAAP also generates waste fluorescent bulb, non-explosive contaminated waste inks, non-explosive contaminated waste solvents, and non-explosive contaminated paint-related waste in addition to lab packs and other miscellaneous hazardous waste. A list of wastes currently registered with the Tennessee Department of Environment and Conservation (TDEC) is listed in Table 1.2-1.

Hazardous wastes are generated at MLAAP as a result of the following:

1. Load, Assemble and Pack (LAP, manufacturing) of ammunition that contains explosives and/or explosive components;

2. Production support operations;

3. Treatment of explosive waste or explosive-contaminated waste;

4. Installation operation and maintenance activities;

5. Military munitions declared obsolete or excess by the U.S. Government.

These wastes are also defined as non-listed reactives displaying the characteristic of reactivity (D003) as defined in Tennessee Rule 0400-12-01-.02(3)(d)(viii) (defined as reactive by DOT). The thermal treatment process may generate ash and/or residue contaminated with Lead (D008) due to the high heat and pressure effects on metal parts. All non-reactive (explosive) hazardous waste generated at MLAAP is shipped offsite to a permitted treatment and/or disposal facility.

Hazardous Waste Received from Offsite Sources

Hazardous waste received at MLAAP from off-site is from Department of Defense (DoD) facilities, DoD contractor facilities, tenants, and DoD associated facilities or agents of the DoD, and consists primarily of "Military Munitions" as defined in the February 3, 1997 "Military Munitions Tennessee Rule 0400-12-01-.08(13). These off-site generators are either DoD facilities or DoD contractors engaged in the manufacture, storage, processing or handling of military munitions as defined in Tennessee Rule 0400-12-01-.09(13) (military munitions rule). Wastes from these facilities sent to MLAAP for thermal treatment are limited to non-chemical waste military munitions and must fit the DOT definition for explosive and Tennessee Rule 0400-12-01-.06 for reactivity.

Military munitions designated hazardous waste are defined as "all ammunition products and components produced or used by or for the U.S. DOD or the U.S. Armed Services for national defense and security, including military munitions under the Department of Defense, the

U.S. Coast Guard, the U.S. Department of Energy (DOE), and National Guard Personnel. The term military munitions includes confined gaseous, liquid and solid propellant, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries used by DOD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunitions, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof." Military munitions, as defined above, are manufactured to exacting standards, with all components and chemical compositions well identified at the point of manufacture and assembly.

Emergency Treatment of Offsite Materials

Additionally, requests and provisions for handling and/or treatment of PEP or ammunition products and components by MLAAP from off-site sources for emergency treatment may be made through the MLAAP Commanding Officer.

If the MLAAP Commanding Officer determines that emergency treatment is required and that treatment is within the capabilities of the MLAAP facility, then emergency handling and treatment may be conducted at MLAAP after consultation with TDEC and the Tennessee Emergency Management Agency (TEMA) and as defined in “Explosives or Munitions Emergency Tennessee Rule 0400-12-01-.01(2)(a)”.

In the event such emergency treatment may be conducted at MLAAP, the waste materials will be profiled and tracked the same as all waste received from offsite. Material destroyed will be assigned a container(s) numbers and placed into MLAAP’s waste tracking system.

Table 1.2-1 Hazardous Wastes Currently Registered with TDEC				
TDEC Wastestream Number	**Waste Name**	**EPA Waste Codes**	**Treatment Location**	**Onsite Treatment Area**
No. 1	Explosive Sludge	K044	Onsite	Area W Ammunition Destruction Area
No. 2	Spent Carbon	K045	*Offsite	Treated at Area W Ammunition Destruction Area only if failed Card Gap/DDT Test
No. 3	Non-listed Reactive	D003, D030	Onsite	Area W Burning Pans or Ammunition Destruction Area
No. 7	Ash	D004, D005, D006, D007, D008	Offsite	Area W Burning Pans
No. 8	Explosive/Solvent Contaminated Rags	D001, F005, F003	Offsite	NA
No. 9	Pinkwater	K047	Onsite	Permit Exempt Totally Enclosed Treatment Units with discharge to CWA permitted system.
No. 10	Mixed Thinner Waste	D001, D007, D008, F003, F005	Offsite	NA
No. 11	Paint Sludge and Thinner	D001, F003, F005	Offsite	NA
No. 38	Waste Fluorescent Bulbs	D009	Offsite	NA
No. 40	Waste Lab Pack (Laboratory Chemicals)	LABP	Offsite	NA
No. 43	Waste Corrosives and Metals	D002, D006, D007, D008, D009	Offsite	NA
No 44	Water Soluble Oil	D004, D006, D007, D008	Offsite	NA
No. 45	Waste Toluene Diisocyanate	U223	Offsite	NA
No. 47	Waste Laboratory Solvents	D001, F003, F005	Offsite	NA
No 50	Waste Lead Foil & Cloth Bags	D008	Offsite	NA
No. 51	Waste Fixer Solution from X-Ray	D011	Onsite	Permit Exempt Totally Enclosed Treatment Units with discharge to CWA permitted system.
No. 54	Waste Paint & Adhesive	D001, F003, F005	Offsite	NA
No. 58	Waste Adhesive/Cement	D001, F003, F005	Offsite	NA
No. 59	Waste Chlorinated Laboratory Solvents	F002, D028, D039, U080	Offsite	NA
No. 61	Waste Ash from OB that fails reactivity Test.	D003	Onsite	Area W Burning Ground
No. 62	Waste Bituminous Compound	D001	Offsite	NA
No. 63	Waste Thinner from Stores	D001, D035, F003, F005, U154	Offsite	NA
No. 64	Waste Ink, Out of Specification or Excess	D001, F003, F005	Offsite	NA
No. 65	Waste Dispersant with Lead	D008	Offsite	NA
No. 66	Waste Lab Pack, Chlorinated Solvent	U080	Offsite	NA
No. 67	Polysulfide, cured	D008	Offsite	NA
No. 68	Richmold	D001	Offsite	NA
No. 69	Gasoline Spill Residue	D001	Offsite	NA

Table 1.2-1 Hazardous Wastes Currently Registered with TDEC				
TDEC Wastestream Number	**Waste Name**	**EPA Waste Codes**	**Treatment Location**	**Onsite Treatment Area**
No. 70	Cosomoline	D001	Offsite	NA
No. 71	Gasoline Spill Residue, Contaminated Vermiculite	D001	Offsite	NA
No. 72	Ethanol	D001, F003, F005	Offsite	NA
No. 73	Red Varnish	D001	Offsite	NA
No. 74	Varsol	D001	Offsite	NA
No. 75	Isopropyl Alcohol	D001	Offsite	NA
No. 76	Waste Toluene	U220, D001	Offsite	NA
No. 81	Flammable Liquid, Corrosive	D001, D002	Offsite	NA
No. 82	Waste Paint Chips and Debris	D008, D006	Offsite	NA
No. 83	PQ-56 Antimicrobial Preservative	D002	Offsite	NA
No. 84	Portable Toilet Chemical	D001	Offsite	NA
No. 85	Calcium Hypochlorite	D001	Offsite	NA

Identification/EPA Classification and Quantities of Hazardous Wastes Managed

The chemical characterization of the wastes generated and/or received by MLAAP is described in Table 1.2-2. The table also provides a description of the various waste streams generated at MLAAP and typical Land Disposal Requirements (LDR) Treatment Standards. Treatment standards are subject to change in some instances when regulatory or analytical data changes.

Discussion of Waste streams treated in Area "W" Open Burning/Open Detonation (OB/OD) Units

Whether generated onsite or received from offsite, permitted treatment units at MLAAP only treat EPA listed or characteristic reactive (D003) wastes. These wastes can be grouped into three (3) categories: Propellants, Explosives, or Pyrotechnics (PEP). These are generally described as follows:

- Propellants used, stored and treated at MLAAP include single based propellants, chiefly nitrocellulose, double based propellants, usually nitrocellulose and nitroglycerine and triple based or complex typically consisting of nitrocellulose, nitroglycerine and one or more additional nitrated compounds such as dinitrotoluene and/or nitroaguanidine. These propellants may contain stabilizers to reduce the risk of self-ignition, along with other additives to enhance serviceability, such as flash suppressants.

- Explosive compounds MLAAP currently processes and treats consist of three basic types. Each type of bulk explosive or munition varies in type and quantity of explosive. Explosives processed are: cyclotetramethylene tetranitramine (HMX); cyclotrimethylene trinitramine (RDX); and trinitrotoluene (TNT) or blends of these explosives. Additionally, military

munitions processed, stored and treated at MLAAP may include ammonium nitrate mixes, insensitive munitions, tetryl and/or primary explosives such as lead azide or lead styphnate.

- Pyrotechnics generated, stored and treated at MLAAP are small tracers, incendiaries containing explosive with metals such as aluminum, magnesium and/or iron, and some types of aircraft countermeasure flares and illumination rounds.

Waste streams treated by OB/OD include the following listed in Table 1.2.2.

Table 1.2-2

TDEC Wastestream Number	EPA ID Number	Treatment Area/Type
No. 1 – Explosive Sludge	K044	ADA – Open Detonation
No. 2 – Spent Carbon	K045	ADA – Open Detonation
No. 3 – Non-Listed Reactive	D003	ADA or BG Dependent upon Wastestream

Because the content of these waste streams vary greatly, some discussion of each waste stream and the basis for treatment is provided in the following discussion.

Waste Stream No. 1 Wastewater Treatment Sludge

Wastewater treatment sludge from the manufacture and processing of explosives is an EPA listed K044 hazardous waste due to reactivity. The sludge consists of PEP residues collected from wastewater collection sump from process and production lines.

Explosives collected from sumps are readily identified from process knowledge. For example, at MLAAP D-Line is an explosives melt/pour operation. Explosive Composition B is melted and poured into mortar casings. Therefore, at the collection sump for the D-Line melt/pour operation, the residue or material collected from the sump is known to be Explosive Composition B.

When a sump is cleaned out, water is decanted from the sludge explosive material. The wet sludge is placed in aluminum trays. The sludge is dried in a steam out bay of the respective production line where the sludge was generated or may be transferred by truck to O-Line, Building O-3 for drying. When the water is sufficiently drained or evaporated from the sludge, it is packaged into plastic-lined fiber containers and transferred to MLAAP's permitted storage area.

Waste Stream No. 2 Spent Carbon

Spent carbon, K045, is an EPA listed hazardous waste due to reactivity. The reactivity of the spent carbon is due to the adsorption of explosive compounds from treatment of explosive contaminated wastewater.

Wastewater generated at production lines is routed to a settling sump then pumped through a pipeline to a "Pinkwater Treatment System" (Pinkwater, K047) Processes such as washout and steam-out of explosive-contaminated shell bodies and process equipment generate the wastewater.

Wastewater may also be generated from washing the interior of an explosives processing or melt/pour building.

A typical treatment system for pinkwater consists of a settling sump followed by filtration and carbon treatment. The treated water is tested routinely to ensure it meets pretreatment criteria for wastewater discharge to MLAAP's wastewater collection system. When laboratory analysis indicates explosives content in the treated water from the effluent of pinkwater treatment is increasing, the activated carbon in the columns is replaced and containerized in 55-gallon drums for disposal. Excess water from the carbon being replaced is decanted off back into the pinkwater treatment process.

When spent carbon is replaced, it is first pumped from the carbon columns into a large collection hopper with a screened bottom. The excess water drains from the hopper back to the pink water treatment system sump. A composite sample of the spent carbon is then collected for analysis. The spent carbon is subjected to a laboratory analysis for explosives content. A duplicate sample of the carbon is also collected for Card Gap/Deflagration to Detonation Transition Test" (DDT) reactivity testing. Deflagration to Detonation Transition Test" (DDT) and the "GAP Test" are usually performed at MLAAP's onsite Test Area. These tests were developed by the U.S. Bureau of Mines for evaluating explosives (or wastes explosives) for the characteristic of reactivity due to detonation. The DDT and GAP test procedures are published by ASTM under the title "Methods of Evaluating Explosive Reactivity of Explosive Contaminated Solid Waste Substances." EPA has determined that reactivity is defined by Department of Transportation (DOT) listing via 49 CFR, Part 172. MLAAP-required reactivity testing is usually performed onsite but may be sent offsite to a qualified laboratory.

Spent carbon from the treatment of wastewater containing explosive that fails the testing for explosive reactivity will be treated onsite by detonation at the Ammunition Detonation Area (ADA). Spent carbon that passes the explosive reactivity test and therefore is not reactive, will not be considered a hazardous waste. The non-hazardous spent carbon is usually sent offsite for disposal to a permitted facility but with special waste approval from the TDEC may be disposed of onsite in the facilities permitted Class II Industrial landfill.

Waste Stream No. 3 Non-listed Reactive

Non-listed reactive waste generated, stored, and treated at MLAAP are EPA D003 hazardous waste. These items include waste military munitions, rejected munitions and components, partial and completed rounds, fuzes, primers, tracers, and PEP. These items are D003 because they are capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement or because they are capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

Non-listed reactive wastes are collected in containers of various types according to the process or item and stored prior to miscellaneous thermal treatment. Whether it is a bulk explosive or an item containing an explosive compound, waste munitions are usually contained in fiber containers. These containers may be the original shipping containers or similar containers that are structurally sound. Other containers that may be utilized are metal ammunition boxes. Some waste munitions such as primers will be stored under water or oil in small plastic containers (usually < 1quart) with a screw on lid. The waste munitions (and components) are generally DOT Class 1 explosives (49 CFR 173.50) and are therefore reactive, Tennessee Rule 0400-12-01-.02. They do not require any analysis requirements for explosive characteristics.

Waste containers used to contain and transport waste reactives are removed prior to treatment or are treated with the waste munitions, such as complete ammunition rounds, or munitions components. Containers that are considered RCRA "Empty" are either flashed at an on-site, non-RCRA Subtitle C unit or shipped directly to MLAAP Property Department Salvage Yard at Area J. Flashing containers using high heat is necessary to remove any explosive residue from containers that have contained reactive waste.

In some cases "off-specification" D003 wastes will be treated. Off-specification means that the item or material has been rejected by the Quality Department. For example, the density of a black powder pellet may be incorrect or the moisture content of a propellant may be incorrect, or the infrared output of a flare composition may be incorrect. The off specification in no way affects the reactivity of the material.

Operations involving explosives drilling or pressing use process vacuum systems to pick up and collect dust and residue. All vacuum dust and residue is collected and placed in plastic-lined fiberboard containers then transferred to a permitted storage area. There are no wet vacuum systems, only dry vacuum systems.

Waste streams generated at MLAAP are tracked from the generating process. Items that are not hazardous for D003 are not treated onsite by OB/OD. Items received from offsite are profiled into the facility and supporting information such as analytical, MSDS, and the Munitions Items Disposition Action System Database (MIDAS) are obtained to determine disposition. If an item is in question as to whether it meets the requirements of D003 characteristics, an analytical test for explosives and possibly a Card Gap/DDT test would be required.

Ash or residue is generated during the treatment of some waste munitions. All ash generated is tested to determine if it is a reactive hazardous waste or non-reactive hazardous waste. Ash residues are removed from the burn pans and collected in containers placed at the site for this purpose. These containers are labeled and identified as to their contents. As a container becomes filled, a sample is collected and tested for Card Gap/DDT, TCLP RCRA metals, explosives (including 2,4-Dinitrotoluene) and other compounds which were known to be present in the reactive

waste prior to treatment. Each container is placed in a secure area meeting the requirements outlined in Tennessee Rule 0400-12-01-.03 until results are returned from the laboratory. If the waste ash is found to contain metals or other toxicity characteristics, the waste is labeled as a hazardous waste, placed in permitted storage and then shipped off-site to a permitted facility for treatment and/or disposal.

The waste ash must also meet the applicable treatment standard for this process, and if not, the waste will be reprocessed and, again handled as outlined above or containerized and shipped off-site for treatment and/or disposal.

Table 1.2-3
Waste streams and Treatment Standards

TDEC Wastestream Number	Waste Name	Generation Area	Process Generating the Waste	Basis for Classification	EPA Waste Codes	Hazardous Properties of Waste	LDR		LDR Treatment	
							NWW	WW	Treatment Standard (mg/L)	Designated Treatment Facility
No. 1	Explosive Sludge	• Production Lines LAP Operations	Cleanout of wastewater collection sumps at production lines and Pinkwater Treatment Plants.	Process Knowledge and/ or testing	K044, *D030	Reactive	X		DEACT (*When D030 is present 0.140 and meet 268.48 standards.)	ADA
No. 2	Spent Carbon	• Production Lines LAP Operations	Wastewater from the settling sumps is piped to activated carbon treatment units for removal of residual explosives. Spent carbon is periodically removed, partially dewatered, and stored in containers prior to disposal at a permitted facility.	Testing	K045, *D030	Reactive	X		DEACT (*When D030 is present 0.140 and meet 268.48 standards.)	Onsite ADA
No. 3	Non-listed Reactive	• Production Lines LAP Operations • Government Stocks • Obsolete or excess Military Munitions	These materials and/or components are rejected munitions and components, which do not meet MLAAP and/or DOD standards. They are collected in containers of various types according to the item and stored prior to miscellaneous thermal treatment. Whether it is a bulk explosive or an item containing an explosive compound, waste munitions are usually contained in fiber containers. Some munitions such as primers will be stored under water or oil in small plastic containers (usually < 1quart) with a screw on lid. The waste munitions (and components) are generally DOT Class 1 explosives and are therefore reactive, TN Rule 0400-12-01-.02. They do not require any analysis requirements.	Process Knowledge (MSDS, MIDAS, Army Manuals) and/or testing	D003, *D030	Reactive	X		DEACT and meet 268.48 standards (*When D030 is present 0.140 and meet 268.48 standards.)	ADA or OBG
No. 7	Ash	• Waste Management Units	Ash from treatment of explosive contaminated non-hazardous waste or from explosive waste or from flashing explosive contaminated equipment The burning of explosive and explosive contaminated waste may generate a residual ash which is an EP-Toxic hazardous waste. When hazardous, the ash is stored for disposal in the container storage facility (magazines).	Testing	D004, D005, D006, D007, D008	Toxic	X		Arsenic 5.0 Barium 21 Cadmium 0.11 Chromium 0.60 Lead 0.75 Meet 268.48 Standards	Solid Stabilization, Landfill
No. 8	Explosive/Solvent Contaminated Rags	• Production Lines LAP Operations	Explosive contaminated solvents/rags and uncontaminated solvents: Clean up and decontamination of process equipment generates an explosive contaminated waste containing the solvents acetone, alcohol, and/or toluene, and rags. The waste solvents and solvents/rags are accumulated at the point of generation and transferred to permitted storage. Explosive contaminated and non-explosive contaminated solvents (acetone, toluene, alcohol and etc.) may be stored in the Area J, Bldg. J-137 container storage building prior to off-site disposal.	Process Knowledge and/or Testing	D001, F005	Ignitable, Toxic	X		Acetone 160 Methanol 5.6 MEK 36 Toluene 10 Xylenes 30	Incinerator or Fuel Blend
No. 9	Pinkwater	• Production Lines LAP Operations	Work areas throughout the facility are periodically washed/rinsed with water to remove residual explosives. In other areas, military munitions are washed out to remove the explosives in the demil process. This explosive-contaminated (Trinitrotoluene) rinse water (K047) is collected by gravity feed into settling sumps as an initial treatment step followed by filtration and activated carbon treatment. The wastewater with the explosives removed is discharged to a NPDES permitted wastewater treatment plant. The treatment of K047 falls under the RCRA exclusion for totally enclosed treatment and is therefore exempt from a RCRA hazardous waste treatment and storage permit.	Process Knowledge and testing	K047	Reactive		X	DEACT	Pink Water Treatment System
No. 10	Mixed Thinner Waste	• Production Lines LAP Operations • Installation Maintenance	Thinners are used to thin, clean and/or remove inks, marking, adhesives and other materials in the manufacture of military munitions. These thinners are typically acetone, various alcohols, toluene, and xylenes. These wastes are	Process Knowledge and/or Testing	D001, D007, D008, F003, F005	Toxic, Ignitable	X		Acetone 160 Methanol 5.6 MEK 36 Toluene 10	Incinerator or Fuel Blend

Table 1.2-3
Waste streams and Treatment Standards

TDEC Wastestream Number	Waste Name	Generation Area	Process Generating the Waste	Basis for Classification	EPA Waste Codes	Hazardous Properties of Waste	LDR		LDR Treatment	
							NWW	WW	Treatment Standard (mg/L)	Designated Treatment Facility
		Activities	satellite collected at the point of generation and as the containers are filled, moved to the container storage location, typically J-137. The containers are shipped off site within one (1) year to a permitted facility for treatment. Mixed thinner waste carries the following waste codes: D001, F003, F005 and if yellow ink is present may carry a D007 and D008 codes due to the presence of lead chromate.						Xylenes 30 Lead 0.75 Chromium 0.060	
No. 11	Paint Sludge and Thinner	• Installation Maintenance Activities	Paint residue from painting of structures and/or equipment and related paint cleanup process.	Process Knowledge and/or Testing	D001, F003, F005	Ignitable, Toxic	X		Acetone 160 Methanol 5.6 MEK 36 Toluene 10 Xylenes 30 Lead 0.75 Chromium 0.060	Incinerator or Fuel Blend
No. 38	Waste Fluorescent Bulbs	• Production Lines LAP Operations	This waste stream is generated from the crushing of florescent lighting (tubes) within MLAAP. The intact bulb is sent from many plant locations to the Open Burning Grounds where it is sent through a crushing unit designed for destruction of these florescent tubes. The waste is collected in drums and has a filter to prevent dust escaping to the atmosphere. As the drum becomes filled, it is managed as a hazardous waste and moved to J-137 permitted storage or Area D permitted storage magazine.	Testing	D009	Toxic	X		Mercury 0.025 and meet 268.48 standards	Metals Recovery
No. 40	Waste Lab Pack (Laboratory Chemicals)	• Production Support Operations	Expired or out of shelf life chemicals & reagents from laboratory or from stock control.	Process Knowledge and/or Testing	LABP	Toxic, Ignitable	X		Various	Incinerator or Fuel Blend
No. 43	Waste Corrosives and Metals	• Production Lines LAP Operations • Production Support Operations	MLAAP's Chemical and Environmental Laboratory uses inorganic acids, such as hydrochloric, nitric and sulfuric acids to analyze material and waste for heavy metals (metals which are listed as EP-toxic). These lab acid and metal wastes are satellite collected at the laboratory in plastic containers. When the container is filled, a sample is collected and analyzed for EP-toxic metals. The container is transferred to the container storage Building J-137, and is managed as a hazardous waste. This lab acid and metal waste is characteristic for corrosivity (D002) and any of the eight (8) EP-toxic metals (D004-D011).	Testing	D002, D006, D007, D008, D009	Toxic	X		Arsenic 5.0 Barium 21 Cadmium 0.11 Chromium 0.60 Lead 0.75 Meet 268.48 Standards	Neutralization and flocculation.
No 44	Water Soluble Oil	• Production Support Operations • Installation Maintenance Activities	Waste from equipment maintenance activities.	Process Knowledge and/or Testing	D004, D006, D007, D008	Corrosive, Toxic	X		Arsenic 5.0 Cadmium 0.11 Chromium 0.60 Lead 0.75 Meet 268.48 Standards	
No. 45	Waste Toluene Diisocyanate	• Production Lines LAP Operations	Out of specification or excess cure agent.	Process Knowledge and/or Testing	U223	Toxic	X		CMBST	
No. 47	Waste Laboratory Solvents	• Production Support Operations	MLAAP's Chemical and Environmental Laboratory also uses various solvents, such as acetone, methyl ethyl ketone, toluene, methyl alcohol, etc. for various laboratory testing. These solvents are satellite collected in containers. Full containers are picked up and managed and stored as hazardous waste in Building J-137.	Process Knowledge and/or Testing	D001, F003, F005	Ignitable, Toxic			Acetone 160 Methanol 5.6 MEK 36 Toluene 10 Xylenes 30	Incinerator or Fuel Blend
No 50	Waste Lead Foil & Cloth Bags	• Production Lines LAP Operations Obsolete or excess Military	Demil of military munitions often generates a lead foil from bag propellants. This foil is placed in cartridge propellants as a gun barrel lubricant. Upon demil, the propellant is	Process Knowledge and/or Testing	D008	Toxic	X		Lead 0.75	Metals Recovery

Table 1.2-3
Waste streams and Treatment Standards

TDEC Wastestream Number	Waste Name	Generation Area	Process Generating the Waste	Basis for Classification	EPA Waste Codes	Hazardous Properties of Waste	LDR		LDR Treatment	
							NWW	WW	Treatment Standard (mg/L)	Designated Treatment Facility
		Munitions	removed from the cloth bag so as to leave the lead foil in the bag. These bags and lead foil are placed in container and managed as a hazardous waste for shipment and disposal off site.							
No. 51	Waste Fixer Solution from X-Ray	• Production Support Operations	Spent fixer and developer solution from X-ray film development.	Testing	D011	Toxic		X	Silver 5.0	Treat and Discharge to CWA System
No. 54	Waste Paint & Adhesive	• Production Lines LAP Operations	MLAAP production lines often use paint and associated materials such as hardeners and thinners for finishing munition items. These wastes are collected at the point of generation and as the drums are filled, the paint wastes are transferred to permitted storage, typically Building J-137. The waste is stored less than one (1) year and then shipped off site to a permitted facility for treatment.	Process Knowledge and/or Testing	D001, F003, F005	Ignitable, Toxic	X		Methanol 5.6 MEK 36 Toluene 10 Xylenes 30	Incinerator or Fuel Blend
No. 58	Waste Adhesive/Cement	• Production Lines LAP Operations	Out of specification or unused adhesive and cement.	Process Knowledge and/or Testing	D001, F003, F005	Ignitable, Toxic	X		Methanol 5.6 MEK 36 Toluene 10 Xylenes 30	Incinerator or Fuel Blend
No. 59	Waste Chlorinated Laboratory Solvents	• Production Support Operations	Spent solvents from laboratory analysis	Process Knowledge and/or Testing	F002, D028, D039, U080	Toxic	X		Methanol 5.6 MEK 36 Toluene 10 Xylenes 30 D028 – 6.0 and meet 268.48 standards. U80 - 30	Incinerator
No. 61	Waste Ash from OB that fails reactivity Test.	• Waste treatment areas	Ash from open burning of explosives that has failed the Card Gap/DDT test for reactivity. Also tested for explosive nitrobodies.	Testing	D003	Reactive	X		DEACT and meet 268.48 standards	Onsite Waste Mgt. Unit. Burning Pan
No. 62	Waste Bituminous Compound	• Installation Maintenance Activities	Out of specification material used to repair roads.	Process Knowledge and/or Testing	D001	Ignitable	X		DEACT and meet 268.48 standards	Incinerator or Fuel Blend
No. 63	Waste Thinner from Stores	• Production Lines LAP Operations • Production Support Operations	Out of specification thinners that have an expired shelf life or failed quality standards.	Process Knowledge and/or Testing	D001, D035, F003, F005	Ignitable, Toxic	X		Methanol 5.6 MEK 36 Toluene 10 Xylenes 30 D035 36 and meet 268.48 standards	Incinerator or Fuel Blend
No. 64	Waste Ink, Out of Specification or Excess	• Production Lines LAP Operations	Out of specification ink that have an expired shelf life or failed quality standards.	Process Knowledge and/or Testing	D001, F003, F005	Ignitable, Toxic	X		Acetone 160 Methanol 5.6 MEK 36 Toluene 10 Xylenes 30 Lead 0.75 Chromium 0.060	Incinerator or Fuel Blend
No. 65	Waste Dispersant with Lead	• Production Lines LAP Operations	Out of specification cure agent	Process Knowledge and/or Testing	D008	Toxic	X		Lead 0.75 and meet 268.48 standards	Metals Recovery or Incinerator
No. 66	Waste Lab Pack, Chlorinated Solvent	• Production Support Operations	Out of specification or excess solvents that are chlorinated.	Process Knowledge and/or Testing	U080	Toxic	X		30.0	Incinerator or Fuel Blend
No. 67	Polysulfide, cured	• Production Lines LAP Operations	Sealant operation on production line	Process Knowledge and Testing	D008	Toxic	X		Lead 0.75 and meet 268.48 standards	Incinerator
No. 68	Richmold	• Production Lines LAP Operations	Out of specification or excess material.	Process Knowledge and/or Testing	D001	Ignitable	X		DEACT and meet 268.48 standards	Incinerator or Fuel Blend

Table 1.2-3
Waste streams and Treatment Standards

TDEC Wastestream Number	Waste Name	Generation Area	Process Generating the Waste	Basis for Classification	EPA Waste Codes	Hazardous Properties of Waste	LDR		LDR Treatment	
							NWW	WW	Treatment Standard (mg/L)	Designated Treatment Facility
No. 69	Gasoline Spill Residue	• Installation Maintenance Activities	Cleanup of spill residue	Process Knowledge and Testing	D001	Ignitable	X		DEACT and meet 268.48 standards	Incinerator
No. 70	Cosomoline	• Installation Maintenance Activities	Heavy oil for protection of equipment	Process Knowledge and/or Testing	D001	Ignitable	X		DEACT and meet 268.48 standards	Incinerator or Fuel Blend
No. 71	Gasoline Spill Residue, Contaminated Vermiculite	• Installation Maintenance Activities	Cleanup of spill residue	Process Knowledge and Testing	D001	Ignitable	X		DEACT and meet 268.48 standards	Incinerator
No. 72	Ethanol	• Production Lines LAP Operations	Out of specification or excess material.	Process Knowledge and Testing	D001, F003, F005	Ignitable, Toxic	X		Various	Incinerator or Fuel Blend
No. 73	Red Varnish	• Production Lines LAP Operations	Out of specification or excess material.	Process Knowledge and Testing	D001	Ignitable	X		CMBST	Incinerator or Fuel Blend
No. 74	Varsol	• Production Lines LAP Operations	Out of specification or excess material.	Process Knowledge and Testing	D001	Ignitable	X		CMBST	Incinerator or Fuel Blend
No. 75	Isopropyl Alcohol	• Production Lines LAP Operations	Out of specification or excess material.	Process Knowledge and Testing	D001	Ignitable	X		CMBST	Incinerator or Fuel Blend
No. 76	Waste Toluene	• Production Lines LAP Operations	Out of specification or excess material.	Process Knowledge and Testing	U220, D001	Ignitable, Toxic	X		10 CMBST	Incinerator or Fuel Blend
No. 81	Flammable Liquid, Corrosive	• Production Support Operations	Out of specification or excess material.	Process Knowledge and Testing	D001, D002	Ignitable, Corrosive	X		DEACT and meet 268.48 standards	Incinerator or Fuel Blend
No. 82	Waste Paint Chips and Debris	• Installation Maintenance Activities	Paint chips and debris removed from buildings during cleaning, remodeling, and/or demolition. The debris is typically contaminated with lead and chromium.	Testing	D006, D008	Toxic	X		0.11 TCLP 0.75 TCLP and meet 268.48 standards	Incineration
No. 83	PQ-56 Antimicrobial Preservative	• Installation Maintenance Activities	Out of specification or excess material.	Process Knowledge and Testing	D002	Corrosive	X		DEACT and meet 268.48 standards	Incinerator or Fuel Blend
No. 84	Portable Toilet Chemical	• Installation Maintenance Activities	Out of specification or excess material.	Process Knowledge and Testing	D001	Ignitable	X		CMBST	Incinerator or Fuel Blend
No. 85	Calcium Hypochlorite	• Installation Maintenance Activities	Out of specification or excess material.	Process Knowledge and Testing	D001	Ignitable	X		CMBST	Incineration

DESCRIPTION OF HAZARDOUS WASTE MANAGEMENT UNITS

There are sixteen (16) permitted hazardous waste storage units and thirty-one (31) hazardous waste treatment units (for explosive waste) at MLAAP.

The 16 permitted hazardous waste storage units include 14 earth-covered igloos (explosive storage magazines), Building J-137, and the Explosive Waste Transfer Facility (EWTF) at the Ammunition Destruction Area (ADA).

The 31 hazardous waste treatment units are located in Area W at two waste management areas, the Burning Ground (BG) that contains eleven (11) burn pans and the Ammunition Destruction Area (ADA) that contains up to twenty (20) demolition pits. Only the BG and ADA are used for the miscellaneous thermal treatment of explosive hazardous waste (waste munitions). Treatment at the BG consists of thermal treatment in open burn pans. At the ADA, treatment consists of open detonation where the munitions are buried underground prior to detonation. In addition, detonation of dropped or dangerous rounds is conducted aboveground where safety issues will not allow for the burial of the items.

Safety and Environmental criteria for BG and ADA operations are communicated to employees by environmental permits, Standing Operating Procedures (SOP's), and work instructions.

Hazardous wastewater is also managed and treated at MLAAP. Treatment is conducted under an EPA permit exclusion for "totally enclosed treatment". Wastewaters treated under the exclusion include listed waste K047 (Pinkwater) and D011 (Silver) characteristic wastewater from X-ray film development. Treated wastewater from each of the wastewater treatment units is discharged to a wastewater collection system for final treatment at MLAAP's CWA permitted wastewater treatment facility operating under NPDES Permit #TN0000060.

Area W Burning Ground

The BG contains thermal treatment units (open burning pans) listed as X01 along with permanent and temporary structures with buffer zones on all sides. The buildings and structures associated with thermal treatment are used to store only enough quantities of waste for thermal treatment that specific operating day. The BG also contains an administrative office which contains a bathroom and changes house.

A brief description of the processes for the miscellaneous thermal treatment at the BG is as follows:

Treatment of propellants, munitions, explosive components, pyrotechnics and/or explosives (waste military munitions) is conducted in raised, refractory lined metal pans, which are located on concrete pads. MLAAP operates eleven burn pans located on four separate concrete pads at the BG within Area W. Nine of these pans are located on three concrete pads. Three pans each on three pads and two pans each on one pad.

Nine (9) of these pans are approximately 100 by 52 by 12 (L/W/H) inches and are raised a minimum of 12 inches off the concrete pad on steel frame supports. Two burn pans are 149 by 60 by 12 inches (L/W/H/) and are raised a minimum of 12 inches above the concrete pad on a steel support frame. The frames are open to reduce weight and allow inspection on the pans from all directions. For safety, each burn pan is grounded using a copper cable secured to a copper grounding rod. Each of the nine small pans will treat a maximum of 333.3 pounds of reactive waste per treatment, while the large pans will treat a maximum of 500 pounds per treatment (burn). The two large burn pans are located on a single concrete pad within the area of the nine burn pans.

Maximum design capacity for these burn units (eleven pans) is 4000 pounds per treatment. At present, six treatments (burns) or fewer burns are conducted per ten hour workday, providing a 24,000-pound per day treatment capacity.

The burn pans are constructed of welded cold roll steel, with all surfaces that come in contact with waste reactives (waste military munitions) lined with four (4) inches of silica based refractory material. Each burn pan is supported by support stand constructed of welded cold roll steel. Each burn pan is equipped with cover when not in use, to exclude stormwater. These covers are constructed of aluminum.

The burn pans sit on concrete pads that are constructed of four (4) to six (6) inches of steel-reinforced concrete. The concrete pads, designated burn pad Numbers 1, 2, 3, and 4 have the following dimensions:

- Pad Number 1 - 90.1 by 45.0 feet,
- Pad Number 2 - 70.0 by 45.0 feet,
- Pad Number 3 - 56.9 by 50.3 feet, and,
- Pad Number 4 - 70.1 by 45.0 feet respectively.

The concrete pads have a raised six (6) inch by six (6) inch dike on three sides to exclude run-on and prevent run-off. The raised portion of the concrete pad is toward the up-gradient portion of the site. The undiked side of each concrete pad is to allow materials to be moved onto the pad.

Concrete burn pads Numbers 1-3 each contain three (3) burn pans, each with a capacity of 333.3 pounds of waste per treatment, while concrete burn pad Number 4 contains two (2) burn pans with a capacity of 500 pounds of waste material each per treatment. Waste propellant, explosives, pyrotechnics, munitions and/or explosive components (waste military munitions) are taken from waste containers and placed in the burn pan by the operator. All transfers are conducted at the burn pan location on the concrete pads. No liquid hazardous wastes are treated in the burn pans.

After each burn pan has been loaded to the correct weight, an electric squib (explosive initiating device) is placed near the center of the waste in each pan. This squib is connected to a series of wires by an operator trained in the handling and management of explosives. After the waste to be treated is properly placed in the treatment pans and each unit has been supplied with an initiating device and wired to the installed cable leads (wire), the area is policed to eliminate other potential sources of combustible material. All operator personnel are evacuated to a minimum distance of 1250 feet. The firing circuit is checked for continuity and stray currents using a Blast Meter. Before treatment occurs local weather conditions are checked using an on-site weather station located at the BG administration Building W-2. If all conditions are within set parameters the squibs are set off remotely using a firing machine to generate an electric current to the squib and igniting the waste to be treated.

Operations at this unit location have been conducted for 18 years with only minor process changes. The two (2) pans with a capacity of 500 pounds each, located on the southeastern portion of the burn area were installed in 1997 to replace a process used to burn explosive contaminated solvents and rags in elevated burn pans.

Area W Ammunition Destruction Area

The ADA (containing X01 units) is located directly south of the BG area. OD is conducted at the ADA in both above and below ground configurations. The materials treated are bulk military high explosives, completed large caliber and small caliber military ammunition, dropped and/or potentially dangerous rounds, and other military munitions components containing explosives. This area has one (1) igloo-type permanent steel reinforced concrete structure covered with earth, which is used as a protective site for employees during treatment operations. It contains separate rooms used for supply storage.

A brief description of the processes for the miscellaneous thermal treatment at the ADA is as follows:

Waste military munitions, due to the variety of shapes and mission requirements, must often be configured to allow thermal treatment. Trained and experience demil workers at the ADA configure and palletize waste munitions at the Explosive Waste Transfer Facility (EWTF).

Munitions awaiting treatment via miscellaneous thermal treatment unit at the Ammunition Destruction Area (ADA) are transferred from the hazardous waste storage igloos to storage at the Explosive Waste Transfer Facility (EWTF). The EWTF is also the location where munitions are configured for treatment.

Within the ADA area, loading and unloading of wastes occur primarily in the secured Permitted Explosive Waste Transfer Facility (EWTF) where explosives are kept in sealed and locked Transportation Units. During palletization, a donor charge is added to the waste munitions, typically 50 to 100 pounds of high explosives, to ensure complete treatment. Specialized equipment and

trained personnel are used for loading and unloading of solid and hazardous waste as required by each process. After the wastes are palletized, they are transferred by rubber tire forklift to the prepared demolition pit.

After placement into the location, an operator inserts a squib into the donor charge and places a length of demolition cord from the squib to a location outside of the pit. Earth moving equipment is then used to cover the waste with approximately eight to thirteen feet of soil. The demolition cord is then attached to a firing device and connected by overland cable to terminal boxes connected to the firing bunker (W-53). After all shots are wired to the firing bunker, the treatment area is cleared of personnel, except those in the above ground firing bunker. The waste is then treated by firing the munitions on a average 10 second interval until all shots are fired. The operator determines initial treatment based on the noise and impact of the explosion. After treatment, personnel return to the area to police up exposed scrap metal. Earth moving equipment then starts to recover soils moved during the detonation to reform the pit.

The OD unit is approximately a 40 acre area containing fourteen to twenty earthen pits, located in two adjacent shooting fields for below ground treatment. The Firing Barricade is located between the shooting fields. Each pit is approximately twenty feet in diameter and ten to fifteen feet in depth (shaped as an inverted cone) and located approximately 120 feet apart.

The amount of materials (explosive waste) treated at this unit depends on the type and configuration of the military munitions. Typical below ground detonation is limited to 350 to 500 pounds or less net explosive weight (NEW) per pit. The material to be treated belowground is placed in open pits and covered with soils before detonation. Typically, there are 10 to 20 "shots" conducted per 10-hour shift. A maximum of 10,000 pounds of waste military munitions as net explosive weight (NEW) may be treated below ground daily. Depending on weather conditions this process may be operated year round.

Above ground open detonation is conducted as well. The amount of waste military munitions and the configuration are limited to a maximum, total explosive weight of 15 pounds (except during an emergency that may threaten human health and/or the environment). This operation is often conducted to treat "potentially armed and/or dangerous rounds" or to open "questionable containers" such as a container from industrial stocks that has been deemed dangerous due to stability of the munition. The Army requires a strict surveillance program for munitions in storage that is run by the Surveillance Department. At time munitions are taken out of storage due to stability of the munitions and transferred for treatment.

The OD unit is constructed of native soils found at the MLAAP facility. Ancillary equipment associated with the OD unit consists of an earthen covered steel reinforced concrete structure used as a firing control/observation post and material storage area. Also used at the ADA is various earth moving equipment, typically two (2) to three (3) bulldozers and a pan scraper. The site uses underground cable from the earthen cover firing control - observation structure to two (2) terminal

boxes. Cables are then laid above ground to the individual pits to allow control of the treatment process.

Waste Transfer and Pick-Up

Hazardous waste transfer to the miscellaneous thermal treatment units is by truck and forklift. The truck picks up waste from each production line or area, the Permitted storage units or from Field Services (stores). The truck, which travels only on MLAAP roads, is placarded and operated by a driver trained in hazardous waste management. The truck is also equipped with a spill control kit.

Waste delivered to the BG may be delivered directly to a treatment process or to a holding area within the BG to await treatment. The BG has two (2) areas, designated the North and South Holding Pens for holding waste prior to treatment, along with three storage buildings. The Holding Pens or the storage buildings are used to store enough wastes for that day's treatment. If the material is not treated during that day, it is transferred back to the permitted storage area.

Waste delivered to the ADA may be stored in secure trailers in the EWTF until it is configured for proper demolition (treatment) or stored in an on-site barricade if the item is armed and/or potentially dangerous. On-site transportation of waste to be treated is by truck and/or forklift. Armed and/or potentially dangerous items (rounds) are picked up and delivered in a specially designed barricaded vehicle to protect the vehicle operator and site personnel.

All loading and transfer within the miscellaneous thermal treatment units are conducted by personnel trained in hazardous waste management, spill control, using proper tools and equipment for waste handling. Waste transfer within the miscellaneous thermal treatment units is carried out by truck, forklift and/or hand and at all time under the observation of trained and experienced personnel.

Waste munitions and munitions components, sludge from the settling sumps, spent carbon, ash from the open burning ground, lead foil and cloth bags are typically stored in the magazine container storage facility located in Area D. The remaining wastes outlined above are usually stored in the container storage Building J-137. Although the waste may be stored at either location, i.e. paint waste in a storage magazine, no waste military munitions (PEP or components) are stored in Building J-137. The EWTF is used to store waste military munitions.

Permit Excluded Treatment Processes

Treatment of hazardous wastes that meet EPA exclusions for treatment of hazardous waste without a permit are listed in Table 1.2-4 below.

Table 1.2-4

Item	EPA Code	Type Waste	Type of Exclusion
1.	K047	Pinkwater	Totally Enclosed Treatment
2.	D011	Wastewater from X-ray film Development	Totally Enclosed Treatment
3.	K047, D008	Primer Water	Treatment

Occasionally, primers are soaked under water for testing at the laboratory. Rather than send the resulting hazardous contaminated wastewater offsite, treatment by pH adjustment may be conducted in the container per Tennessee Rule 0400-12-01-.05 (10)(a)1 to precipitate the lead or other metals to render the wastewater nonhazardous. The resulting water would be discharged for pretreatment and discharged into the permitted CWA treatment system. Any solids would be collected for proper sampling and characterization.

Treated wastewater from each of the wastewater treatment units is discharged into a wastewater collection system to a CWA permitted wastewater treatment facility operating under NPDES Permit #TN0000060. Appropriate documentation is prepared for all liquids discharged through a CWA permitted system.

SPECIAL PROCEDURAL REQUIREMENTS

All waste munitions received from off-site would be managed within the boundaries of MLAAP as described in the following narrative.

Procedures for Receiving Wastes from Off-Site Generators

All waste to be received in to MLAAP must be prescreened. Prior to receiving a waste a completed Waste Profile form must be reviewed and approved by the Demil Supervisor and Environmental Manager. This form provides information regarding the process generating the waste and chemical and physical description of the wastes to be received. In addition to the waste profile form, additional information about the munitions components and end items such as a complete analytical, MSDS, MIDAS or other technical specifications will be provided with the profile in order to obtain the necessary information to safely store and treat the waste. Additionally, MLAAP is a non-commercial facility. Milan is limited to receive 10% of the total amount of the waste treated from off-site.

If the waste to be received is a waste stream that has been treated in the past, the profile form is screened by the Demil Supervisor to see if the waste has been treated within the past year. If not received within the previous year, the waste profile form must be renewed and routed through the approval process. In addition, any time the generating process is changed, the generator is

required to update the profile form and if any employee at the treatment facility notices anything different about the material, the generator is contacted and a profile will be updated as necessary.

Incoming Waste Shipment Procedures

Prior to receiving waste from offsite, the Demil Supervisor is notified of the proposed waste shipment date. In addition, a listing of the proposed waste quantities, identification, and profile numbers are provided. If all wastes to be provided on the waste shipment are approved and there are no schedule conflicts, then the generator is given permission to ship the waste.

Hazardous waste munitions are received at Area Y, Building Y-103, MLAAP truck/rail point. As a shipment of hazardous waste from off-site DoD facilities enters MLAAP, Area Y serves as an inspection and processing point. Waste munitions at Y-103 are received using a Uniform Hazardous Waste Manifest and DoD shipping controls for military munitions.

As the truck or rail car reaches Y-103, MLAAP Surveillance Department personnel check all bills, manifest and/or documentation. In the case of trucks, hazardous waste management or surveillance personnel direct the driver to the Y-103 Office and proceed to inspect the truck. The surveillance inspector at the office of Y-103 prepares a hand written copy of the Tally-In (TI).

The surveillance inspector notifies the Burning Ground or Demil Supervisor of the waste received. The Demil Supervisor or a site Supervisor receiving the truck will inspect the Uniform Hazardous Waste Manifest and ensure the material received corresponds with the material received on the manifest. If the manifest is correct, and there are no discrepancies found at Y-103, the truck is escorted onto the MLAAP installation. Based on the wastes received, the truck driver may be routed directly to a permitted storage area (igloo), Explosive Waste Transfer Facility (EWTF) or to the Burning Ground.

The “Holding Pens” at the Burning Ground are temporary classification facilities where complex shipments of waste are sorted and inventoried. Waste material received into MLAAP may be held up to (48) forty-eight hours in a holding pen. Once the contents of the trailer are inventoried and segregated they are transferred to permitted storage or directly to treatment.

When a trailer of waste is received, the manifest number, generator and received date are placed into a log book. When the inventory from the trailer is complete, it is entered into the MLAAP Hazardous Waste Tracking System. The received hazardous waste is transferred to a permitted storage area within (48) forty-eight hours.

Any problems and/or discrepancies with the waste munitions received will be investigated by the Demil Supervisor as outlined in the following sections.

Minor Paper Work Deficiencies

The Demil Supervisor or hazardous waste management personnel designated by the Demil Supervisor will determine the deficiencies and contact the off-site generator and notify the shipper of the nature of the problem. The Demil Supervisor will assist the generator in correcting any deficiency as soon as possible. If the deficiency can be corrected without delaying the movement of waste to a permitted storage or treatment area, the Demil Supervisor will move the waste as soon as practical.

Major Paper Work Deficiencies

The Demil Supervisor or hazardous waste management personnel designate by the Demil Supervisor will determine the deficiency and contact the off-site generator and notify the shipper of the nature of the problem. The Demil Supervisor will direct the waste munitions to a secure location and detain the transporter until the deficiencies are corrected. Waste munitions will not be allowed off the facility even if major deficiencies cannot be immediately corrected. The Demil Supervisor will work with the off-site generator until all deficiencies are corrected and then the waste will be accepted for treatment. If it is determined that the waste has been mis-identified and cannot be treated or stored under permit conditions at MLAAP, the off-site generator will be instructed to correct or prepare the proper shipping papers. MLAAP will then direct the shipment to the proper location.

Minor Shipping Problems

These include minor damage to the outer shipping containers, broken or damaged strapping or blocking, etc. The hazardous waste management or surveillance inspector will notify the Demil Supervisor of the nature of the problem. The Demil Supervisor will contact the MLAAP Safety Department and both departments will inspect the loaded shipment of waste munitions. The off-site generator will be notified of the received condition of the material. The Safety Department will determine if the waste munition load may be transported safely to permitted storage and/or treatment. If movement to permitted storage and/or treatment is safe, the Demil Supervisor will direct the waste munitions to the proper permitted area, based on the materials compatibility with other stored materials or proper treatment. As the waste munitions are received at the permitted location, each container or package of the material will be inspected as to proper labeling (hazardous waste identification label), item identification [(Stock Number (S/N) or National Stock Number (NSN)], condition of containers or waste and inventoried for quantity.

Major Shipping Problems

Problems include spilled or released PEP in trailers or rail cars, non-packaged (loose) munitions or similar issues. The hazardous waste management personnel or Surveillance Inspector will immediately notify the Demil Supervisor, MLAAP Safety Department, MLAAP Security Department and the Emergency Coordinator (Note: All Departments listed are defined as both U.S. Army and Contractor.) The area around the trailer or rail car will be evacuated to a safe distance as determined by the Safety Department and the area blocked to entry and secured by the MLAAP

Security Department. Safety and Security Departments personnel experienced in Explosive Ordnance Disposal (EOD) will evaluate the contents and condition of the material and decide the proper course of action. Army Safety and Security will determine the final course of action. If the waste is determined to be manageable on site, trained demil workers will collect and repackage the waste and ensure that the trailer or rail car is safe to leave MLAAP. If the material is determined to be unsafe, an emergency will be declared and EOD Specialists will be contacted to assist in the removal.

Received and accepted waste munitions will be moved to a permitted location within the facility and recorded on the Tally-In & Receiving Report. The Demil Supervisor or hazardous waste management personnel designated by the Demil Supervisor will sign the Hazardous Waste Manifest and return a copy to the generator. The Tally-in & Receiving Report will display the movement of waste munition from Y-103 to the permitted storage or treatment destination.

All movements of waste munitions will be identified using a Hazardous Waste Tracking Form. An example of the Hazardous Waste Tracking Form is provided in Appendix 1.2-3.

This Table tracks all movements of hazardous waste received at the facility and all waste generated at the facility once placed in permitted storage. The form is printed out and placed with containers that may have partial treatment. For example, a container may be a pallet with one-hundred boxes all with the same fill date. All the boxes on that pallet can not be treated simultaneously. A hazardous waste tracking form is placed with the pallet. When any waste is removed from that pallet, data is entered onto the form as to the date, weight, and person removing the waste so that a running total can be kept of the waste treated as well as the waste remaining to be treated. Data from the form is entered into the computer base tracking system.

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running total can be kept of the waste treated as well as the waste remaining to be treated. Data from the form is entered into the computer based tracking system.

Sampling of Received Wastes

If sampling was required after receipt of the waste munition, MLAAP would first request that the off-site generator supply a sample of the material or device before proceeding with any in-house sampling.

Before sampling would be implemented, the following assumptions would be made. The waste would be assumed to meet the definition of a reactive waste (waste code D003), therefore, the minimum number of samples and amount of sample that would provide a representative sample for the waste stream would be collected. In the case of fixed munitions, the minimum representative number of sample would be one complete item representative of that group (lot or part (DoDAC) number). It must be noted that safety of site sampling personnel and property will be of major concern. All explosive ordnance items to be sampled would be moved to a remote, safe location prior to sampling.

A MLAAP employee trained in demil (demolition worker) would inspect the received hazardous waste munitions to determine if the material (of interest) within the munition could be accessed for sampling. If the sample required was a component within or attached to the completed munition, the demolition worker would determine if it could safely be removed for sampling and if so, could the material slated for analysis be accessed. If any of the materials to be sampled appeared unsafe or impossible to sample, the generator would be contacted for assistance or possible return of the waste to the generator site.

Prior to sampling, all containers with identical marking, similar and/or identical packaging, similar appearance, lot numbers, etc. would be grouped, identified and designated for sampling as a group. Each grouping will be marked (identified) using a spray paint number code, identified on the sampler's field log to match each group represented by the sample.

A trained technician will collect grab samples from each group identified above. The amount of sample collected will be the minimum required for laboratory analysis (In the case of fixed munitions, the minimum representative amount of sample would be one complete item representative of that group (lot or part (DoDAC) number)). Sample container opening devices and sample collection devices will be non-sparking and approved by the MLAAP Safety Department. Sample containers will be labeled to reflect the generator, generator location, generator EPA ID Number, hazardous waste nomenclature, hazardous waste codes, sample code, the samplers name, time and date and sample location. Samples will be transported under Chain of Custody to MLAAP Laboratory.

Upon receipt at MLAAP's Explosive or Environmental Laboratory, a Laboratory Analysis Request Form will be completed for any analysis (chemical or physical) required. MLAAP Laboratory Personnel are trained and experienced in the handling, preparation and analysis of PEP and PEP containing devices. The Laboratory Manager will determine if laboratory analysis is safe and possible. If analysis is determined not safe and/or possible, the sample will be held at a safe location and the generator of the waste notified. Once the waste sample has been determined to be safe for laboratory analysis and that analysis is possible, analysis will be performed.

Procedures for Ignitable, Reactive, and Incompatible Wastes

MLAAP has a rigorous program to provide information concerning a wastes hazardous characteristics or incompatibility prior to treatment. MLAAP explosive waste streams are classified according to DoD regulations for compatibility. Incompatible wastes will not be stored or treated together. Chart 1.2-1 illustrates typical wastes and compatibility issues that identified for safe storage and movement of hazardous wastes at MLAAP.

Ignitable wastes are identified by reference to vendor MSDS's, Sax's Dangerous Properties of Industrial Materials, NFPA's Fire Protection Guide on Hazardous Materials, and AMC-R-385-100 which is the Army's Safety Manual. Not all wastes stored at MLAAP are compatible, hence, requirements for segregation of incompatible wastes are applicable. All storage is conducted in compliance with AMC-R-385-100 and all rules governing the storage of incompatible waste in Tennessee.

Chart 1.2-1
Typical Compatibility Controls

Wastestream Name	Incompatible Characteristic	Method
Spent Carbon	• Spent carbon waste may be corrosive to steel depending upon moisture content due to electrolytic action. • Spent carbon may be reactive	• Polyethylene liners will be used in steel containers for spent carbon that shows steel corrosivity. • Store in igloo if reactive.
Laboratory Acid	Corrosive to steel	Store in plastic drums.
Bulk Explosives	Subject to friction	Store in fiber containers
Dropped or Dangerous Munitions	Dangerous to move	Place in container filled with sand and move with barricaded truck.

In addition, wastes may be subject to a compatibility evaluation. This evaluation uses the procedures delineated in the EPA document entitled "Design and Development of a Hazardous Waste Reactivity Testing Protocol, February 1984, EPA 600/2-84-057". These test procedures are used to classify wastes based on gross chemical composition for designation according to specific reactivity groups.

Specific compatibility issues are placed into Standard Operating Procedures (SOP). For example, some explosive wastes may not be stored together. An example is illustrated in Chart 1.2-2.

Chart 1.2-2
Non-Compatible Storage

STANDING OPERATING PROCEDURE - MILAN ARMY AMMUNITION PLANT

SOP NO. MA-0000-H-008 REV. NO. 4 CHANGE NO. 8 | Page H-008-71 | Date 4-7-08

APPENDIX D

STORAGE COMPATIBILITY GROUPS

Storage compatibility groups. In view of ammunition and explosives storage principles and the considerations for mixed storage, ammunition and explosives are assigned to the appropriate one of twelve storage compatibility groups (A through H, J, K, L and S).

1. Group A - Initiating explosives. Bulk initiating explosives which have the necessary sensitivity to heat, friction, or percussion to make them suitable for use as initiating elements in an explosive train. Examples are wet lead azide, wet lead styphnate, wet mercury fulminate, wet tetracene, and dry PETN.

2. Group B - Detonators and similar initiating devices. Items containing initiating explosives that are designed to initiate or continue the functioning of an explosive train. Examples are detonators, blasting caps, small arms primers and fuzes without two or more safing features.

3. Group C - Bulk propellants, propelling charges, and devices containing propellant with or without their own means of ignition. Items that upon initiation will deflagrate, explode or detonate. Examples are single, double, triple-base, and composite propellants, rocket motors (solid propellant), and ammunition with inert projectiles.

4. Group D - Black powder, high explosive (HE), and ammunition containing HE without its own means of initiation and without propelling charge, or a device containing an initiating explosive and containing two or more independent safety features. Ammunition and explosives that can be expected to explode or detonate when any given item/component thereof is initiated.

   NOTE: Where sufficient storage space is available, it is desirable to store bulk HE separately from ammunition containing HE even though they are both in the same compatibility group.

5. Group E - Ammunition or devices containing both HE and propelling charges without its own means of initiation. Examples are artillery ammunition, rockets, or guided missiles.

6. Group F - Ammunition containing HE with its own means of initiation[2] and with or without propelling charge. HE ammunition or devices (fuzed) with or without propelling charges. Examples are grenades, sounding devices, and similar items having an in-line explosive train in the initiator.

7. Group G - Fireworks, illuminating, incendiary, smoke (including HC), or tear-producing munitions other than those munitions that are water activated or which contain white phosphorus, or flammable liquid or gel. Ammunition that, upon functioning, results in an incendiary, illumination, lachrymatory, smoke, or ammunition, and other smoke or tear producing devices.

Some explosives may not be treated together. An example of what explosives may not be treated together is found in the SOP for Area W as illustrated in Chart 1.2-3.

Chart 1.2-3
Non-Compatible Treatment

0. Explosives to be placed in burn pan will be grouped as follows:

   a. Loose bursting and/or boostering explosives (Comp. A-5, Comp. B, Comp. A-3, Tetryl, PBXN:5, CH-6, Cyclotol, RDX, PETN, Octol, Comp. C-4 and Comp. D-4).

      NOTE: PETN is not combined with the other explosives listed in this group. PETN is not compatible with the other explosives.

   b. Propellants or Propelling Charges [M1, M2, M5, M6, M7, M9, M10, M11, M14, M15, M26, M30, JA2, LKL, DIGL: Form A (shortstick); Form C: (chopped); and Form D (support prop. form part)].

   c. NSP Powder (Approx 70% Black Powder).

   d. Black Powder

   e. Booster Pellets (Uncased)

   f. HE floor sweepings

   g. MTV flares, contaminated materials or MTV Comp.

      NOTE: All HE floor sweepings are handled and destroyed in the same manner as High explosives.

      NOTE: No mixing of the above groupings is permitted.

Waste munitions are typically stored in fiber, wood and/or metal containers. These containers are the units used for shipment and usage in the field. Bulk propellants and explosives are stored in fiber boxes and drums, non-sparking metal containers and lined wooden boxes. Waste munitions, with no open explosives are considered to be in a container. The munition body is considered the container. For example, some explosive wastes may not be stored together.

COMPATIBILITY OF WASTE AND CONTAINER

Spent carbon waste may be corrosive to steel depending upon moisture content due to electrolytic action. Polyethylene liners will be used in steel containers for spent carbon that shows steel corrosivity. Laboratory acid and metals waste generated at the chemical and environmental laboratories is collected in plastic containers that are resistant to the corrosive acids. All solvent waste, including waste mixed thinners, waste paint-related material, waste laboratory solvents, waste solvent/oily rags, and waste water-soluble oil, are stored in 55-gallon steel drums or 5-gallon steel cans.

Waste ash from open burning is stored in compatible 55-gallon steel drums.

PROCEDURES TO ENSURE COMPLIANCE WITH LDR REQUIREMENTS

Solid wastes generated at MLAAP may be listed or characteristic hazardous waste and may be treated onsite or offsite. In accordance with Tennessee Rule 0400-12-01-.10, wastes may need to be analyzed to determine whether the waste meets the applicable LDR treatment standard.

Analytical data or information from knowledge of the waste is used to determine if the waste is restricted under Tennessee Rule 0400-12-01-.10. If generator knowledge is used, all supporting data is maintained in the operating record. Testing will be conducted only to certify that the waste meets LDR treatment standards. If it is known that the wastes do not meet applicable LDR treatment standards based on process knowledge, no testing is necessary. Each waste for which a treatment standard has been set will be evaluated for the applicable parameters in Tennessee Rule 0400-12-01-.10. All analytical results completed in support of the LDR requirements will be retained in the facility operating record.

Waste resulting from facility operations that exceed applicable LDR treatment standards and are not permitted to be treated onsite will be sent to an off site permitted treatment facility. LDR notifications will be supplied with the shipment of waste with the information required by Tennessee Rule 0400-12-01-.10(g). In addition to the LDR notification, any additional data for the waste stream (waste profile, analytical data) will be provided to the designated treatment facility.

ADDITIONAL REQUIREMENTS FOR WASTE SHIPPED OFFSITE FOR DISPOSAL

Further analyses may be required for a waste to be accepted for offsite disposal. Laboratory arrangements must include data needed for completion of a Waste Analysis Profile and, at a minimum, must include sufficient information to generate the proper DOT shipping name, designation of reportable quantities of hazardous substances, and any other data required by the disposal company. Sufficient analytical data must be obtained to properly complete a shipping manifest for all offsite shipments of hazardous waste.

All wastes that are determined through analysis to meet treatment standards as specified in Tennessee Rule 0400-12-01-.01 will be land disposed in a permitted facility without further treatment. An LDR certification, including all analytical records to support the certification will be prepared and accompany the shipment of waste to the receiving facility.

Waste Received from Offsite Treated Onsite

When waste is received from offsite, it is accompanied by a Land Disposal Restriction Form. The waste is treated to meet the criteria on the Land Ban Form. Most treatment of PEP by deactivation leaves no residue. An inspection of the treatment site is performed to determine whether residue remains or not. If there is no residue, a Certification of Treatment is prepared with one copy placed on file and one copy returned to the generator.

Waste Residues from Treatment

All residues of wastes collected from waste treatment onsite are laboratory tested to determine if waste is fully treated to meet land disposal restrictions. In addition, if a D003 or D030 code applies, then waste is tested for underlying hazardous constituents “UHC” or rather any constituent listed in Tennessee Rule 0400-12-01-.10(3)(i).

If the residue from the waste exceeds applicable LDR treatment standards and are not permitted to be treated onsite, the waste will be sent to an off site permitted treatment facility. LDR notifications will be supplies with the shipment of waste with the information required under Tennessee Rule 0400-12-01-.10(g). In addition to the LDR notification, any additional data for the waste stream (waste profile, analytical data) will be provided to the designated treatment facility.

Whether the residue from the waste treatment meets land disposal restrictions or not, a One-Time Notice to File is prepared

SELECTING WASTE ANALYSIS PARAMETERS

Waste analysis parameters are selected to ensure proper waste management. This includes not only waste generated onsite and destined for offsite disposal, but also for wastes generated onsite and waste received from offsite that are destined for onsite storage and treatment.

Based on MLAAP's extensive knowledge of raw materials, in process materials, physical/chemical processes of MLAAP activities, and analytical results as necessary, parameters were selected to ensure complete characterization of solid wastes. To ensure complete characterization of listed waste for compliance with the LDR regulations, knowledge of the process, and where necessary, testing has been used to determine if the hazardous waste exhibit any of the four characteristics of Tennessee Rule 0400-12-01-.02.

Samples will be collected as necessary to meet the following objectives:

- To ensure the safety of the personnel at the site
- Identification of incompatible/inappropriate wastes
- Determine proper waste characterization;
- Determine land disposal requirements; and
- Verification of treatment.

Waste Analysis Requirements for Military Munitions Waste Generated Offsite

Sampling for laboratory analysis of military munitions will not be required in most cases. Military munitions are manufactured to exacting standards, with all components and chemical compositions of materials well identified at the point of manufacture and assembly. The composition of all materials, including those that would become hazardous waste, must meet Military Specification (Mil-Spec) as must the assembly of completed munitions.

The DoD has developed the MIDAS database that details all materials, including chemical composition of all munitions manufactured for or by the DoD. And is available for use at MLAAP. MIDAS may be used to determine the composition of any waste munition received from off-site for which the exact composition was undetermined.

This system allows a site receiving these munitions as a hazardous waste to meet all the requirements of Tennessee Rule 0400-12-01-.06((2), General Waste Analysis, for waste received from off site.

In the event information is not available to correctly characterize and classify the munitions waste, samples will be collected and analyzed in accordance with Table 1.2-5.

Sampling Preservation and Storage

Most chemical samples from MLAAP are high concentration waste samples that do not require preservation. Low concentration samples or any samples where the concentration is not known will be preserved in accordance with SW-846 requirements. In addition, sample containers will be selected according to the waste compatibility.

Table 1.2-5 Waste Sample Analysis Requirements				
TDEC Wastestream Number	**Waste Name**	**Minimum Sample Parameter(s)**	**Analytical Method**	**Comments**
No. 1	Explosive Sludge	Explosives, Card Gap/DDT	EPA 8330A, ASTM	
No. 2	Spent Carbon	Explosives, Card Gap/DDT, RCRA Metals	EPA 8330A, EPA 6010B, EPA 7470A, 9095B, ASTM	Spent carbon wastes are also listed for reactivity and are therefore always assumed to be reactive unless tested and determined to be non-hazardous. Spent carbon undergoes both total nitrobodies testing and reactivity testing.
No. 3	Non-listed Reactive	Explosives, Reactivity	EPA 8330A, ASTM	The chemical composition of waste munitions and munition components is known and the munitions are also known to be reactive. In most cases no laboratory analyses are needed to determine physical or chemical characteristics. Before sampling and analysis is performed, every avenue available to determine the waste composition will be exhausted. In many cases, due to the nature of the waste, sampling and analysis may not be possible. In this case the generator site will be contacted for possible return of the waste munitions.
No. 7	Ash	Explosives, RCRA Metals, Card Gap/DDT, Paint Filter	EPA 8330A, EPA 6010C, EPA 7470A, ASTM, EPA 9095B	
No. 8	Explosive/Solvent Contaminated Rags	Explosives, Volatiles	EPA 8330A, EPA 8260B	
No. 9	Pinkwater	pH, Explosives	EPA 9040B, EPA 8330A	
No. 10	Mixed Thinner Waste	Ignitibility, Volatiles, BTU's/lb.	EPA 1010, EPA 8260B,	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 11	Paint Sludge and Thinner	Volatiles	EPA 8260B	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 38	Waste Fluorescent Bulbs	RCRA Metals	EPA 6010C	
No. 40	Waste Lab Pack (Laboratory Chemicals)	Various Reagents, etc.	NA	Determined by Content Solvent or solvent-like wastes are defined from the MSDS's that are on file for the products added to the container.
No. 43	Waste Corrosives and Metals	pH, RCRA Metals	EPA9040B, EPA 6010C, EPA7470A	
No 44	Water Soluble Oil	Flashpoint, RCRA Metals		
No. 45	Waste Toluene Diisocyanate	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 47	Waste Laboratory Solvents	Volatiles, Semi-Volatiles, RCRA Metals	NA	Determined by Content. Waste is usually defined from the MSDS's that are on file for the products added to the container.

Table 1.2-5 Waste Sample Analysis Requirements				
TDEC Wastestream Number	**Waste Name**	**Minimum Sample Parameter(s)**	**Analytical Method**	**Comments**
No 50	Waste Lead Foil & Cloth Bags	Lead	EPA 6010B	
No. 51	Waste Fixer Solution from X-Ray	pH, Silver	EPA 9040B, EPA 6010C	
No. 54	Waste Paint & Adhesive	Flashpoint, BTU's/lb, Volatiles	EPA 1010, EPA 8260B,	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 58	Waste Adhesive/Cement	Flashpoint, BTU's/lb, Volatiles	EPA 1010, EPA 8260	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 59	Waste Chlorinated Laboratory Solvents	Flashpoint, BTU's/lb, Volatiles, RCRA Metals	EPA 1010, EPA 8260, EPA 6010C, EPA 7470A,	Determined by Content
No. 61	Waste Ash from OB that fails reactivity Test.	Explosives, RCRA Metals, Card Gap/DDT	EPA 8330A, EPA 6010C, EPA 7470A,	
No. 62	Waste Bituminous Compound	Flashpoint, BTU's/lb.	EPA 1010,	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 63	Waste Thinner from Stores	Flashpoint, BTU's/lb, Volatiles	EPA 1010,	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 64	Waste Ink, Out of Specification or Excess	Flashpoint, BTU's/lb, Volatiles, RCRA Metals	EPA 1010, EPA 8260B, EPA 6010C	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 65	Waste Dispersant with Lead	Lead	EPA 6010C	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 66	Waste Lab Pack, Chlorinated Solvent	Flashpoint, BTU's/lb, Volatiles, RCRA Metals	EPA 1010, EPA 8260, EPA 6010C, EPA 7470A,	Determined by Content of the Lab Pack.
No. 67	Polysulfide, cured	Lead	EPA 1311/6010C	
No. 68	Richmold	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 69	Gasoline Spill Residue	Flashpoint, BTEX	EPA 1010	
No. 70	Cosomoline	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 71	Gasoline Spill Residue, Contaminated Vermiculite	Flashpoint, BTEX	EPA 1010	
No. 72	Ethanol	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 73	Red Varnish	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the

Table 1.2-5 Waste Sample Analysis Requirements				
TDEC Wastestream Number	**Waste Name**	**Minimum Sample Parameter(s)**	**Analytical Method**	**Comments**
				products added to the container.
No. 74	Varsol	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 75	Isopropyl Alcohol	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 76	Waste Toluene	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 81	Flammable Liquid, Corrosive	Flashpoint, BTU's/lb pH	EPA 1010 EPA 9040B	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 82	Waste Paint Chips and Debris	RCRA Metals Explosives	EPA 8330A EPA 6010C	
No. 83	PQ-56 Antimicrobial Preservative	pH	EPA 9040B	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 84	Portable Toilet Chemical	Flashpoint, BTU's/lb	EPA 1010	Waste is usually defined from the MSDS's that are on file for the products added to the container.
No. 85	Calcium Hypochlorite			Waste is usually defined from the MSDS's that are on file for the products added to the container.

Sampling Methods

Selection of the analytical testing methods for the wastes generated or received at MLAAP was based upon the physical state of the wastes, analytes of interest, and information requirements. Selected sample parameters are the minimum analytes necessary to analyze for that particular waste stream in order to properly manage the waste. Table 1.2-6 lists waste streams at MLAAP and strategies to ensure these objectives are met.

The sampling methods used at MLAAP are consistent with those referenced in Tennessee Rule 0400-12-01-.02.

Trained and experienced laboratory or site personnel perform sampling of all wastes at MLAAP. Sampling personnel have a minimum of 24-Hour TSD training and are proficient in the use of PPE and sampling equipment.

All sampling containers are purchased new or received pre-cleaned from the onsite laboratory or subcontract laboratory.

Samples, if required, for analysis of mixed solvent waste, waste paint related material, waste oils and waste laboratory solvents are collected from the 55-gallon waste container using a clean glass tube that will reach the bottom of the drum. Sample collected is deposited in either a 40 ml VOA vial or a clean glass jar with Teflon lined lid. After sample collection, the glass tube is carefully broken and remains in the waste container.

All samples, upon collection are labeled and, as required, packed and transported at 4º Centigrade to the laboratory. Chain of custody (CoC) protocol is followed. Sample containers must carry the waste or sample name, sample location, sample date and time of collection, the analysis requested, the method of preservation and the sampler's name.

Sample Equipment Decontamination Methods

Reusable sampling equipment is cleaned in the field or by MLAAP's Environmental Laboratory. Sample equipment cleaning also includes decontamination in three (3) separate consecutive cleaning tubs as follows:

1. The equipment is washed with a phosphate-free detergent and nylon brush;
2. The equipment is washed with distilled water and a nylon brush; and
3. Step two is repeated.

Table 1.2-6 Waste Sample Strategies							
TDEC Wastestream Number	**Waste Name**	**Sample Preservation**	**Sample Container**	**Holding Time**	**Sample Type**	**Sample Equipment**	**Sample Frequency**
No. 1	Explosive Sludge	NA	Conductive Bag, fiber	6-months	Grab	Scoop	As required where process knowledge is not sufficient
No. 2	Spent Carbon	Ice	Plastic	2-weeks	Composite	Scoop	Every Batch
No. 3	Non-listed Reactive	NA	Fiber	6-months	Grab	Scoop	As required where process knowledge is not sufficient
No. 7	Ash	NA	Plastic	6-months	Grab	Scoop	Every Batch
No. 8	Explosive/Solvent Contaminated Rags	Ice	Glass	14 days	Grab	hand	As required where process knowledge is not sufficient, Process changes
No. 9	Pinkwater	Ice	Glass, amber	14 days	Grab	Dipper, sample port	Annual or more often
No. 10	Mixed Thinner Waste	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 11	Paint Sludge and Thinner	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 38	Waste Fluorescent Bulbs	NA	Plastic	6-months	Grab	Trier, scoop, tiered thief	Every Batch
No. 40	Waste Lab Pack (Laboratory Chemicals)	NA	Glass, Plastic	14-days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 43	Waste Corrosives and Metals	NA	Glass	6-months	Grab	coliwasa	Every Drum
No 44	Water Soluble Oil	NA	Glass, Plastic	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 45	Waste Toluene Diisocyanate	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 47	Waste Laboratory Solvents	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No 50	Waste Lead Foil & Cloth Bags	NA	Plastic	6 months	Grab	hand	As required where process knowledge is not sufficient
No. 51	Waste Fixer Solution from X-Ray	NA	Glass, Plastic	6 months	Grab	Coliwasa, sample port	Annual
No. 54	Waste Paint & Adhesive	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 58	Waste Adhesive/Cement	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 59	Waste Chlorinated Laboratory Solvents	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 61	Waste Ash from OB that fails reactivity Test.	NA	Plastic	6-months	Grab	scoop	Every Batch
No. 62	Waste Bituminous Compound	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 63	Waste Thinner from Stores	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient

Table 1.2-6 Waste Sample Strategies							
TDEC Wastestream Number	**Waste Name**	**Sample Preservation**	**Sample Container**	**Holding Time**	**Sample Type**	**Sample Equipment**	**Sample Frequency**
No. 64	Waste Ink, Out of Specification or Excess	NA	Glass, Plastic	14 days	Grab	Coliwasa, scoop	As required where process knowledge is not sufficient
No. 65	Waste Dispersant with Lead	NA	Glass, Plastic	6 months	Grab	coliwasa	As required where process knowledge is not sufficient
No. 66	Waste Lab Pack, Chlorinated Solvent	NA	Glass	14 days	Grab	hand	As required where process knowledge is not sufficient
No. 67	Polysulfide, cured	NA	Plastic	6 months	Grab	hand	Annual or when the process changes
No. 68	Richmold	NA	Glass, Plastic	6 months	Grab	coliwasa	As required where process knowledge is not sufficient
No. 69	Gasoline Spill Residue	Ice	Glass	14 days	Grab	Scoop, auger	As required
No. 70	Cosomoline	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 71	Gasoline Spill Residue, Contaminated Vermiculite	Ice	Glass	14 days	Grab	Scoop, auger	As required
No. 72	Ethanol	NA	Glass, Plastic	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 73	Red Varnish	NA	Glass, Plastic	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 74	Varsol	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 75	Isopropyl Alcohol	NA	Glass, Plastic	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 76	Waste Toluene	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 81	Flammable Liquid, Corrosive	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 82	Waste Paint Chips and Debris	ICE	Glass	6 Months	Grab	coliwasa	As required where process knowledge is not sufficient
No. 83	PQ-56 Antimicrobial Preservative	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 84	Portable Toilet Chemical	NA	Glass	14 days	Grab	coliwasa	As required where process knowledge is not sufficient
No. 85	Calcium Hypochlorite	NA	Glass, Plastic	14 days	Grab	coliwasa	As required where process knowledge is not sufficient

Decontamination water is processed through the Industrial Wastewater Treatment Plant and subsequently discharged to the NPDES, #TN0000060.

Any equipment disposed of will be collected and characterized for proper disposal.

Sampling QA/QC Procedures

All sampling conducted for the purposes of characterizing wastes managed by MLAAP will use compatible storage containers, chain-of-custody from sample collection through delivery to the analytical laboratory, and appropriate QA/QC procedures.

Health and Safety Protocols

All sampling is conducted by employees that have completed the OSHA 24-Hour Treatment, Storage and Disposal (TSD) training in accordance with 29 CFR 1910.120. Personnel Protective Equipment (PPE) will vary according to waste being sampled.

In order to minimize contact with potentially hazardous materials the following personal protective equipment will be available and worn as deemed appropriate by MLAAP Safety Department:

- Full Face shield or chemical splash proof goggles
- Tyvek apron or full body coveralls
- Chemical resistant gloves
- Safety glasses
- NIOSH approve air purifying respirator with appropriate cartridges

Many metals are carcinogenic, and most are toxic by ingestion, inhalation, and/or skin absorption. Wearing personal protective clothing and maintaining good work practices minimizes the possibility of exposure to metals. Exposure to metals through skin contact can be controlled through use of proper PPE.

Explosives that could be sampled at MLAAP sites include Trinitrotoluene (TNT), RDX, HMX, and others. The exposure route for explosives may be by inhalation, absorption, ingestion, or skin or eye contact. Exposure to explosives via inhalation is expected to be minimal as little dust is generated from sampling. PPE will control the possibility of exposure through skin contact. When sampling explosive materials, conductive shoes will be worn to eliminate electrostatic discharge.

The primary route of exposure to solvents is through the respiratory system, although other routes of exposure may be by skin absorption and/or ingestion. If it is determined that a waste contains volatiles an air respirator will be worn when deemed appropriate by MLAAP Safety. PPE will control the possibility of exposure through skin contact.

SELECTING LABORATORY TESTING AND ANALYTICAL METHODS

Selecting a Laboratory

Laboratory analysis may be performed onsite or with a contract laboratory. The onsite MLAAP laboratory has expertise in the analysis of explosives in accordance with SW-846 Method 8330. In addition, MLAAP operates an ammunition Test Area that can conduct the ASTM Bureau of Mines Card Gap and Detonation to DDT test.

In cases where MLAAP does not have the equipment, expertise, or staffing to perform onsite analysis, the samples will be sent offsite.

In either case of onsite or offsite analysis, laboratory selection is based upon the laboratory having a comprehensive QA/QC program, technical expertise, and an effective reporting system.

Selecting Testing and Analytical Methods

Selection of testing methods is based upon several items including the physical state of the waste, analytes of interest, required detection limits, and information requirements.

Testing for hazardous characteristics of waste streams generated at MLAAP will be performed on all waste streams where characteristics may vary or the content of the waste is not known. In most cases it is known exactly what the content of the waste stream is and therefore information can gathered from MSDS's or similar descriptive information.

Complete military munitions are units that contain a propellant, a primer device, and a projectile often containing an explosive with a fuse device. Typically, all conventional military munitions contain one or more of the above components. These units are made to withstand the rigors of battle, therefore often materials contained in these munitions are not readily accessible. The military builds these munitions to exacting standards and tracks each part and material used in their manufacture. The sampling and analysis of any complete munition and/or component would be a very rare event. MLAAP would not anticipate receiving any completed military munitions or components that were not already identified as to their materials of construction and configuration. If all avenues of information were inconclusive and the waste munitions had to be sampled and an analysis performed, the following procedure would be used. Note: It cannot be overemphasized that the composition of these munitions is well documented and the need for sampling and analysis would be rarely, if ever required. Since there is a safety hazard posed by the handling and testing of wastes (waste munitions) containing relatively high levels of explosives, and explosive contaminated wastes, they are assumed to be reactive in lieu of testing.

Due to the nature of many types of munitions, traditional test methods are not applicable due to the design and configuration of the subject. In many cases, testing would be unsafe, potentially resulting in damage to valuable equipment, injury or death to analytical personnel. In cases dealing with these types of munitions, waste analysis would be taken from MIDAS manufacturer's

information, military Technical Manuals, and/or MSDS's. MIDAS details all materials, including the chemical composition, of all munitions manufactured for the DoD. This computer based information system was developed for this application and is available for use at MLAAP. MIDAS can be used to determine the composition of any waste munition proposed to be received from off-site.

In the event MLAAP becomes subject to new regulatory requirements, additional testing methodologies will be incorporated into the waste analysis plan.

Sampling Requirements for Wastes

Prior to sampling, all containers with identical marking, similar and/or identical packaging, similar appearance, etc. would be grouped, identified and designated for sampling as a group. Each grouping will be marked (identified) using a spray paint number code, identified on the sampler's field log to match each group represented by the sample.

A trained technician and/or demil worker will collect grab samples from each group identified above. The amount of sample collected will be the minimum (250 grams) required for laboratory analysis. Sample container opening devices and sample collection devices will be non-sparking and approved by the MLAAP Safety Department. Sample containers will be labeled to reflect the generator, generator location, generator EPA ID number, hazardous waste nomenclature, hazardous waste codes, sample code, the samplers name, time and date and sample location. Samples will be transported under COC to the MLAAP Laboratory. Upon receipt at the laboratory, a Laboratory Analysis Request Form will be completed for any analysis (chemical or physical) required. MLAAP Laboratory Personnel are trained and experienced in the handling, preparation and analysis of PEP. The Laboratory Manager will determine if laboratory analysis is safe and possible. If analysis is determined not safe and/or possible, the sample will be held at a safe location and the generator of the waste notified.

Due to the nature of its manufacturing process, MLAAP may generate other waste streams in the future, which could be explosive and/or explosive contaminated. Additional procedures are specified to evaluate these waste streams. They are the "Deflagration to Detonation Transition Test" (DDT) and the "GAP Test." These tests were developed by the U.S. Bureau of Mines for evaluating explosives (or wastes explosives) for the characteristics of reactivity due to detonation. The DDT and GAP test procedures are published by ASTM under the title "Methods of Evaluating Explosive Reactivity of Explosive Contaminated Solid Waste Substances." EPA has determined that reactivity is defined by Department of Transportation (DOT) listing via 49 CFR Part 172.

The Card Gap and DDT tests are performed by specialized explosive testing facilities at MLAAP or by independent test facilities. All other analyses are performed by laboratory personnel at MLAAP or by independent laboratories.

Sampling of Bulk Packaged Explosive, Propellants and/or Pyrotechnics

Bulk packaged hazardous waste (explosives, propellants and or pyrotechnics) are typically packed in cardboard boxes with water proof liners, paperboard drums with a water proof or anti-static liner or non-sparking metal containers. The waste would be assumed to meet the definition of a reactive waste (waste code D003); therefore the minimum number of samples and amount of sample that would provide a representative composite would be collected. In the case of bulk materials, the minimum representative number of sample would be one complete item representative of that group (lot or part (DoDAC) number), while a minimum amount of bulk material would be 250 grams. It must be noted that safety of site sampling personnel and property will be of major concern. All explosive ordnance items to be sampled would be moved to a remote, safe location prior to sampling.

Analysis of military munitions, including sump scrap (K044) may be performed on bulk material such as bulk explosives or propellants. This would only be performed prior to treatment of an item to determine if any trace materials were leachable (EP toxic), such as lead, that would not be identified in normal munitions data.

Additional Requirements for Waste to be Disposed Off-Site

Further analyses may be required for acceptance of a waste for off-site disposal. Laboratory arrangements must include data needed for completion of a Waste Analysis Profile and, at a minimum, must include sufficient information to generate the proper DOT shipping name, designation of reportable quantities of hazardous substances, and any other data required by the disposal company. Sufficient analytical data must be obtained to properly complete a shipping manifest for all off-site shipments of hazardous waste.

Table 1.2-7 Examples of Waste Sampling Methods, Equipment, and Procedures					
TDEC Wastestream Number	**Waste Name**	**EPA Waste Codes**	**Sample Collection Method**	**Sampling Equipment**	**Sample Preservation and Storage**
No. 1	Explosive Sludge from Sumps	K044	Grab	Conductive scoop or container	NA (Store in approved location for explosives)
No. 2	Spent Carbon	K045	SW846 Section 9 Composite	Scoop	Samples placed in new sealed Ziploc plastic bag or glass container.
No. 3	Non-listed Reactive	D003	Grab	NA	NA (Store in approved location for explosives)
No. 7	Ash	D004, D005, D006, D007, D008	Composite	Scoop	Samples placed in new sealed Ziploc plastic bag or glass container.
No. 8	Explosive/Solvent Contaminated Rags	D001, F005, F003	Composite	Collected by hand from the 55-gallon waste container at the point of generation.	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 9	Pinkwater	K047	Composite	Collected from sample spigot.	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 10	Mixed Thinner Waste	D001, D007, D008, F003, F005	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 11	Paint Sludge and Thinner	D001, F003, F005	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 38	Waste Fluorescent Bulbs	D009	Grab	Scoop	
No. 40	Waste Lab Pack (Laboratory Chemicals)	LABP	NA	NA	
No. 43	Waste Corrosives and Metals	D002, D006, D007, D008, D009	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No 44	Water Soluble Oil	D004, D006, D007, D008	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 45	Waste Toluene Diisocyanate	U223	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 47	Waste Laboratory Solvents	D001, F003, F005	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No 50	Waste Lead Foil & Cloth Bags	D008	Grab	Collected by hand from the waste container at the point of generation.	Samples placed in new sealed plastic container and transported to the laboratory.
No. 51	Waste Fixer Solution from X-Ray	D011	Grab	Collected from sample spigot.	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 54	Waste Paint & Adhesive	D001, F003, F005	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 58	Waste Adhesive/Cement	D001, F003, F005	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 59	Waste Chlorinated Laboratory	F002, D028,	Grab	Glass Coliwasa	Sample in glass container and kept at

Table 1.2-7 Examples of Waste Sampling Methods, Equipment, and Procedures					
TDEC Wastestream Number	**Waste Name**	**EPA Waste Codes**	**Sample Collection Method**	**Sampling Equipment**	**Sample Preservation and Storage**
	Solvents	D039, U080			4 degrees Celsius prior to analysis.
No. 61	Waste Ash from OB that fails reactivity Test.	D003	Grab	Scoop	Samples placed in new sealed plastic container and transported to the laboratory.
No. 62	Waste Bituminous Compound	D001	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 63	Waste Thinner from Stores	D001, D035, F003, F005	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 64	Waste Ink, Out of Specification or Excess	D001, F003, F005	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 65	Waste Dispersant with Lead	D008	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 66	Waste Lab Pack, Chlorinated Solvent	U080	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 67	Polysulfide, cured	D008	Grab	Collected by hand from the waste container at the point of generation.	Samples placed in new sealed plastic container and transported to the laboratory.
No. 68	Richmold	D001	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 69	Gasoline Spill Residue	D001	Grab	Scoop	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 70	Cosomoline	D001	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 71	Gasoline Spill Residue, Contaminated Vermiculite	D001	Grab	Scoop	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 72	Ethanol	D001, F003, F005	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 73	Red Varnish	D001	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 74	Varsol	D001	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 75	Isopropyl Alcohol	D001	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 76	Waste Toluene	U220, D001	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 81	Flammable Liquid, Corrosive	D001, D002	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 82	Waste Paint Chips and Debris	D006, D008	Composite	Scoop	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 83	PQ-56 Antimicrobial Preservative	D002	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.

Table 1.2-7 Examples of Waste Sampling Methods, Equipment, and Procedures					
TDEC Wastestream Number	**Waste Name**	**EPA Waste Codes**	**Sample Collection Method**	**Sampling Equipment**	**Sample Preservation and Storage**
No. 84	Portable Toilet Chemical	D001	Grab	Glass Coliwasa	Sample in glass container and kept at 4 degrees Celsius prior to analysis.
No. 85	Calcium Hypochlorite	D001	Grab	Scoop	Sample in glass container and kept at 4 degrees Celsius prior to analysis.

SELECTING WASTE RE-EVALUATION FREQUENCIES

Most MLAAP waste streams are well documented and mature. Process knowledge of what is in the waste is well documented by knowing where the waste was generated and exactly what items were added to the waste. An example would be a stenciling machine at Building B-14 which uses a solvent that is controlled by a standard operating procedure and a stock number for the solvent. Anytime a process is changed specific samples will be collected from that waste stream.

Table 1.2-8 provides an example of waste streams on MLAAP and sampling frequencies.

Table 1.2-8
Examples of Waste Sampling Frequencies

Waste Name	Sampling Frequency
Explosive Contaminated Solvent & Rags	Any time the process generating the waste changes.
K045 Spent Carbon	K045 Spent carbon from the on-site wastewater treatment plants is composite sampled and analyzed from each dump of spent carbon from the units.
Waste Ash	• Every time a waste container is filled. • Any time a munition is treated that contains a know RCRA metal, the ash will be collected separately and not mixed with other ash. This ash will be sampled and analyzed as often as necessary.
Pinkwater	Daily or weekly often enough to ensure removal of explosives prior to discharge to the NPDES permitted treatment plant.
Waste Oil	Each time the waste is generated
Waste Ink and or Thinners	Each time the process is changed.
Waste explosives (D003, K044, K045)	Any time there is a possibility that impurities may keep the waste from meeting D003 characteristics.

APPENDIX 2.1-1

(NON-HAZARDOUS RESIDUE)

One Time Notice to File
0400-12-01-.10(1)(g)(1)(iv)

Name and Title of Facility Receiving the Waste:
Milan Army Ammunition Plant Industrial Landfill (Permit No. IDL 27-101-0085)

Manifest No:
Not Applicable

Description of Waste:

- Ash from Open Burning of Explosive Waste. EPA waste meeting the definition of 0400-12-01-.02(3)(d)1(vi), (vii), and (viii) D003 has been thermally treated by open burning (DEACT) at MLAAP Area W. D003 waste is treated by Treatability Group 0400-1-11 Table "Treatment Standards for Hazardous Waste." The waste meets the definition of a nonwastewater.

- Ash from Open Burning of D003 Explosive Waste has been tested for regulated constituents that may be in the waste per 0400-12-01-(1)(b).10 "Universal Treatment Standards" and meets rule 0400-12 01-.10(3)(i).

"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that it has been maintained and operated properly so as to comply with the treatment standards specified in Rule 0400-12-01-.10(3)(j) without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

Signed _____ Date _____

Environmental Manager

One Time Notice To File
0400-12-01-.10(1)(g)2(iv)(IV)

(HAZARDOUS RESIDUE)

Name and Title of Facility Receiving the Waste:
Milan Army Ammunition Plant Industrial Landfill (Permit No. IDL 27-101-0085)

Manifest No:
Not Applicable

Description of Waste:

- Hazardous Ash from Open Burning of Explosive Waste. EPA hazardous waste meeting the definition of 0400-12-01-.02(3)(d)1(vi), (vii), and (viii) D003 has been thermally treated by open burning (DEACT) at MLAAP Area W. D003 waste is treated by Treatability Group 0400-12-01 Table "Treatment Standards for Hazardous Waste." The waste meets the definition of a nonwastewater.

- Ash from Open Burning of D003 Explosive Waste has been tested for regulated constituents that may be in the waste per 0400-12-01-.10(1)(b) "Universal Treatment Standards" remains hazardous for underlying hazardous constituents D008.

"I certify under penalty of law that the waste has been treated in accordance with the requirements of Rule 0400-12-01-.10-(3)(a) or Rule 0400-12-01-.10(3)(j) to remove the hazardous characteristic. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine imprisonment."

Signed Date

Environmental Manager

APPENDIX 2.1-2
CERTIFICATE OF TREATMENT, STORAGE AND/OR DISPOSAL

MILAN ARMY AMMUNITION PLANT
HWY 104 SUITE 1
MILAN, TENNESSE 38358

Milan Army Ammunition Plant certifies that on the 00th day of XXXX, waste material received from XXXX described on shipping document (manifest #) XXXX was managed in compliance with all state and federal laws and regulations, including 40 CFR 260 thru 270.

Methods of Management: X01 Miscellaneous Thermal Treatment (Open Detonation)

Description: WASTE RDX, DESENSITIZED (D003), 1.1D, UN0483, PG II, (EX1992090126), (11-0483-07).

By: _____
Mr. XXXX
Burning Ground / Ammunition Destruction Area Supervisor

Should you have any questions, please contact the MLAAP Burning Ground at (731) 686-6654 or 686-6914.

APPENDIX 2.1-3

HAZARDOUS WASTE TRACKING			Manifest No.		
Hazardous Waste Description - Waste Code:			Quantity:		
RECEIVING INFORMATION Date Received:			Received By		
Container No.	Amount	Weight Lbs.	Fill-Date	Location	Section

TRANSFER INFORMATION					Moved/ Received By:
Date Moved	Container No.	Amount/Ctn. Or Weight	Location	Section	Date, Time, and Signature

Facility: Milan Army Ammunition Plant
EPA Identification Number: TN0210020582
Permit Number: TNHW-153

ATTACHMENT 2.
PERSONNEL TRAINING

This Attachment details the Milan Army Ammunition Plant (MLAAP) personnel training program as required Tennessee Hazardous Waste Management Regulations 0400-12-01-.06(2)(g) and 0400-12-01-.07(5)(a).

OUTLINE OF THE TRAINING PROGRAM

Personnel responsible for handling hazardous waste, including military munitions, must have a training schedule/program that is a function of their job title and description. Job descriptions for employees are involved in the management and handling of hazardous waste, open burning (OB) and open detonation (OD) activities and em ergency response activities related to waste munitions and propellants, explosives, and pyrotechnics (PEP) are listed as follows. Personnel training requirements are listed in Table 2-1.

Job Descriptions

Environmental Manager
The Environmental Manager is responsible for the entire facility's environmental compliance program elements. The job position requires a Bachelor's degree and five years experience.

Environmental Scientist
The Environmental Scientist is responsible for assisting and supporting the Environmental Manager in ensuring the entire facility's environmental program elements meet regulatory compliance. The job position requires a Bachelor's degree.

Disposal Manager
The Disposal Manager monitors the progress, actions, and workload of waste-generating departments and is responsible for the collection and disposal of all refuse, contaminated trash; reject explosives, and excess explosives and production items. The Disposal Manager is also responsible for the decontamination of excess metals, machinery, and tooling along with the management and operation of the Resource Conservation and R ecovery Act (RCRA) permitted Hazardous Waste Treatment, Storage, and disposal areas. These areas include the open burning (OB); open detonation (OD), and various permitted storage areas. T he Disposal Manager coordinates with the Environmental Department to maintain compliance with the RCRA Part A Storage and the Part B treatment permits and Tennessee Solid and Hazardous Waste and open bur ning regulations. A nother duty includes ensuring that OB/OD employees are trained in accordance with the approved RCRA Training Plan. The job position requires an Associate's degree and three years Demil experience or a Bachelor's degree.

Demolition Supervisor
The Demolition Supervisor (Demil Supervisor) assigns demil workers to specific jobs to accomplish workload treatment schedules and directs demil personnel with respect to transporting hazardous/non-hazardous waste and preparing material for destruction at the OB and OD units. The job requires thermal treatment of hazardous waste generated at MLAAP and received from offsite sources; verifying all hazardous waste storage and treatment permit requirements are complied with; and determining and verifying all site inspection requirements for environmental compliance including water, solid, and hazardous waste. The Demolition Supervisor manages all aspects of offsite shipment and receipt of hazardous waste in addition to ensuring that he and his subordinates are trained in hazardous waste handling and follow pertinent regulations. This individual supervises operations at all RCRA-regulated hazardous waste treatment and storage facilities utilizing demilitarization operations. OB and OD units are required to have an operating record and equipment inspection record prepared. This job requires a high school diploma/general education degree (GED) and one year related experience.

Demolition Leader
The Demolition Leader performs duties as required for the operation of the OB and OD units, hazardous waste operators, and the Environmental Office. He/she is also responsible for the management of all hazardous waste generated at MLAAP and received from offsite sources and verifies that all hazardous waste storage and treatment permit requirements are complied with for site activities. The Demolition Leader determines and verifies all site inspection requirements for environmental compliance including air, water, and solid and hazardous waste. This person must manage all aspects of offsite shipment and receipt of hazardous waste. This position requires three years of Demil experience.

Demolition Worker
This person disposes of scrap or rejected explosive products and hazardous waste munitions generated by operating lines. This position requires 12 months manufacturing experience.

Hazardous Waste Transporter
This person reports to the Demolition Supervisor. The Hazardous Waste Transporter performs demil operations; transports hazardous waste, and conducts hazardous waste storage inspections. Hazardous waste is picked up at generating areas at production lines and support areas and transported to treatment areas or storage facilities. This person determines if waste is packaged and labeled correctly and that tracking documents are completed and assures that wastes being transported are compatible.

Reject/Hazardous Waste Operator
This person reworks rejected ammunition and component parts at production lines and disposes of reject ammunition parts when rework is not possible. Duties may also include accumulating and segregating hazardous waste at production lines; packaging and preparing hazardous waste for shipment to the burning ground (BG) and ammunition destruction area (ADA) for disposal and maintaining detailed accountability records of hazardous waste generated, stored and shipped. This position requires 12 months manufacturing experience and familiarity with waste codes and compatibility.

Hazardous Waste Operator
The Hazardous Waste Operator disposes of hazardous waste and rejected ammunition parts and components generated at production lines. This person accumulates and segregates hazardous waste from all sources daily; and packages and ships hazardous waste and reject ammunition and components to the BG and ADA for treatment. The Hazardous Waste Operator manages the satellite collection areas and 90-day storage areas for areas they are responsible for. The HW Operator

maintains detailed accountability records for hazardous waste, and requires familiarity with hazardous waste codes and compatibility of hazardous wastes. This position requires 12 months manufacturing experience.

Fire Chief
During a conflagration or other similar emergency, the Fire Chief has the power to temporarily suspend BG and ADA operations and report this action to the Environmental Manager. The Fire Chief maintains familiarity with, observes, and trains others in safety, health, and environmental requirements. This position requires an Associate's Degree, five years as a firefighter, two years as a fire officer, two years in Emergency Medical Services (EMS), two years in HAZMAT Operations, and two years in Rescue Services.

Fire Lieutenant
The Fire Lieutenant has the direct responsibility for the operations of the Fire Department shift. He/she shall direct and supervise employees in accordance with fire safety training, firefighting, and emergency hazardous material response standards and EMS protocol. He/she will assist the Fire Chief as necessary including preparing required reports and assuring that all records and personal observations are kept in the strictest confidence. The lieutenant maintains a familiarity with, observes and trains applicable shift personnel, in all facility standards dealing with safety, environmental, and health requirements. He/she also supervises MLAAP Fire Department personnel to operate within the safety, environmental, and health division guidelines; and commands shift fire operations, inspections, firefighter training, EMS, ambulance operations, rescue operations, HAZMAT response, and confined space rescue. This person may come into contact with hazardous materials, biohazards, flammable materials, explosives and devices, radioactive materials, toxic and explosive atmospheres, extreme temperatures, and extreme heights during the performance of his/her duties. This position requires a high school diploma/GED and three years firefighter experience.

Firefighter/Emergency Medical Technician (EMT)
This person performs operation checks and completes applicable forms on all fire service apparatus including fire engines, the brush and rescue unit, and all adjunct equipment to assure a state of readiness in responding to emergency situations including but not limited to structural fires, entrapments, rescue, and HAZMAT incidents. This position requires a high school diploma/GED (an Associate's in fire science is preferred), State of Tennessee Fire Fighting Level I and II (Live Fire Training preferred), and HAZMAT First Responder or higher preferred.

Firefighter/Paramedic
This person performs operational checks and completes applicable forms on all fire service apparatus including fire engines, hazardous response trailer, fire lieutenant's vehicle, and all adjunct equipment to assure a state of readiness in responding to emergency situations including but not limited to structural fires, entrapments, rescue, and HAZMAT incidents. The firefighter/paramedic puts into service and operates portable firefighting equipment including fire apparatus, hoses, ladders, monitors, ventilation, rescue, hazardous material and other specialized emergency equipment. This position requires a high school diploma/GED, recommended two years as a firefighter, and paramedic certification.

Spill Response Team
The Spill Response Team, or Installation Response Team (IRT), consists of personnel from multiple departments that have specialized skill sets to aid the MLAAP Fire Department in spill response incidents. Team members include heavy equipment operators, plumbers, riggers, electricians, a chemist and environmental staff.

Training

MLAAP Standard Operating Procedure (SOP) training needs for personnel associated with the Waste Management Area (WMA). Supervisors and operators assigned to the WMA are required to be thoroughly trained regarding the nature of the materials handled, the hazards involved, and necessary precautions in accordance with regulatory requirements and provisions in the above SOP's. Training consists of a combination of in-house classroom training, public training, instructor-led training (ILT), on-the-job training (OJT), computer-based training (CBT), and/or individual instruction.

Personnel who handle, manage, or treat hazardous waste at MLAAP must not work unsupervised until all required training is completed. Within six months of being assigned to a hazardous waste associated task, MLAAP personnel receive an 8-hour introductory course in hazardous waste management. Hazardous waste management employees receive documented classroom refresher courses and 8 hours of OJT. All training is documented, signed, and dated by the trainee and the person providing the training. All training records are retained for three years after the employee has been reassigned to duties other than hazardous waste. Table 2-1 outlines training requirements for all employees that handle, manage, or treat hazardous waste at MLAAP.

Training Content

OB and OD unit personnel at MLAAP must successfully complete a training program that teaches them to perform their duties in a way that ensures compliance with applicable federal and state regulations, Army regulations, and plant SOPs. Training includes hazardous waste handling procedures relevant to the position in which they are employed, contingency plan implementation, and familiarization with emergency procedures, equipment, and systems. Table 2-1 outlines the job positions and their training requirements.

Course Outlines

General Training

All employees are provided Hazard Communication (HAZCOM) training in accordance. In addition to general training, portions of the training program are specific to the individual's job requirements and are designed to train the individual relative to actual job tasks. For instance, hazardous waste handling personnel are taught how to collect representative samples of ash, select proper containers and fill out hazardous waste labels, perform inspections, and operate forklifts, ramps, and other equipment used around hazardous waste. In addition, hazardous waste personnel are provided detailed safety training for working around reactive materials and/or wastes. All hazardous waste personnel are given detailed instructions on area evacuation, alarms, and emergency notification.

Table 2-1
Training Requirements by Job Description for Employees Who Handle, Manage, or Treat Hazardous Wastes At MLAAP

	Employees	Environmental Mgr	Environmental Scientist	Hazardous Waste Operator	Reject/Hazardous Waste Operator	Hazardous Waste Transporter	Solid/Hazardous Waste Tracker	Demolition Worker	Demolition Leader	Demolition Supervisor	Disposal Manager	Fire Chief	Fire Lieutenant	Fire Fighter/EMT	Fire Fighter/Paramedic	Spill Response Team
Hazard Communication	X															
40-Hour Hazwoper		X	X									X	X			
24-Hour Hazwoper														X	X	X
24-Hour Hazwoper TSD				X	X		X	X	X	X	X					
Incident Commander												X	X			
8-Hour OSHA Supervisor/Manager		X	X							X	X					
8-Hour Hazwoper Refresher		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RCRA Hazardous Waste Initial Training		X	X	X	X	X	X	X	X	X	X					X
RCRA 8-hour Refresher		X	X	X	X	X	X	X	X	X	X					X
RCRA Hazardous Waste Continuing (OTJ) Training		X	X	X	X	X	X	X	X	X	X					
Demilitarization and Familiarization Course (Demil Certification)						X	X	X	X	X	X					
Explosive Ordnance Safety (AMMO 4)										X	X					
DOT HM-126F (Ammo-67)		X				X	X		X	X	X					
DOT Hazardous Materials Transportation		X	X							X	X					

RCRA Hazardous Waste Initial Training

Initial RCRA Hazardous Waste training consists of an eight (8)-hour course with an annual eight (8)-hour refresher course. An example outline is provided below.

I. RCRA
   - A. History and background of USEPA and RCRA
   - B. History and background of TDEC and Tennessee Hazardous Waste Management Rule (0400-12-01)
   - C. Brief background of past waste treatment and disposal practices at MLAAP

II. MLAAP OB and OD SOPs and SOP Book 12 "Management of Solid and Hazardous Waste"
   - A. Personnel Training
     1. 8-Hour introductory
     2. Annual classroom refresher
     3. Annual on-the-job update
   - B. Record Retention
     1. Type of records to be retained
     2. Length of retention
     3. Location of record retention
   - C. Segregation of Hazardous and Non-Hazardous Waste
     1. Segregation at lines and areas
     2. Non-explosive contaminated, burnable, non-hazardous materials
     3. Explosive-contaminated materials
     4. Explosive scrap
     5. Salvageable scrap
     6. Machinery exposed to explosives
     7. Non-pentachlorophenol (PCP)-treated scrap wood
     8. PCP-treated boxes
     9. Creosote-treated poles and railroad ties
     10. Solvent/oil-contaminated articles
     11. Waste oils and hydraulic fluids
     12. Paint and paint-related waste
     13. Solvent/thinner waste
     14. Inert loaded ammunition projectiles
     15. Metal hydroxide sludge
     16. Friable asbestos waste
     17. Medical waste
     18. Oil-contaminated articles
     19. Dropped or potential dangerous items
     20. Universal Waste
     21. Polychlorinated biphenyl (PCB) waste
   - D. Waste Codes

E. Hazardous Waste Generation, Identification, and Recordkeeping
   1. Locations that generate hazardous waste
   2. Labeling of containers
   3. Inspection of accumulation areas
   4. Operating logs
   5. Spill kits

F. Explosive-contaminated Carbon

G. Management of Industrial and Fi eld Services Stock from Ammunition Storage

H. Explosives/Propellants Reclaimed for Resale

I. Reclaimed Explosives

J. Propellants

K. Commercial chemical products

L. Co-Management of Other Materials

M. Satellite Collection, In-Process Waste
   1. Container labels and markings
   2. Container management
   3. Special instructions
   4. Inspection

N. OB and OD Units

O. Hazardous Waste Storage
   1. Permitted Area D
   2. Permitted Building J-137 (Area J)
   3. Inspection of hazardous waste storage

P. Contingency Plan for Hazardous Waste Emergencies

Q. Closure and Post-Closure Plans, Financial Requirements

R. Special Solid Waste Generation and Disposal

S. Transportation of Hazardous Waste

24-Hour HAZWOPER Treatment, Storage, and Disposal (TSD) Site Worker Training
The 24-hour HAZWOPER TSD Site Worker Training is required per 29 CFR 1910.120(p)(7) in addition to an annual 8-hour refresher course. The following is the recommended training outline for the 24-hour TSD Site Worker.

I. Day 1
   A. Introduction

B. 1910.120 Overview
C. Hazard Analysis
D. Hazard Recognition

II. Day 2
A. Day 1 Review
B. Generator/TSD Requirements
C. PPE/Medical/Air Monitoring Requirements
D. Emergency Procedures
E. Response Scenario #1

III. Day 3
A. Day 2 Review
B. Response Scenario #2 Planning
C. Response Scenario #2
D. Critique
E. Review
F. Final Exam
G. Evaluation/Questions

8-Hour Occupational Safety and Health Administration Supervisor/Manager

The 8-hour Occupational Safety and Health Administration (OSHA) Supervisor/Manager course is assigned according to 29 CFR 1910.120. This course must be preceded by 24 to 40 hours of initial training and one to three days field experience. An example outline is below.

I. Introduction

II. Overview of OSHA
1. 29 CFR 1910 General Industry Regulations
2. Written Programs/Plans/Procedures/Training

III. Inspections/Directives/Instructions
1. OSHA Small Business Inspection Checklists
2. Generic Safety Inspection Checklist
3. OSHA Checklist for General Industry
4. Investigation Checklists

IV. OSHA Most Recently Cited Violations

APPENDICES
A. Personal Protection Equipment (PPE)
B. Confined Spaces
C. Lockout/Tagout
D. Hazard Communication
E. Means of Egress

24-Hour HAZWOPER

The following is the recommended training outline for the 24-hour First Responder Course and the required 8-hour annual refresher course.

A. Regulation Overview
B. OSHA Overview

1. Hazard Overview
   A. Hazard Analysis/Material Safety Data Sheet
   B. Hazard Communication
   C. First Responders Assessment
   D. Waiting for Assistance

2. Incident Command
   A. Surveillance, Reconnaissance and Site Safety
   B. Establishment of Perimeter and Security
   C. Weather Impacts
   D. Establishment of Work Zones
   E. Locating Incident Command and Communications
   F. Use of Resources and Site Control
   G. Strategic Goals and Tactical Objectives
   H. Information Releases
   I. Containment and Decontamination

3. Medical Surveillance
   A. Monitoring Worker Health and Fitness
   B. Emergency Treatment and Other Treatment
   C. Recordkeeping Procedure

4. Site Monitoring
   A. Air Monitoring, Considerations during Response
   B. Heat and Cold Stress
   C. Fall Protection
   D. Other Monitoring

5. Personal Protective Equipment
   A. Levels of Protection
   B. Waiting for Support
   C. Selection, Use, and Limitation
   D. Donning and Doffing Procedures
   E. Decon and Disposal

6. Management and Disposal of Decon Waste
   A. Personnel and PPE
   B. Decon of Equipment
   C. Decon Procedures and Limitations
   D. Decontamination

7. First Response Considerations
   A. Fire/Explosions
   B. Spills

C. Disasters
D. Other Considerations
(1) Personnel Injury, Self and Others
(2) Confined Spaces
(3) Excavations
(4) Scaffolding

8. First Response to Remediation
A. Changing Roles from Responder to Clean-up
B. Site Control
C. Documentation
D. Waste Management

9. Review

40-Hour HAZWOPER
Currently, all HAZWOPER training is provided by an out side Tennessee OSHA-recognized training contractor. The training is conducted in accordance with 29 CFR 1910.120

RCRA Hazardous Waste Continuing OJT
This training consists of 8 hours of annual OJT. The training is supervisor-led in-house and documented.

H-1c(2) Additional Training Programs
Additional training provided to meet job requirements is described below.

Hazardous Waste Management
This training consists of 8 to 16 hours of Instructor-Lead Training (ILT)/public training annually. This training covers numerous aspects of RCRA.

Demilitarization and Familiarization Course (Demil Certification)
The MLAAP Demil Certification Board provides this 8-hour training course to all new employees in the Demil department to ensure that they are aware of the aspects involved with the Demil program.

Explosive Ordnance Safety (Ammo 4)
This is a three-week course conducted by the U.S. Army Defense Ammunition Center.

DOT Hazardous Materials Transportation
This is an 8-hour to 16-hour annual course provided at a minimum of once every three years to ensure compliance with DOT regulations for shipping hazardous materials.

On-Scene Incident Commander
This is an 16-hour course provided to ensure the on-scene incident commander (IC) is trained to respond to various situations at MLAAP.

DOT HM-126F (Ammo 67)
This biannual 6-hour course is taught in-house by CBT.

Training Frequency
All MLAAP personnel complete the RCRA Hazardous Waste Initial Training Program within six months of assignment to the WMA, or within six months of their date of assignment to hazardous waste activities. All MLAAP employees who are involved in miscellaneous thermal treatment of hazardous waste will not work unsupervised until training is completed.

Re-training and additional information are provided in daily safety meetings. During daily safety meeting, problems which may have arisen are corrected, and additional training may be given related to changes in hazardous waste handling.

Hazardous waste treatment employees will receive documented classroom initial training program refresher courses annually, along with annual documentation of any OJT received during the year.

Training Techniques
The hazardous waste training program for personnel at MLAAP consists of a combination of in-house classroom, public, ILT, OJT, CBT, and/or individual instruction as specified by the hazardous waste training director. The individualized training concept ensures that each person receives adequate training relevant to his specific job duties.

Training Coordinator
The overall direction of the hazardous waste training program at MLAAP is the responsibility of the Environmental Manager. Training for demil personnel is conducted by the Demil Supervisor or designee, Environmental Office personnel, or qualified training contractors. A list of general qualifications for personnel providing training to hazardous waste personnel includes:

- Experience, working knowledge and familiarity of MLAAP hazardous waste storage units
- Experience, working knowledge and familiarity of wastes generated and OB/OD units SOPs
- Experience, working knowledge and familiarity of SOP Book 12, “Management of Solid and Hazardous Waste”
- Training and certification in ammunition/explosive disposal/demilitarization operations Completion of Hazardous Waste TSD Training, 40-Hour HAZWOPER, or basic First Responders Course
- U.S. Army Explosive Safety Course
- U.S. Army Special Technical Ammunition/Demilitarization Course
- MLAAP Safety Orientation

The Environmental Manager or designee may waive any of the general qualifications listed above in lieu of other appropriate environmental courses, training, and/or experience.

TRAINING FOR EMERGENCY RESPONSE

Because of the potentially hazardous nature of the waste located in the OB and OD units, especially waste munitions, personnel assigned to work in those operations are required to follow MLAAP SOPs in order to minimize the potential for accidents. Because little can be done to counteract a premature ignition of waste PEP or munitions, personnel are trained to evacuate the area immediately and call for assistance in the event of an unplanned or premature ignition. The Emergency Coordinator will implement the Contingency Plan and personnel designated in the plan will respond. Hazardous waste personnel assigned to the hazardous waste container storage units and Emergency Response duties, receive in addition to hazardous waste training and the 4-hour TSD Site Worker Course, the 40-hour HAZWOPER training.

The following information is from the MLAAP Spill Pollution Control and Countermeasure (SPCC) and Installation Spill Contingency (ISC) plans detailed in Attachment 5. MLAAP's Installation On-Scene Coordinator (IOSC) is the MLAAP Emergency Coordinator, which is always the MLAAP Fire Chief. MLAAP's Alternate IOSC is the Alternate Emergency Coordinator, which is always the Fire Lieutenant.

The Environmental Manager is accountable for oil and hazardous substance spill prevention. In that role, he/she is required to:

- Designate the IOSC and Alternate IOSC.
- Select personnel to comprise the Installation Response Team and other personnel necessary to implement the SPCC/ISCP.
- Establish a schedule and conduct spill prevention briefings as necessary to highlight and describe known spill events or failures, malfunctioning components of the plans, and recently developed precautionary measures.

The MLAAP ISCP is required to be simulated annually. The Environmental Manager designates the time for the simulation and notifies the Army Environmental Coordinator in advance. Spill training exercises are designed to simulate potential incidents involving hazardous wastes and hazardous materials that could occur at MLAAP. Locations of the exercise will be changed for each event. In addition to the annual simulation, formal training sessions are held as determined by the Environmental Manager after each training simulation as a critique of the exercise. For each training session, the date and time held, attendance, and subject of training are recorded. Each simulated exercise shall be reported to the Army Contracting Officer's Representative and documented in the SPCC/ISCP. MLAAP's Fire Department and IRT participate annually in this simulation training exercise. The SPCC/ISC plan is changed as necessary after each critique.

The critique of the simulated exercise is used to determine if the actions of the Emergency Coordinator (IOSC), the Alternate Emergency Coordinator (Alternate IOSC), Fire Department (First Responders) and the IRT are in line with established response

techniques. Based on the information gained from the critique and the discussion of the simulated exercise, additional training is directed at any problem area. Any additional training if required is then scheduled.

In addition, the SPCC/ISCP is critiqued after each response, whether actual or simulated and is changed as necessary to implement recommendations gained from the critique.

TRAINING & STAFFING REQUIREMENTS FOR GROUNDWATER SAMPLING

See Attachment 9 for Groundwater Sampling Training.

RECORD KEEPING

All training will be documented, signed, and dated by both the person performing the training and the trainee. All training records will be retained at the WMA for Five (5) years after the employee has been reassigned to duties other than hazardous waste. A record of training shall be completed for each person trained in hazardous waste management at the completion of the introductory training, and annually for continuing training.

A copy of all training records will be forwarded to the Human Resources Office. Training records for current personnel must be kept at the facility until the facility is closed. Training records for former employees must be kept for at least Five (5) years from the date the employee last worked at the facility.

Facility: Milan Army Ammunition Plant
EPA Identification Number: TN0210020582
Permit Number: TNHW-153

ATTACHMENT 3. INSPECTION

In accordance with Tennessee Hazardous Waste Management Regulations 0400-12-01-.06(2)(f) and 0400-12-01-.07(5)(a)(1)(v), Milan Army Ammunition Plant (MLAAP) must inspect its facility for malfunctions and deterioration, operator errors, and other conditions that may cause or lead to release of hazardous constituents to the environment or a threat to human health. This Attachment comprises the written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards at the miscellaneous thermal treatment units.

INSPECTION SCHEDULES

All hazardous waste associated structures at MLAAP are routinely inspected for structural deterioration, releases, fire hazards, safety or security issues, equipment malfunctions, and operator errors. These inspections are conducted on a schedule so as to identify problems in time to correct them before they harm human health or the environment.

Daily, weekly, and operating inspections are performed for management of hazardous waste. These inspections are performed by the appropriate departments (Operations, Maintenance, Fire, Security, etc.), throughout the facility. The open burning (OB) and open detonation (OD) units are inspected after each use.

The general inspection schedules — which list the item to be inspected, the type of problem to be checked, and the frequency of inspections are in Tables 3-1 through 3-11.

Table 3-1

Inspection Schedule
Miscellaneous Thermal Treatment Unit Areas
Hazardous Waste Treatment Operating, Monitoring, and Structural Equipment
Communication and Alarm Systems
Decontamination Equipment
Personal Protective Equipment

Item Inspected	Types of Problems	Frequency of Inspection
Burning Pans and Surrounding Area	Damaged pans/liners, grounding components, structural components, ash/debris removal, covers, concrete pads, and surrounding area	Before and after each use [4]
Gates/Locks	Broken, unsecured	Daily [1]
Warning Signs	Missing, damaged	Weekly [2]
Two-Way Radios	Not operating	Before each use [4]
Fence (External)	Damaged, corroded	Semi-annual [5]
Fence (around ADA and BG), Gates, Locks (Internal Security)[7]	Damaged, corroded, mowing, washouts	Weekly
Shovels, Brooms, Dust Pans (for ash/debris and storm water removal)	Missing, damaged	After each use[6]; weekly at a minimum
Absorbent	Inadequate supply	After each use; weekly at a minimum
Repack Drums	Missing/damaged	Weekly
Other Containers	Corrosion, leakage	Weekly
Pallets	Damaged	Weekly
Loading/Unloading Area	Leaks, releases	Daily (when used)
Splash Aprons and gloves	Absent, holes, and/or contaminated	Daily; after use (gloves)
Communications	Operation	Daily and weekly alarms
Fire Hydrants	Flow, operation, damage	Annually
Air Purifying Respirator	Cleaning, function, damage	Before use
Face Shields	Cleaning, damage	Daily or before use
Fire Extinguishers	Proper charge, clogged nozzle	Monthly [3] and after use
Sampling Supplies	Cleanliness, damage, and quantity	Before use
Forklifts	Operation, maintenance, service (Service Personnel) Maintenance, Service (Maintenance Shop Personnel)	Weekly (as required) Quarterly (as required)
Earth-Moving Equipment (1 Unit at ADA)	Operation, maintenance, service (Service Personnel) Maintenance/service (Maintenance Shop Personnel)	Weekly (as required) Quarterly (as required)
Trucks, Vans/Pickups	Operation, maintenance, service (Service Personnel) Maintenance, service (Maintenance Shop Personnel)	Weekly (as required) Quarterly (as required)
Firing Circuit	Continuity, stray current	Before each use
OB/OD Area	Various	Spot inspection performed by the Environmental Coordinator

Notes:
(1) Daily inspection means once per day when the unit is operating
(2) Weekly inspection means once per 7-day period when the unit is operating
(3) Monthly inspection means once per calendar month when the unit is operating
(4) Before each use inspection means unit is inspected before batch treatment
(5) Semi-annually means once every 6 calendar months when the unit is operating
(6) After each use inspection means unit is inspected each day
(7) BG = Burning Ground
ADA = Ammunition Destruction Area

Table 3-2

Inspection Schedule
Miscellaneous Thermal Treatment Unit Areas
Maintenance and Transportation Equipment

Number	Identification	Location	Responsible Department
1	750-gallon tank truck	Area J	Maintenance
1	1,000-gallon tank truck	Area J	Maintenance
1	2,000-gallon tank truck	Area J	Maintenance
2	4-inch suction pump	Building K-10	Maintenance
1 or 2	Bulldozer	On plant site	Maintenance
Varies	Analytical equipment	Building J-124	Chemical Laboratory
 2 1 2 1 1 Varies ***	Fire-fighting equipment: Pumpers, Equipped for foam Spray truck Ambulances Hazmat van Hazmat trailer Pickup	On plant site	Fire Department
1	Crane	On plant site	Maintenance
1	Road grader (maintainer)	On plant site	Maintenance
1	Trackhoe	On plant site	Maintenance
1	Backhoe, tractor attached	On plant site	Maintenance
3	Dump truck (5-ton)	On plant site	Maintenance/Material
2	Front-end loaders	On plant site	Maintenance/ Material
1	Truck (stake body)	Burning Ground (BG)	Material
Varies	Truck (pick-up) and r adio equipment	On plant site	Varies
3	Portable generators	On plant site	EHS/Maintenance
2	Emergency lighting systems	On plant site	Maintenance
1	1,000-gallon water wagons	On plant site	Maintenance

Note:
All equipment listed in Table 3-2 is inspected quarterly, except trucks and pick-ups, which are inspected semi-annually by Maintenance Shop personnel. Equipment is inspected as serviced (fueled, greased, etc.) in the field by Maintenance Service personnel.

Table 3-3
Inspection Schedule
Miscellaneous Thermal Treatment Unit Areas

Cabinet Equipment	Quantity	HAZMAT Trailer Equipment	Quantity
Cabinet #1		Scott SCBA W/Bottles	4
Decon Sprayers	4	Spare Bottles	5
Decon Pools	4	Drum Sampling Tubes(Cylinder)	1
Duck Tape	4	Sampling Kit (Cooler)	1
Barrier Tape	Box	Electric Disconnect Pole	1
Trash Bags	>6	Absorbent Booms	Box
Tarps	4	Lite-Dri	2 Bags
Cabinet #2		Level A Chemical Suit	6
Drager Analyzer	1	Folding Chairs	2
ICS Vest	Box	Steel Tooth Rake	2
Bolt Cutters	1	Hoe	2
Sparkless Tool Kit	1	Plastic Shovel	1
Chemical Gloves	>6	Push Broom	2
Shaving Cream/Razors	Box	Mop	1
Bar Soap	>6	Generator W/ Ext. Cord	1
Tide	1	K-12 Saw	1
Safety Sorbent	1	5lb. Fire Extinguisher	2
Chemical Boots	>4		
Crowbar	2		

Note:
Spill Response References Located on HAZMAT Trailer and/or at Building F-50

General Inspection Requirements

The OB Unit burn pans are inspected for structural integrity, release and leaks, function of the unit, containment, and associated systems. Inspections at the OB/OD units are conducted under the direction of the Demil Supervisor and by Demil personnel trained in hazardous waste management. Inspections are documented on a log and all inspection logs and records are maintained by the Demil Supervisor at the OB Unit Building W-2. The log sheets provide for notations regarding the hazardous waste unit location, date, and time of inspection, condition of units, inspector's name and badge number, and a column for observations and notations of remedial/corrective actions. See attached examples of inspection logs for the general inspection schedule in Table 3-7.

Hazardous waste processes conducted at the OB/OD units are inspected for leaks, releases, and fugitive emissions before and after each use. On-the-spot inspections during thermal treatment are not possible, due to the safety hazards to personnel involved. Propellant/explosive burns are observed from minimum distance of 1,250 feet.

The only control associated with the OB Unit, including the burn pans, is a firing circuit. The firing circuit consists of a squib and two wire leads from the squib to the blasting machine. The squib and wire leads are independent for each process or within a process, while the blasting machine may be used for a number of firing circuits.

The inspector is required to indicate whether any condition is satisfactory or unsatisfactory, and to follow up on unacceptable notations with the date and nature of corrective actions. All logs are retained for at least five years.

Frequency of Inspections
The OB/OD units are inspected according to the frequencies outlined in Tables 3-1 and 3-2. Perimeter fencing, locks, and gates are checked by the Demil Department in conjunction with the Security Department on a daily basis, or more often during non-operating periods. The OB/OD units security fencing is inspected by demil personnel weekly.

Remedial Action
During an inspection, the authorized inspector can initiate corrective action if unacceptable conditions are discovered. If emergency maintenance is required, corrective action will be taken immediately. In the event of a spill or release, the inspector will take action as specified in Attachment 5 and/or the MLAAP Spill Pollution Control and Countermeasure and the Installation Spill Contingency plans. Any action taken will be documented.

Any remedial action required that cannot be readily initiated by the Demil operator(s) shall be reported immediately to one of the following in the order given: the Demil Supervisor, Environmental Manager, Guard Dispatcher, and Emergency Coordinator. Conditions requiring reportable remedial action include equipment breakdowns, equipment malfunctions, minor injuries, and any non-threatening problem outlined on the inspection form. Remedial action requiring MLAAP maintenance, crafts, or engineering assistance will be requested on a work order to correct any deficiencies for which immediate response is not required.

Remedial action that is required for threats to human health and/or the environment, such as fire and ambulance service, must be reported by dialing “17” on any plant phone or by two-way radio. Remedial action requirements that are a threat to human health and/or the environment require implementation of the Contingency Plan and must be immediate.

If an immediate remedial action that is not a threat to human health or the environment is required at any the OB or OD units, the supervisors of their respective units or the Environmental Manager will be notified. In turn, those individuals will inform the appropriate department by telephone to receive the necessary assistance. If an emergency remedial action is required, the Supervisors of the appropriate area or the Environmental Manager will implement the Contingency Plan as outlined in Attachment 5.

Maintenance, Monitoring, Inspection
All process operations at the OB Unit are inspected before, during, and after each use. The burn pans are inspected before each use for structural integrity, cracks or damage to the refractory liner, damaged support structure, cleanliness, signs of remaining waste military munitions/PEP, or residues, and their suitability for continued operations. The underlying concrete pads are also inspected for cracks or other damage. The inspections are logged on a form maintained at Building W-2. During operation, (loading, preparation of burn, actual burn, and cool down) the pans are monitored.

Inspections and monitoring that reveal any maintenance requirements (other than minor adjustments) are reported immediately to the OB Supervisor. Repairs and maintenance that cannot be carried out by OB Unit personnel are placed on a work

order to the appropriate department for action. If an emergency repair is required, the arrangements may be made by telephone then documented on a written work order.

All process operations at the OD Unit are inspected before, during, and after each use. The OD Unit is inspected before each use for structural configuration, cleanliness (policing of metal), signs of remaining munition residues, testing of firing circuits, and the suitability for continued operations. Those inspections also include the associated structures and communication equipment, which is essential to OD Unit operations. The inspections are logged on a form maintained at the OD Unit Office (Building W-61A).

Inspection, Monitoring, and Maintenance of Open Burn Unit

All equipment at the OB Unit is inspected before, during, and after each use. Open burning operations are monitored and maintenance is conducted as required by MLAAP SOPs. The following summarizes the inspection, monitoring, and maintenance plan; the complete version of which is in the SOPs found in the facility operating record.

The OB Unit is inspected before each use for structural integrity and cracks or damage to the refractory liner of the burn pans, damaged support structure, cleanliness, signs of remaining waste military munitions PEP, or residues and their suitability for continued operations. These inspections also include the concrete pad on which the pans are located. These inspections are logged on an inspection form maintained at Building W-2. During operations (loading, preparation of burn, actual burn, and cool down), the pans are also observed.

Inspections and observations that reveal any maintenance requirements (outside minor adjustments) are reported immediately to the Demil Supervisor. Repairs and maintenance that cannot be carried out by OB Unit personnel are placed on a work order given to the appropriate department for action. If an emergency repair is required, the arrangements may be made by telephone then documented by a written work order.

No post-closure inspections will be performed at areas within the WMA that contain residual concentrations of COCs in soil below closure thresholds.

For areas where contaminated soil is capped, ground cover will be inspected quarterly for erosion, establishment of vegetative cover, mowing of cover, warning signs, evidence of cap or cover failure, and security. These inspections will be performed by ground maintenance, contractor personnel, or Environmental office staff. Inspections will be recorded, with copies of the inspections maintained in the Environmental Manager's office. After three years, if no problems are noted and with the approval of TDEC, inspections will be conducted on a semi-annual basis for a minimum of 30 years.

If any areas are closed by capping, the capped areas will be surveyed and the survey placed on a survey plat. Additionally, permanent monuments will be set at each corner of the excavation. Those monuments will be used to monitor soil settling, subsidence, and/or displacement. The placement and elevation of the monument will also be recorded on the survey plats. In order to protect the surveyed benchmarks from mowing and other activities that may occur at the site, the monuments will be concrete encapsulated steel pins, set at or slightly below ground surface. The benchmarks will be marked with steel flag pins for an extra measure of protection. Quarterly inspection of

the monuments will be included in the inspection for mowing and vegetative cover, erosion, settling, and displacement.

The run-on and run-off structures associated with the closed units will be included in the quarterly inspection and inspected after a significant storm event. These inspections will be conducted semi-annually and recorded by the MLAAP Environmental office.

Monitoring wells will be inspected for damage from mowing or deterioration during semi-annual sampling according to the approved sampling plan. Those inspections will be conducted by the well sampling team designated by the MLAAP Environmental office. The inspections will be recorded in the field notebook used during the sampling event. Generally, the inspection program will follow the outline listed in Table 3-4.

Table 3-4
General Program Inspection Schedule — Security Devices
Post-Closure Plan
Waste Management Area — Milan Army Ammunition Plant

Inspection	Frequency	Log	Issue
Signs	Quarterly	Closure	Damage, missing, illegible
Gates	Quarterly	Closure	Locked, damaged
Erosion	Quarterly and after significant rainfall	Closure	Loss of vegetation, damage to soil cover, pooling water
Subsidence	Quarterly	Closure	Cover settlement, subsidence, displacement
Run-on and Run-off	Quarterly and after significant rainfall	Closure	Blocked structures, damaged structures, erosion
Contoured caps	Quarterly	Closure	Damaged cover
Monitoring wells	Semi-annually	Log Book	Damage, security, protective measures
Benchmarks	Quarterly	Closure	Damage, stability

The closed units are located within MLAAP, which has controlled access, security personnel, outer perimeter fencing, and restricted operation within the facility. The potential for damage via acts of nature are accounted for by requiring inspection after rainfall events that are significant enough to impact erosion and run-on/run-off.

Monitoring

The current semi-annual groundwater-monitoring plan for the WMA in Attachment 1 is proposed to be continued post-closure for a minimum of three years. If the results of three years of groundwater monitoring demonstrate no degradation in groundwater quality at the point of compliance, the sampling frequency will be reduced to annual.

Maintenance Plan

To maintain the integrity of the WMA, any deficiencies noted during inspections will be corrected by MLAAP or contractor personnel using appropriate equipment. Actions taken will also be recorded. Telephone numbers for emergency notification and maintenance will be posted onsite. Records of inspection and maintenance actions will be maintained in the Environmental Manager's office. Groundwater monitoring reports, soil sampling results, and storm water discharge records will be maintained in Environmental office.

Maintenance of conditions noted during inspection, both routine and non-routine, will be handled as outlined in Table 3-5.

The concrete pads are inspected between open burning and cleaned as necessary to pick up any ash or debris. Pads are cleaned after the last burn of the day.

Table 3-5
Routine and Non-Routine Inspections Repair Timetable
Post-Closure Plan
Waste Management Area — Milan Army Ammunition Plant

Problem/Unacceptable Condition	Estimated Repair Timetable
Repair of security control devices (gates)	Gate within 14 days
Erosion damage	Capped area within 14 days Other areas within 30 days
Settlement, subsidence, displacement	Capped area within 14 days Other areas within 30 days
Mowing overgrown vegetative cover	Two times annually or more often as required by inspection
Poor vegetative cover	Reseed and fertilize within 30 days
Monitoring well repair	Within 30 days
Run-off/Run-on control structures	Within 14 days
Damaged surveyed benchmark	Within 30 days

Personnel performing the inspection will be trained, experienced, and knowledgeable in the closure system employed for use at the WMA. Inspection personnel will make maintenance and repair decisions based on experience and the following criteria in (Table 3-4).

Table 3-6
Inspections Repair Criteria
Post-Closure Plan
Waste Management Area — Milan Army Ammunition Plant

Items to be Inspected	Issue
Security control devices	Gate broken or down, or unserviceable, warning signs missing or illegible
Erosion damage	Soil below vegetation washed, pooling, or mounding of water on cap, liner exposed, mowing hazarded
Settlement, subsidence, displacement	Standing/pooling water, sinks in cap or adjacent soils
Vegetative cover	Cover too thin, showing exposed soils, cover too tall with potential to hide erosion or displacement, cover spotty allowing erosion
Run-on/Run-off controls	Caps; condition of caps; vegetative cover on caps
Monitoring well condition	Broken or unlocked well covers; broken, damaged, or undercut well pad or guards; broken or damaged riser pipe; excessive sand and/or silt in well (damaged screen); incompatible well constituent or well construction material; according to approved groundwater sampling plan
Benchmark integrity	Missing or damaged benchmark locators; unexplained movement or changes in a number of established measuring points

Table 3-7
BURN PAN INSPECTION and OPERATING LOG
MILAN ARMY AMMUNITION PLANT

Inspector's Name & Badge No.											
Date & Time Inspected											
Burn Start Time											
Burn End Time											
Number of Pans Used (1,2,3,& 4)											
Amount of Material Treated											
Control/ Firing System											
Spilling or Leak											
Pan Condition											
Grounding Components											
Structural Components											
Covers											
Concrete Pad											
Surrounding Area											
Ash/Debris Removal											
S-Satisfactory, U-Unsatisfactory, indicates pan/pan/area is safe for operations. **No inspections required when units are not in operation**.											
NATURE AND DATE OF CORRECTIVE ACTIONS:											
Reviewed and Approved by Department Manager: Name & Date											

File from at Burning Ground Office When Complete.

This Table is from Appendix F-1

Table 3-8
Weather Data Statistics-Open Detonation

Weather Data Statistics-Open Detonation **Reporting Month \ Year :**
AMC-R-755-8
Installation American Ordnance **Demolition Range Location Area W / ADA**

General			Wind		Local Parameters				Material Destroyed			
	Temp.	%Relative	Sky	Speed					Quanity		DA Form	
Day / Time		Humidity	Condition	MPH.	Direction						4508 NO	
AMC Form 2887 R-E **December 1994**												

Table 3-9
WEATHER DATA STATISTICS OPEN BURNING

WEATHER DATA STATISTICS OPEN BURNING AMC-R 755-8									MC
INSTALLATION: Milan Army Ammunition Plant						BURNING GROUND LOCATION: Area W			
GENERAL						WIND		MATERIAL DESTROYED	
DAY/TIME	1/2 M TEMP	4 M TEMP	TEMP DIFFERENCE	COND. LAPSE/ INVERSION	% RELATIVE HUMIDITY	SPEED MPH	DIRECTION	SKY CONDITION	

Table 3-10

AMERICAN ORDNANCE - TEAM MILAN

Page: ____ of ____

RCRA Audit Checklist (ADA and Burning Ground)

Date: _____

AUDITOR:

AREA CONTACT/SUPERVISOR:

REQUIREMENTS:	**REQUIRED REFERENCES:**
Review ADA and the Burning Ground for compliance to RCRA requirements. This list is not all inclusive.	RCRA Permit TNHW-104
	SOP Book 12
	SOP's Book 6, 7, and 8

	QUESTIONS/VERIFICATIONS:	**STATUS***			
		A	**NC**	**F**	**NA**
1	Complete waste profiles onsite at BG?				
2	Personnel training up to date with records at the site?				
3	Waste analysis records onsite?				
4	All waste analysis data kept at least three years?				
5	Only wastes authorized are being treated in units?				
6	Waste received from offsite manifested correctly (signed and returned to Generator)?				
7	Landbans attached to all manifests received or shipped?				
8	Certificates of Destruction completed for all Haz. Waste received from offsite?				
9	Copy of Permit Onsite? (Part A)				
10	Burn pads in good shape under burn pans?				
12	Inspections conducted as required by permit? (Satellite Collection, Weekly Permitted Areas, Loading and Unloading Areas for Permitted Units, Accumulation and Shipping Area Daily Inspection, Weekly Aboveground Tank Inspection, Burn Pan Inspection and Operating Log, and Weekly Security Fence Inspections				
11	Communications systems in place?				
13	Ash removed as required from Burn Pans?				
14	Ash removed from Contaminated Waste & Explosive Contaminated Waste Burn Pens as required?				
15	Warning signs posted as required around facility? (EWTF, ADA, BG)				
16	Seals on trailers containing hazardous waste at the EWTF?				
17	Hazardous Waste signs on trailers at EWTF as required by SOP?				
18	Spill response equipment in place at EWTF and at W59?				
	OBSERVATIONS:				
	CORRECTIVE ACTION REQUEST (CAR) NUMBER:				

***Status Key - A: Acceptable; NC: Non-Compliant, Action Required; F: Follow-up Required; N/A: Not Applicable**

Table 3-11
Security Fence Weekly Inspection Log
Area –Open Burn- Open Detonation Treatment Area
Milan Army Ammunition Plant

EWTF □ **ADA □** **Burning Ground □**

Date & Time Inspected										
Inspectors' Name/Badge Number										
Condition of Fence: damaged breaks, etc (including poles, barbwire, and ties)										
Condition of Gates: damage, proper operating, secure										
Security Locks and Chains: locked and secure										
Signs: damaged, missing or not spaced properly										
Condition of Adjacent Area: washouts around fence, need mowing, etc										
Comments:										
Correction Action Taken:										

Inspectors' initials in appropriate blocks indicate that no problem or noncompliance issue were found.
File from at Burning Ground Office When Complete

Facility: Milan Army Ammunition Plant
EPA Identification Number: TN0210020582
Permit Number: TNHW-153

ATTACHMENT 4. SECURITY

This Attachment describes the procedures and structures at Milan Army Ammunition Plant (MLAAP) to prevent and minimize the possibility for unauthorized entry of persons or livestock onto the active portion of the facility, and to prevent and/or mitigate hazards associated with the miscellaneous thermal treatment of hazardous wastes. The section includes general security procedures, preventive procedures, and procedures for the management of ignitable, reactive, and incompatible wastes.

The entire MLAAP is a secured, limited-access facility. The perimeter of MLAAP is protected by a five-strand barbed wire fence. All gates to the portion of the plant located north and south of Tennessee Highway 104 and east of Highway 45E are locked or manned by guards (MLAAP Security Personnel). All outside transport vehicles must enter through the manned Highway 45E gates. All outside hazardous waste transport vehicles must be escorted while on the MLAAP facility. Procedures for providing access to outside vehicles are in the Security Department's "Security Policies and Procedures". MLAAP Security Department personnel also provide constant roving patrols of the facility, including Highway 104.

Security Procedures and Equipment

Specific security procedures and equipment for the open burning (OB) and open detonation (OD) units are described in detail in MLAAP Standard Operating Procedures (SOPs): MA-0000-G-006 (Demilitarization by Detonation — Aboveground Demolition), MA-0000-G-007 (Demilitarization by Detonation - Underground Demolition), and MA-0000-H-008 (Demilitarization Procedures for Burning Ground Activities). The SOPs are maintained in the facility operating record.

24-Hour Surveillance System

The MLAAP is protected by a 24-hour surveillance system that is designed and operated to prevent unauthorized entry or access to MLAAP property. This system includes identification badges for all employees, visitors, contractors, and tenants. All personnel entering MLAAP must pass through manned security check points. At the checkpoints, security may perform a search of personnel and personal belongings, including vehicles being brought onto the MLAAP. In addition, personal vehicles are not allowed to enter the OB or OD units without a permit from the Security Department; use of personal vehicles within the OB and OD units is discouraged.

Gates that are not manned remain locked and are checked by roving security patrols. Keys to gates, buildings, and other structures, which must be signed in and out through MLAAP Security Department, provide access to only those areas in which the person must have access. All keys must be turned in at the end of shift if the Security Department has not been notified that the keys are required by an employee for any extended period. Loss of a key requires a change of lock at the location where the key was lost. All keys and locks at the MLAAP are audited by the Lock and Key Coordinator.

Barrier and Means To Control Entry

The entire MLAAP facility is fenced with five strands of barbed wire to restrict unauthorized entry onto plant property. All points of entry into the facility are controlled during operating and non-operating hours. A security patrol checks all points on a scheduled basis and provides a roving patrol over the entire facility, including the OB and OD units. All roads leading to the OB and OD units are patrolled by facility security during non-operating hours. In addition, entrance gates to the OB and OD units are locked during non-operating hours.

Gates allowing entry onto the MLAAP facility from State Highway 104 are serpentine labyrinth steel crash gates, designed to prevent unauthorized entry by vehicles. The gates have warning signs displaying that the facility is U.S. Government Property and only properly authorized personnel are allowed to enter. All other entry gates to MLAAP are 6-foot-high chain link fencing. As the OB and OD units are over one mile from any entry gate to MLAAP, and all internal roads are patrolled by armed security forces, there is low probability of unauthorized access.

In addition to the MLAAP's perimeter fences, gates, and armed security patrols, the OB and OD units are surrounded by a 6-foot chain link fence with triple stands of barbed wire mounted along the top as showing in Figures 4-1 and 4-2. The fencing has warning signs spaced at 500-foot intervals. This fencing prevents unknowing entry into the OB and OD units.

The OB and OD units use a flashing red light mounted on a pole at the entry gate to each location to indicate when thermal treatment is underway. The flashing red lights are mounted approximately 30 feet above ground. Within the OB and OD units, barricades and/or personnel acting as observers are used to prevent and/or direct non-process personnel entry to the area during operations.

At the OB Unit, personnel wishing to enter the area must proceed to Building W-2, sign in, and check with the Demil Supervisor to obtain permission to visit and/or observe any operation. Roads, gates, and barricades at the OB Unit direct traffic to Building W-2. At the OD Unit, visiting personnel must sign in and check with the Demil Supervisor at Building W-61A before proceeding to the shooting fields. Before entering the shooting fields, visitors must also check with the field observer at Shooting Barricade W-53. During many activities at the OD Unit, casual personnel are not allowed on the field.

Facility safety personnel visit both sites daily to record and observe all operations. All gates, buildings, and/or processes at the OB and OD units are locked unless attended by operating or security personnel.

Warning Signs

Existing signs reading "U.S. ARMY RESTRICTED AREA WARNING" are located at the gates accessing the OB and OD units and intermittently around the outer perimeter fence. The fence located around the perimeter of the OB and OD units has signs spaced at 500-foot intervals that read "DANGER-EXPLOSIVE DISPOSAL AREA-KEEP OUT." The chain link fence surrounding the active portion of the treatment units have signs at each gate and at 50-foot intervals that read "DANGER — Unauthorized Personnel Keep Out." In addition, signs with the legend "NO SMOKING — NO MATCHES — NO FLAME PRODUCERS WITHOUT PERMIT BEYOND THIS POINT" are posted at the access gates.

Other warning signs include: "Hazardous Waste, Authorized Personnel Only" on buildings that contain hazardous waste; "Do Not Proceed" barricades or crash gates on roads leading to specific processes within the Waste Management Area (WMA); safety warning signs such as "Explosive Limits," "Limits to Operator and Casual Personnel" at the process, and type of personal protective equipment (PPE) required (e.g., "Safety Glasses with Side Shields Required in this Area").

All signs displayed at the OB and OD units are in English, are legible from a distance of greater than 25 feet, and have minimum 2-inch lettering, typically black or red on contrasting backgrounds. Warning signs posted at the entry points to MLAAP and entry locations at the OB Unit are also reflective to facilitate reading at night.

Homeland Security Issues
The OB and OD units are on an active government owned, contractor operated military installation with strict access and other security procedures. All MLAAP personnel are required to visibly display identification badges while on the installation and are forbidden from wearing their badges when they are off the installation. Visitors who are allowed access to the MLAAP must have photo identification, are subject to a vehicle search upon entry, and must declare which specific areas/personnel are to be visited. Any visitor traveling beyond the headquarters building must be escorted by MLAAP personnel. Visitors must wear a visitor's badge at all times while on the installation and return them upon leaving the installation. Visitors are prohibited from bringing cameras, cell phones with cameras, and computers on the installation without permission from MLAAP.

Alarms and Warning Devices W-61A
The OB and OD units are not equipped with fire alarms or warning devices. The BG area has a siren to alert personnel to unusual situations. Area SOPs instruct thermal treatment personnel to assemble at Building W-2 for the OB Unit and Building W-61 for the OD Unit in case of an unplanned fire, explosion, or release.

Access Controls
The entire MLAAP installation is operated under strict security and access controls. Entry to the installation is limited to badged employees and authorized visitors only. Security guard houses are used as checkpoints at all plant entrances. A five-strand barbed wire fence or 8-foot chain link fence surrounds the entire installation boundary to provide added security. Many areas and all operation lines are surrounded by a chain link fence with barbed wire outriggers. Single entry and exit points are manned by MLAAP security when active and locked during periods of inactivity. The WMA is within the MLAAP's outer fenced boundary, which provides a dual measure of security.

The OB Unit is surrounded by a 6-foot chain link fence with signs indicating "Explosive Disposal Range-Keep Out" at 500-foot intervals. The entrance gate to the OB Unit is a vehicle crash gate that is kept locked when not attended and during non-operating hours. The following warnings are at area gates: a flashing red light, signs reading "U.S. Government Property, WARNING, Authorized Personnel Only, No Smoking, No Matches, No Flame Producers Without Permit, Beyond This Point," "Caution, Safety Glasses with Side Shields, Required Beyond this Point," and "DANGER — Unauthorized Personnel Keep Out." The entrance gate is unmanned during operating hours; therefore, control of the OB Unit is accomplished by the operations,

security, and maintenance personnel using the area at that time. Internal roads at the site direct traffic to the OB Office (Administrative Building W-2). A sign outside of the office instructs visitors that they must report to the OB Supervisor before proceeding. A MLAAP security mobile unit patrols the OB Unit at least once every 8-hour shift during non-operating hours.

The OD Unit is surrounded by a 6-foot tall chain link fence with barbed wire outriggers. The OD Unit vehicle crash entrance gate on the south side is locked at all times except when manned. The OD Unit gate is only opened and closed by operations personnel assigned to the area or security personnel. A MLAAP security police mobile unit also patrols the OD Unit at least once every 8-hour shift during non-operating hours.

Access to the WMA is already controlled by fences and gates, and warning signs are posted on the fencing as described in Attachment 4. The WMA is enclosed with a 6-foot chain-link fence with triple stranded barbed wire at the top. The fence has warning signs in English placed at 50-foot intervals. The signs face outward and have the warning "DANGER — UNAUTHORIZED PERSONNEL KEEP OUT" legible from a minimum distance of 25 feet. However, under post closure, the fence will not be maintained. All entry gates to the WMA will be locked when the area is vacant.

Access control features at the WMA are depicted in Figures 4-1 and 4-2.

Security Department staff is equipped to handle the types of emergencies expected to occur at the OB and OD units.

Internal Communications
Employees involved in hazardous waste operations at the OB and OD units are in close proximity to communication systems and/or in visual and/or voice contact with other employees who may summon assistance.

Telephones
Internal communications at the OB Unit are provided by the plant telephone system. Having telephones at the burn pans, pits, or shooting fields is impractical because the thermal treatment of waste munitions would destroy a telephone system (due to the heat, pressure, and debris generated).

Telephones at the OB Unit are in Buildings W-2, W-56, and W-60, and W-61A. Open burning is observed from Building W-2. The location of the communication system at the OD Unit in Shooting Barricade W-53 is within the bunker. During all phases of treatment at that location, Demil personnel are stationed at the barricade, with easy access to the telephone. During field activities, the Demil worker stationed at the barricade acts as a Field Observer and is in a position to communicate by telephone any problems to those who can offer assistance.

Internal emergency assistance is obtained by dialing "17" and providing the following information: incident location, incident type, and number of personnel involved. Dialing "17" will conference the following emergency assistance departments at MLAAP: Security (Guard Dispatch), Medical Department, Ambulance, and Fire. Assistance can also be obtained by dialing "6565" to notify the guard dispatcher and report the emergency. The guard dispatcher will notify the appropriate emergency response personnel as outlined in the MLAAP SPCC/ISC plans.

Alarms and Warning Devices

The OB and OD units are not equipped with fire alarms or warning devices. The BG area has a siren to alert personnel to unusual situations. Area SOPs instruct thermal treatment personnel to assemble at Building W-2 for the OB Unit and Building W-61, and W-61A for the OD Unit in case of an unplanned fire, explosion, or release.

Personnel are trained to evacuate the area during an emergency and summon emergency assistance from the MLAAP fire, medical, and security departments. Those departments' personnel have and use personal hand-held two-way radios (plant net radios in their vehicles), which are used by the Fire Chief/Captains to direct their personnel at the treatment units. The OB and OD units are limited as to the amount of waste munitions and personnel allowed, and the pans and pits are spaced to prevent a fire or explosion from propagating from one to another.

External Communications

External communications are described in the MLAAP SPCC/ISC plans. External communication at the OB Unit consists of the plant telephone system. Telephones at the OB and OD units can be used to summon external (outside) assistance by dialing "9" and then the number. Typically, external (off the MLAAP facility) communication would be used only as a notification tool, as MLAAP has in-house emergency and support capabilities.

Figure 4-1

This figure is a copy of Figure B–6 of Section B of Milan permit Application Dated 01-2011

Figure 421

This figure is a copy of Figure B–8 of Section B of Milan permit Application
Dated 01-2011

Facility: Milan Army Ammunition Plant
EPA Identification Number: TN0210020582
Permit Number: TNHW-153

ATTACHMENT 5. CONTINGENCY PLAN

Attachment 5 consists of two separate sections as follows:

- Attachment 5.1 Contingency Plan
- Attachment 5.2 Evacuation Route and Hospital Emergency Agreements

ATTACHMENT 5.1. CONTINGENCY PLAN

5-1 CONTINGENCY PLAN

The Hazardous Waste Contingency Plan for the Milan Army Ammunition Plan (MLAAP) is required by 40 Code of Federal Regulations (CFR) 270.14(b)(7), 40 CFR 264 Subpart D, Tennessee Hazardous Waste Management Regulations (THWMR) 0400-12-01-.06(4) and 0400-12-01-.07(5)(a). This stand-alone contingency plan works in conjunction with the MLAAP Spill Prevention Control and Countermeasure (SPCC) and Installation Spill Contingency (ISC) plans, which are maintained in the Environmental Office.

MLAAP is an active government owned, contractor operated (GOCO) Military Industrial Installation assigned the following general responsibilities:

- Operation and maintenance of active facilities in support of current operations
- Maintenance and/or layaway of standby facilities (including machinery and package lines received from industry or other government installations) in a condition that permits rehabilitation and resumption of production within prescribed time limits
- Receipt, surveillance, maintenance, renovation, storage, physical inventory, issue, demilitarization, and salvage of field service stocks, items of industrial stocks, and international logistics requirements stocks
- Procurement, receipt, storage, and issuance of necessary supplies, equipment, components, and essential materials
- Industrial readiness and emergency mobilization planning including preparation, review, and revision of prescribed plans
- Production quality assurance functions in support of procurement and production
- Production engineering and process engineering
- Support services of tenants
- Custodial maintenance and administrative functions of sub-installations
- Provide support to, and surveillance of, the Modernization and Expansion Program
- Monitor contract efforts performed in accordance with the current contract and policy
- Load, assemble, and pack ammunition items

- Maintain the capability to receive/ship containerized cargo
- Provide quality assurance specialist ammunition surveillance and storage surveillance functions
- Handle and store ammunition, and store and issue necessary supplies, equipment, components, and essential materials

MLAAP production operations result in the generation of waste munitions, including propellants, explosives, and pyrotechnics (PEP) that require treatment through open burning (OB) or open detonation (OD) at the OB/OD units, respectively. The information in this section details actions and plans for contingencies related to unplanned incidents as a result of hazardous waste storage and miscellaneous thermal treatment (OB/OD) operations.

MLAAP operates hazardous waste container storage units for the storage of waste munitions, spent carbon from the treatment of wastewater containing explosives, ash from the open burning of waste explosives and explosives-contaminated materials, waste solvent/oily rags, waste crushed florescent bulbs, and wastewater treatment sludge's from the manufacturing and processing of explosives.

Building J-137, is used to store waste solvents, waste laboratory acids containing trace metals, electrical Polycarbonated biphenol items, and waste friable asbestos. This structure may also be used to store wastes that are also stored in the magazines, as long as they contain no waste munitions or are not reactive. Also, any item typically stored in Building J-137 may be stored in any of the 14 magazines, as long as there are no waste munitions stored in that magazine and the wastes are compatible.

The Explosive Waste Transfer Facility (EWTF) in the Ammunition Destruction Area (ADA) is used to store waste munitions in containers within enclosed tractor trailers. Typically these waste munitions are awaiting configuration for thermal treatment at the ADA. The EWTF may also be used to temporarily store other waste, such as spent carbon (K045), for 96 hours or less while in route to the storage magazines.

5-1(a) Actions to Take in Case of Emergency

The provisions of this plan must be carried out immediately whenever there is an unplanned fire, explosion, or release of hazardous waste or hazardous waste constituents to the air, soil, or surface water that could threaten human health or the environment. The Contingency Plan will be implemented under the following circumstances:

1. Unplanned Fire/Explosion
    a. Fire threatens areas outside the OB/OD units
    b. Fire threatens areas outside the MLAAP facility
    c. Fire-fighting agents result in contaminant runoff
    d. Imminent threat of explosion

2. Releases/Leaks
    a. Releases outside of release contaminant area
    b. Fire/explosion hazards exist due to release of reactive wastes

Only pre-containerized and bulk solid waste munitions are treated at MLAAP's OB/OD units; therefore, regulations in 40 CFR 264.171 (Subpart I — Use and Management of Containers) do not apply to this permit application.

5-1(a)(1) Arrangements with Local Authorities

MLAAP is self-sufficient for emergency responses to fire, explosions, releases, and other types of emergencies. MLAAP maintains a well-trained and well-equipped 24-hour fire department. The fire department, along with standard mobile fire-fighting equipment, also maintains a HAZMAT-equipped mobile van. The MLAAP fire department is trained in and has experience with the special nature of products manufactured and wastes treated at MLAAP. MLAAP maintains a well-trained and staffed security department capable of providing security and other services required in contingencies that may arise at MLAAP. MLAAP also maintains a medical department and ambulance services. The medical department has a staff of nurses, with physicians on call.

This Contingency Plan has been coordinated with the various MLAAP installation departments who respond to emergencies. MLAAP also maintains a well-trained and experienced onsite Spill Response Team. The Spill Response Team consists of personnel from departments having specialized skills needed during a release response.

5-1(a)(2) Local Agency Resources

Emergencies at the OB/OD units are not expected to have impact outside the areas surrounding the units. MLAAP's security department staff is equipped to handle the types of emergencies that may occur at the OB/OD area.

Assistance from local agencies such as fire and police departments is limited. Because of the rural location of the MLAAP, local emergency agencies are not as well equipped or trained in managing emergencies dealing with waste munitions, as are MLAAP's response personnel. The City of Milan Hospital has agreed to provide medical services not available at MLAAP's medical department.

The Contingency Plan has been coordinated with the City of Milan Hospital, and local authorities and agencies, which have agreed to provide services or assistance MLAAP during an emergency. Notification and acceptance of requests for emergency assistance by the hospital and other local authorities for MLAAP are provided in Attachment 5.2. Agencies that have entered into agreements of assistance with MLAAP for emergency response services have received a copy of the installation's Contingency and SPCC/ISC Plans.

Communication concerning emergencies at MLAAP to agencies or personnel outside the requirements of the SPCC/ISC and Contingecy Plan must be done or approved for release by the Army Public Affairs Office (PAO).

5-1(b) Emergency Coordinators

In the event of an emergency at the OB/OD or storage units, the discoverer should contact the following:

Emergency Coordinator	***Alternate Coordinator***
Chief David Boroughs	Ronald A. Wier
Fire Chief, Building F-50	Fire Lieutenant, Building F-50
(731) 686-6776 (Work)	(731) 686-6776/6416 (Work)
Home Address:	***Home Address:***
938 Wilkinstown Road	2870 Asbury Glimp Road
Parsons, Tennessee 38363	Ripley, Tennessee 38063
(731) 847-6769 (Home)	(731) 635-0119 (Home)
(888) 877-8830 ext. 0186 (Pager)	(888) 877-8830 ext. 0185 (Pager)
(731) 549-4291 (Mobile)	(731) 431-8030 (Mobile)

Being the Emergency Coordinator and Installation On-Scene Coordinator (IOSC) is a job requirement of the MLAAP Fire Chief (i.e., the Emergency Coordinator, the IOSC, and the Fire Chief are the same person). Being the Alternate Emergency Coordinator and the Alternate IOSC is a job requirement for MLAAP's Fire Lieutenant. The Emergency Coordinator and Alternate Emergency Coordinator have the authority to commit all necessary MLAAP resources in the event of an emergency, and have been trained in Contingency Plan implementation. The Emergency Coordinator and Alternate Emergency Coordinator are accessible to MLAAP Fire Captains at all times. The Emergency Coordinator, through two-way radio and/or telephone communication, can direct response activities to fire captains and the response team.

5-1(c) Location and Description of Emergency Equipment at the Facility

The Emergency Coordinator has the authority necessary to commit considerable resources at MLAAP, including emergency equipment listed in but not limited to the Tables 5-3 through 5-5.

5-1(d) Evacuation Plan

The OB/OD unit personnel will determine if evacuation is necessary due to unplanned fire and/or detonation. If the Contingency Plan is activated, the Emergency Coordinator is responsible for determining whether evacuations are necessary in the event of an emergency.

To ensure that all personnel have evacuated the area, security department personnel will assist by searching the area. The assembly points for evacuees are Building W-61A for the OD unit and Building W-2 for the OB unit; the OB unit has a secondary assembly point at the entry crash gate. The assembly point for evacuees from the 14 magazines in Area D is Building D-44. The assembly point for evacuees from Building J-137 is Building J-5. The assembly point for evacuees from the EWTF is Building W61A, the ADA office. Diagrams displaying evacuation routes and alternate evacuation routes are in Attachment 5.2. In emergency events involving reactive waste

(munitions), or incidents at or near where reactive wastes are managed, only evacuation routes shown in Attachment 5.2 will be used.

The evacuation signal at the OB unit is direct contact. OB unit personnel will travel within the unit in a vehicle and warn each group of treatment personnel to evacuate. At the OD unit, a telephone call is made to shooting barricade W-53 with a warning to evacuate. An observer is always stationed at shooting barricade W-53 when activities are being conducted at the OD unit. The observer will wave a red flag to warn field personnel to evacuate. For the storage units radios will be utilized for evacuation warnings

5-1(e) Location and Distribution of Contingency Plan

5-1(e)(1) Maintained at the Burning Ground and Hazardous Waste Storage/Handling Areas at MLAAP

Table 5-1 lists the locations of copies of the Contingency and SPCC/ISC Plans maintained at areas where hazardous waste is stored and/or handled at MLAAP.

Table 5-1
Location of SPCC/ISC Plan
Hazardous Waste Areas — MLAAP

Office Location	Building	Number of Copies
Demil Supervisor	Building W-2	2
Truck for Hauling Line HW	Burning Ground	1
Demil Supervisor	Building W-61A	1
OD Shooting Barricade	Magazine W-53	1

At the OB/OD units, a copy of the Contingency Plan is maintained in areas that are or could be manned for eight hours or more per operating day. Additional plans were distributed to MLAAP departments listed in Table 5-2.

5-1(e)(2) Submitted to Other MLAAP Departments and Local Authorities

The Contingency Plan was made available to external agencies; however, the following agencies did not accept the Plan: Milan Fire Department, Carroll and Gibson County fire departments, and Carroll and Gibson County ambulance services.

Table 5-2
Contingency Plan Distribution Lists

MLAAP Departments and Local Agencies s
Plant Manager
Environmental Manager
Security Manager
BG Supervisor
Safety Manager
ADA Supervisor
Guard Dispatcher
Fire Department
Facilities Maintenance Director
Hospital
Army Commander (Commanding Officer)
Army Safety
Army Environmental Coordinator

5-2 EMERGENCY PROCEDURES

5-2(a) Notification

Treatment at the OB/OD units involves the use of fire and/or explosion. In the event of an emergency at the OB/OD units or any of the hazardous waste container storage units, the Emergency Coordinator must be notified by the discoverer or the Demil Supervisor. The Emergency Coordinator must determine if a release, unplanned fire, or explosion could threaten human health or the environment either inside or outside the facility. If so, the Emergency Coordinator must notify MLAAP guard headquarters and the Environmental Manager. Notification to any affected site personnel not involved in the emergency response will be made through Guard Headquarters to production lines and/or areas affected. Because of the remoteness of the OB/OD units and container storage units and the limited amount of waste staged and treated at the OB/OD units, it is unlikely that a release, fire, or unplanned explosion would affect onsite and/or offsite personnel, only those involved in the treatment operations and/or the response personnel.

The Emergency Coordinator, Environmental Manager or designee must report any releases of hazardous waste exceeding the reportable quantity (RQ) or unplanned fire or explosion involving hazardous waste. The findings must be reported immediately to the Tennessee Emergency Management Agency (TEMA) using its 24-hour number (615) 741-0001, and the National Response Center using its 24-hour toll-free number (800) 424-8802. Information to be provided to those agencies includes:

- Name and telephone number of reporter
- Name and address of facility
- Time and type of incident (e.g., release, fire)

- Name and quantity of materials involved, to the extent known
- The extent of injuries, if any
- The possible hazards to human health or the environment where this is applicable

The Emergency Coordinator will also notify MLAAP Security, MLAAP Fire Department, and the MLAAP Medical Department if their assistance is needed.

If the emergency is determined to be outside the capabilities of MLAAP departments and there is a potential for the release, fire, or unplanned explosion to spread beyond the boundaries of MLAAP, notification will be made to the affected surrounding personnel through TEMA. Any request for assistance will be made by the Emergency Coordinator through the Army PAO to the appropriate Regional Response Team. Any notification to local authorities requested by the Emergency Coordinator will also be made through the Army PAO. The emergency telephone number at MLAAP is "17" on any plant phone or (731) 686-6565 from any external line and may be used to report emergencies. Dialing "17" will connect the caller with the MLAAP Fire Department, Guard Department, Medical Department, and Human Resources Department. The caller will be asked to provide the following information:

- Name
- Exact location
- Location of incident
- If fire is involved
- Size of release
- Extent of injuries
- Time Incident Occurred

The caller will then be given instructions as to what action, if any, he/she is to conduct.

5-2(b) Identification of Hazardous Waste

The Emergency Coordinator will determine the types of wastes involved or potentially involved in the emergency (release, fire, or explosion). The exact source, amount, and areal extent of materials involved in the emergency are to be determined by reviewing the storage log, personal knowledge, information supplied by site personnel, observation if the area can be approached safely, or through any other available source (e.g., chemical analysis). Hazardous wastes thermally treated at MLAAP include waste munitions, spent carbon (only spent carbon that is D003 reactive that has failed the Card Gap/DDT test), explosive-contaminated materials, and wastewater treatment sludge (K044).

5-2(c) Hazard Assessment

The Emergency Coordinator will assess possible hazards, both direct and indirect, to human health and/or the environment. At a minimum, this assessment will consider:

- The waste(s) involved (explosives, ash, or debris)
- Quantity (RQ, multiple containers)
- Proximity to surface water (distance to standing water)

- Local surface drainage patterns (slope, ditches)
- Potential for explosion
- Potential for spreading (pavement, soil, slope)

5-2(d) Threats to Human Health or the Environment Outside the Facility

The OB and OD units and hazardous waste container storage units along with hazardous waste accumulation and satellite collection points at load lines and areas are all remotely located. The OB and OD units are over 4,000 feet from the nearest MLAAP facility boundary and the hazardous wastes container storage units are at least 2,000 feet. All units are located on federally owned property. It is highly unlikely than any sudden event, such as fire, explosion, or release, would affect MLAAP boundaries or personnel and property outside MLAAP boundaries. This determination is based on the physical size of the installation (over 23,000 acres), the products manufactured at the installation, the remoteness of the treatment units within the installation in relationship to each other, the distances between treatment units within the installation, the distances from the treatment units to MLAAP's boundary, and land use outside MLAAP boundaries. Most of MLAAP's initial response to fire and/or explosions would be to evacuate (clear) the area until it is safe to re-enter.

5-2(e) Control Procedures

Potential emergency incidents at MLAAP are classified as releases or unplanned fires/explosions. Specific guidance relating to those types of incidents is provided in the following paragraphs.

5-2(e)(1) Fire/Explosion

The Fire Department, Emergency Coordinator, and Environmental Manager or designee must be notified in the event of the discovery of any unplanned or uncontrollable fire. For unplanned fires and/or explosions at the OB or OD units involving hazardous waste, notification will be made by two-way radio or telephone from Buildings W-2 or W-61A. At the 14 magazines, notification should be by two-way radio or from the telephone in Building D-44. In the event of a fire at Building J-137, the automatic alarm system will notify MLAPP's Fire Department. Notification of a fire at the EWTF should be made from Building W61A (ADA office) by phone or two-way radio.

Firefighting and control will be conducted by the MLAAP Fire Department. Fire control will be limited to extinguishing fires outside the explosion danger zone surrounding the OB/OD units. In most cases, it is preferable to allow burning to continue and keep personnel away until reactive material is expended. An exception would be a situation in which personnel were injured near the burning waste, and a rescue attempt was deemed feasible by the Emergency Coordinator.

Fires involving hazardous waste during vehicular transport within MLAAP may require evacuation, the need for which will be determined by the Emergency Coordinator depending on the amount and type of waste (explosives) involved and the proximity to occupied buildings.

The evacuation may be as far as one-half mile. Evacuation of the OB/OD and storage units during a fire, explosion, or release will follow the evacuation routes detailed in Attachment 5.2.

Should the Emergency Coordinator deem it necessary to fight a fire involving waste munitions (e.g., to rescue injured personnel), the runoff from the incident will be contained by earthen dikes constructed within the surface drainage path at a safe distance down gradient of the incident. The construction of dikes will be accomplished using heavy equipment, such as a bulldozer, backhoe, and/or trackhoe. If necessary, soil will be transported to natural drainage areas (e.g., ditches) via a dump truck to construct dikes. The captured runoff will be promptly pumped into a water wagon and transported to one of MLAAP's industrial wastewater treatment facilities (IWTFs) for treatment.

In the event of a spill, a sample of the material or run-off water and a composite soil sample, taken 6-inches deep within the impoundment area from three random locations, will be collected and analyzed for subject hazardous constituents.

An additional composite sample of soil will be collected in the same manner described above. The sample will be up gradient from the spill and utilized for a background sample.

For hazardous constituents, remedial actions will be based upon risk based action levels as determined by the U.S. Environmental Protection Agency (USEPA) Region 9 Preliminary Remediation Goal (PRG) table. For explosives, these levels will be determined by the MLAAP Record of Decision for OU5. Action levels are as follows: Cyclotrimethylene trinitramin (RDX) - 10 milligrams per kilograms and Trinitrotoluene (TNT) - 25 milligrams per kilograms.

If the concentration of RDX or TNT in the soil sample exceeds action levels, the soil will be considered contaminated and the area extending five feet beyond the perimeter of the temporary impoundment will be excavated, containerized, and held for subsequent treatment onsite or disposal offsite.

Following the excavation, a confirmation sample comprised of three 6-inch deep random soil samples will be analyzed for RDX and TNT. If those samples are contaminated above treatment limits, an additional 6-inch soil layer will be excavated. The excavation and sampling will continue until uncontaminated soil is reached. The excavated area will be backfilled with clean soil and re-graded and the natural drainage pattern reestablished.

At the OB/OD and storage units, proper response to a fire involving explosives consists of withdrawal and protection (evacuation), followed by remedial actions when safe conditions return. MLAAP Standard Operating Procedures require the immediate evacuation of personnel from the treatment area. Firefighting is not recommended due to the potential for explosions.

5-2(e)(2) Leaks and Releases

The most probable causes of emergency releases of hazardous waste are vehicle accidents during shipment of waste, releases during unloading operations at the OB/OD units, storage units, or ash, debris, or residue following thermal treatment. In the event of a release, the Emergency Coordinator will be immediately notified. The Emergency Coordinator and alternate are on call 24 hours a day. Until the Emergency Coordinator's arrival on scene, the on duty Fire Captain will act to prevent the spread of a release and contain the emergency. The on-

duty Fire Captain may also act for the Emergency Coordinator through voice communication, until the Emergency Coordinator's arrival onsite. The Emergency Coordinator will make an immediate assessment of the degree of hazard posed by the release. Based on that assessment, the Emergency Coordinator will initiate one or more of the following actions:

- Evacuate personnel to a safe location.
- Direct-trained personnel to handle the release under his supervision.
- Moisten explosives or explosives-contaminated material (moistened wastes minimize fire/explosion hazards).
- Direct the fire department to mobilize and stand by at the site of the release for fire protection.

Once the Emergency Coordinator determines that it is safe for cleanup operations to begin, employees will be directed to bring emergency equipment (brooms and non-sparking shovels) and containers to the release/leak location. Personnel involved shall be instructed in management of hazardous waste, safety procedures, and use of emergency equipment. All released material will be removed and containerized.

One inch or more of soil will be excavated from beneath the released material to ensure adequate removal of contaminated soils. In the event of a liquid release, the Emergency Coordinator must develop and implement a protocol to assess soil contamination that will ensure all contaminated soils are removed or remediated. Contaminated solids will be excavated and containerized for offsite disposal as hazardous wastes or treated onsite if the waste contains explosive residues.

5-2(e)(3) Prevention of Recurrence of Spread of Fires, Explosions, or Releases

The spread of released material will be prevented by the immediate removal of any such material and contaminated soil. Within the OB/OD units, fire controls are provided in the form of clear zones and fire breaks. Firebreaks and clear zones are maintained around the Waste Management Area, which encompasses all thermal treatment operations.

To avoid the spread of fires and explosion, the magazines are spaced in accordance with AMC-R-835-100, at a non-propagating distance. In addition, the units are designed to vent the blast through the front and top and placed so that the front of one unit faces the back of another at a predetermined distance. The Emergency Coordinator may order the temporary removal of containers of waste from a storage unit after an emergency, until the unit is safe and no recurrence can be expected.

Only non-explosive hazardous waste is stored in Building J-137. The Emergency Coordinator may order the temporary removal of containers of hazardous waste from the building and/or forbid entry until sufficient cooling has occurred to prevent recurrence of a fire. The Emergency Coordinator may order immediate removal of released liquids at the container storage building to prevent further releases.

Only waste military munitions or items containing no free liquids are stored at the EWTF, and a fire or explosion can be expected to consume all waste and waste by-products as no firefighting will occur, therefore no migration of contaminated liquids can be expected.

5-2(f) Storage and Treatment of Released Material

The Environmental Manager or designee and Demil Supervisor will ensure that all released material, cleanup debris, and contaminated soil is containerized and stored for testing and treatment or disposal. Ash and contaminated soil will be containerized in 55-gallon (lined if required) drums, labeled properly, and stored in the MLAAP permitted hazardous waste storage magazines. The containerized contaminated soil will be subsequently treated onsite or shipped offsite for disposal. MLAAP is a Large Quantity Generator (LQG) of hazardous waste and operates under this permit. All hazardous waste generated during an emergency response will be handled in accordance with the hazardous waste storage permit and Resource Conservation Recovery Act generator regulations.

Recovered waste munitions will be appropriately containerized, and may be treated at the OB or OD units. Munition components will be containerized in appropriate containers.

The equipment used to containerize the released material is discussed in Section 6-1(d). Released liquids (if any) will be pumped into containers and/or solidified using compatible absorbents, resulting in solids containerized for subsequent treatment onsite or shipment offsite for disposal.

5-2(g) Monitoring for Leaks, Pressure Buildup, Gas Generation, or Ruptures

If the facility shuts down due to an emergency, all personnel are evacuated to a safe location. There is no monitoring for leaks, pressure buildup, gas generation, or ruptures during emergency shutdown. If monitoring conducted during the emergency is deemed necessary, it would be directed by the Emergency Coordinator in consultation with onsite Safety Personnel.

5-2(h) Incompatible Wastes

Waste military munitions are stored based on compatibility, i.e., fuze and/or primers are not stored with bulk propellants, explosives, and PEP. All wastes generated at MLAAP and received from offsite are characterized prior to being placed into one of the storage units.

5-2(i) Decontamination Procedures

After an emergency event, all emergency equipment will either be decontaminated or replaced. Equipment will be decontaminated using, as appropriate, water and soap solutions, or alcohol. Decontaminated equipment will then be serviced, tested, and/or inspected for reuse. Unusable emergency equipment will be characterized and disposed in accordance with state and federal regulations and replaced with serviceable equipment. Any waste liquids generated from decontamination will be tested to determine the methods for proper disposal. A list of

decontamination equipment, containment for disposal of contaminated non-reusable equipment, and decontamination solutions are listed in Table 5-3.

Resulting wastewaters will be collected and taken to an MLAAP IWTF for treatment. Before operations are resumed, all equipment listed in Tables 5-3 and 5-4 will be decontaminated, inspected, and re-serviced for use or replaced. The emergency equipment and drums needed for removing released material will be maintained at the Burning Ground.

The Maintenance Department is responsible for forklifts, ramps, trucks, and earth-moving equipment that might be used in an emergency. The MLAAP Fire Department maintains its equipment, listed in Table 5-5, at the MLAAP Fire Station (Building F-50).

Personal protective equipment will be utilized as required for specific hazards associated with the release response, including but not limited to polymer gloves, splash suits, safety glasses, and protective boots for solvent removal. Materials and equipment stored and necessary for safe emergency response at MLAAP are listed in Tables 5-3 through 5-5.

Many of the items listed in Table 5-4 are for decontamination of response equipment and personnel. These items include the dual use of items such as a 1,000-gallon water tank truck and 1,000-gallon water wagons to transport potable water to the site for decontamination. Decontamination items on the HAZMAT van and/or trailer include:

Table 5-3
Emergency Equipment

Item
Two-Way Radios
Shovels, Brooms, Dust Pans (for ash/debris and storm water removal)
Absorbent
Repack Drums
Other Containers
Pallets
Splash Aprons and gloves
Communications
Fire Hydrants
Air Purifying Respirator
Face Shields
Fire Extinguishers
Sampling Supplies
Earth-Moving Equipment (1 Unit at ADA)

Notes:

1. ADA = Ammunition Destruction Area
2. After an emergency event, all emergency equipment will either be decontaminated or replaced.

Table 5-4
Emergency Equipment

Number	Identification	Location
2	4-inch suction pump	Building K-10
1 or 2	Bulldozer	On plant site
Varies	Analytical equipment	Building J-124
 2 1 2 1 1 Varies ***	Fire-fighting equipment: Pumpers, Equipped for foam 1,200 Gallon tanker Ambulances Hazmat van Hazmat trailer Pickup	On plant site
1	Crane	On plant site
1	Road grader (maintainer)	On plant site
1	Trackhoe	On plant site
1	Backhoe, tractor attached	On plant site
3	Dump truck (5-ton)	On plant site
2	Front-end loaders	On plant site
1	Truck (stake body)	Burning Ground (BG)
Varies	Truck (pick-up) and radio equipment	On plant site
3	Portable generators	On plant site
2	Emergency lighting systems	On plant site
1	1,000-gallon water wagons	On plant site

Note:
After an emergency event, all emergency equipment will either be decontaminated or replaced.

Table 5-5
Emergency Equipment

Cabinet Equipment	Quantity	HAZMAT Trailer Equipment	Quantity
Cabinet #1		SCBA W/Bottles	4
Decon Sprayers	4	Spare Bottles	5
Decon Pools	4	Drum Sampling Tubes(Cylinder)	1
Duck Tape	4	Sampling Kit (Cooler)	1
Barrier Tape	Box	Electric Disconnect Pole	1
Trash Bags	>6	Absorbent Booms	Box
Tarps	4	Chemical absorbent	2 Bags
Cabinet #2		Level A Chemical Suit	6
ICS Vest	Box	Folding Chairs	2
Bolt Cutters	1	Steel Tooth Rake	2
Sparkless Tool Kit	1	Hoe	2
Chemical Gloves	>6	Plastic Shovel	1
Shaving Cream/Razors	Box	Push Broom	2
Bar Soap	>6	Mop	1
Tide	1	Generator W/ Ext. Cord	1
Safety Sorbent	1	K-12 Saw	1
Chemical Boots	>4	5lb. Fire Extinguisher	2
Crowbar	2		

Notes:
1. Spill Response References Located on HAZMAT Trailer and/or at Building F-50.
2. After an emergency event, all emergency equipment will either be decontaminated or replaced.

In addition to the above-listed equipment, heavy equipment may be used in conjunction with plastic tarps to create a decontamination basin at ground level to capture water and debris from decontamination of large equipment. MLAAP also has a decontamination pad available at Area I. The pad is constructed of concrete and discharges to a settling basin, which is linked to an oil-water separator that discharges to the MLAAP wastewater collection system. The pad is supplied with potable water and high-pressure hoses. The pad is diked, therefore, all water and debris from the decontamination operation is directed to a settling basin. The decontamination pad is large enough to handle vehicles and equipment up to 20 feet wide and 40 feet long.

5-2(j) Notification

The USEPA Regional Administrator, Tennessee Department of Environmental Conservation, and TEMA, as appropriate, will be notified that post-emergency equipment maintenance has been performed and operations will be resumed.

5-2(k) Record Keeping Requirements

In addition to the verbal notifications to be initiated by the Emergency Coordinator, Environmental Manager or designee, written follow-up reports will be prepared. All emergencies that require implementing the Contingency Plan will be reported in writing within 15 days to the Administrator, USEPA Region 4, Tennessee Department of Environmental Conservation, and TEMA.

The report will detail the name of the facility, date, time, and type of accident, type, and quantity of material involved, extent of injuries, an assessment of the impact on human health and the environment, and the quantity and disposition of material released.

After an emergency, the Emergency Coordinator will review the Contingency Plan for effectiveness and make any necessary changes. The plan will also be reviewed when the Emergency Coordinator, emergency equipment, Hazardous Waste Management Plan, or the Permit are changed. Records of the incidents and any critiques will be filed at the Environmental Office.

5-3 Amendment of Contingency Plan

Per 0400-12-01-.06(4)(e), the Contingency Plan will be reviewed and amended, when any of the following occur:

1. The facility permit is revised;
2. The plan fails in an emergency;
3. The facility changes its design, construction, operation, maintenance, or other circumstances in a way that increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;
4. The list of emergency coordinator changes; or
5. The list of emergency equipment changes.

Facility: Milan Army Ammunition Plant
EPA Identification Number: TN0210020582
Permit Number: TNHW-153

ATTACHMENT 6. CLOSURE PLAN

This Closure Plan identifies all steps necessary to partially close the open burning (OB) and open detonation (OD) units at any point during their operating life and to perform final closure of those units at the end of their intended operating life.

Waste Management Area History
The Waste Management Area (WMA) is within the area known locally as Area W and includes the OB ground and Ammunition Destruction Area (ADA). Area W has reportedly been in use for destruction and disposal of reject munitions and explosive-contaminated waste since Milan Army Ammunition Plant (MLAAP) began operations in 1942. Soil and groundwater at Area W are known to be contaminated; possibly, from the result of bulk explosives reportedly being burned on the ground surface with the resulting ash disposed of in natural gullies or excavated trenches. Ordnance items and explosive contaminated wastes were routinely discarded in trenches at the OB ground along with ash from the burning of bulk explosives. Contamination also exists at the WMA from past thermal treatment and disposal, up- and down-gradient of the present OB and OD units.

Regulatory Background
MLAAP was placed on the National Priorities List (NPL) in August 1987. In 1991, United States Environmental Protection Agency (USEPA) Region 4, U.S. Department of the Army, and Tennessee Department of Health and Environment (now Tennessee Department of Environment and Conservation (TDEC)) executed a Federal Facility Agreement (FFA) for MLAAP that documents the agreed approach to RCRA-Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) integration relating to RCRA corrective measures. Article VIII, Statutory Compliance/RCRA-CERCLA Integration of the FFA stipulates, "the Parties intend that activities covered by this Agreement will be deemed to achieve compliance with CERCLA . . . to satisfy the corrective action requirements of . . . Section 3004 (u) and 3004 (v)" and that "remediation of releases covered by this Agreement shall obviate the need for further corrective action under RCRA (i.e., no further corrective action shall be required).

Status of CERCLA Action
The OB and OD units are located within CERCLA Operating Unit (OU) #5 (OU5), for which an Interim Record of Decision (IROD) was issued September 28, 2004. The *Final Feasibility Study Addendum and Supplemental Remedial Investigation Report* was approved by the USEPA in April 2010. The OU5 "Final Proposed Plan" was released on October 11, 2010. A final Record of Decision is expected in January 2011.

The 2004 IROD and supporting reports and documentation are in the MLAAP Administrative Record File which is available at:

MLAAP Army Environmental Office
MLAAP Building T-116
2280 Highway 104, Suite 1
Milan, Tennessee 38358-3176
(Monday through Thursday, 6:45 a.m. to 5:15 p.m.)

Mildred G. Fields Library
1075-A East Van Hook Street
Milan, Tennessee 38358
(Monday through Friday, 9:00 a.m. to 5:00 p.m., and Saturday 9:00 a.m. to Noon)

CLOSURE PLAN
MLAAP intends to close the WMA in a manner that:

- Minimizes the need for further maintenance.

- Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous wastes or constituents.

- Complies with requirements of the latest Tennessee's Hazardous Waste Management Regulations.

The existing contamination within the WMA has been thoroughly investigated under CERCLA in accordance with the FFA, quantified cleanup goals that are protective of human health and the environment have been established for soil and groundwater. Moreover, the OU5 Record of Decision (ROD) prescribes long-term care of the site following successful implementation of the remedy. The cleanup goals and post-closure care measures in this Closure Plan are consistent with those resulting from the CERCLA actions.

Partial Closure Activities
Partial closure is not planned for the MLAAP WMA. In the event that future circumstances (e.g., change in production capacity or type ordnance produced) require MLAAP to close a portion of the WMA, a revision in the Closure Plan will be submitted to the appropriate regulatory agencies within the required time limit. Substantial production changes at MLAAP would likely only result in the reduction in the needed capacity of the OB or OD units, but not their elimination.

Final Closure Activities
Final closure activities will include:

- Treatment of final inventory of waste
- Removal of ash/residue from the OB Unit burn pans
- Decontamination/Removal of the OB Unit burn pans and underlying concrete pads
- Soil characterization within the WMA
- Groundwater characterization at the point of compliance
- Treatment of contaminated soil (as necessary)
- Re-grading for drainage control

Treatment of Final Inventory of Waste
The maximum potential volume of waste at the WMA is equal to the sum of the capacities of the OB and OD units:

- OB Unit capacity = 24,000 pounds NEW per day
- OD Unit capacity = 10,000 pounds NEW per day

Before proceeding with the closure process, the final charge of waste will be treated at each unit. No untreated ordnance or explosive materials will remain at either unit. Only ash from the OB Unit will remain within the WMA.

Removal of Ash/Residue from the OB Unit Burn Pans
Any ash/residue within the burn pans will be swept clean, collected, and managed as it is under operational conditions described in Attachment 8. It will be containerized, sampled, characterized, stored, and disposed as appropriate based on hazardous waste characterization.

Decontamination/Removal of the OB Unit Burn Pans and Concrete Pads
The empty elevated burn pans will be disconnected from the grounding cables, and the pans, structural supports, and pan covers will be transported to designated clean sand pads (a.k.a. explosive contaminated burn pads). These sand burn pads are used in the final step of cleaning recyclable metal equipment (e.g., piping and production process components) by flashing (i.e., heat-destruction of explosive residue). The pans, supports, and covers will be flashed by placing wood and/or other combustible materials along with an appropriate number of thermal pellets under and around the pans, remotely igniting the material, and allowing the heat to destroy any reactive residue that may be present. Complete decontamination will be indicated when the thermal pellets are melted. The pans, supports, and covers will be flashed using wood and/or other fuels to achieve the proper temperature for destruction of any remaining explosives residues. The flashing operation will follow MLAAP Standard Operating Procedure (SOP) MA-000-H-008 (maintained in MLAAP operating record) under which metal is determined to be safe for transfer to the MLAAP scrap yard for subsequent offsite recycling.

A composite sample of sand and ash will be collected for characterization and subsequent management. The composite sample will be comprised of four grab samples, one from the center of each quadrant of the sand pad. Each grab sample will extend the full depth of the sand pad. The sand/ash material will be excavated by front loader and shovels into a roll-off box and covered to prevent contact with precipitation. The sand/ash will be analyzed and managed in the same manner as ash/debris under operational conditions described in Attachment 8. It will be stored, transported, and disposed of as indicated by the characterization.

The four concrete pads associated with the elevated burn pans will be diked using sand berms covered with 6-mil polyethylene plastic sheeting. The pads will be pressure-washed using clean potable water and detergent, followed by two potable water rinses. After the wash and each rinse, the water will be pumped to clean, plastic-lined, Department of Transportation (DOT) approved 55-gallon steel drums. Wash water and rinsate will be analyzed for total explosives and RCRA metals following the Sampling and Analysis Plan in Attachment 9 and discharged to the MLAAP Clean Water Act-permitted wastewater treatment plant, if acceptable.

The four concrete pads will be spall sampled for RCRA metals, characterized, and the concrete will be disposed of properly.

After the concrete pads are removed, the polyethylene plastic sheeting will be removed from the sand berms and placed in clean DOT-approved 55-gallon steel drums. That material will be sampled, characterized, and disposed of properly. The sand used under the plastic sheeting will be stockpiled for later use.

Soil Characterization within the Waste Management Area

The sampling, characterization, and any necessary cleanup of soil throughout the WMA will be addressed in separate investigations. The soil cleanup goals in this Closure Plan are consistent with the ROD for soil remediation at OU5 under CERCLA actions at MLAAP for these reasons:

- The parties to the MLAAP FFA agreed that remedial actions under CERCLA would satisfy the corrective action requirements of RCRA.
- The OU5 ROD reflects the results of a CERCLA-compliant Remedial Investigation/Feasibility Study (RI/FS), which established risk-based soil cleanup goals.
- The remedial actions which implement the OU5 ROD will have been completed many years prior to the expected closure of the WMA in 2061, and soil in OU5 (which encompasses the WMA) will have been remediated to those goals.

The OU5 ROD contains the following information that is applicable to this Closure Plan.

- RDX and TNT are the COCs for soil.
- Soil containing RDX above 10 milligram per kilogram (mg/kg) or TNT above 25 mg/kg will be remediated[1].
-
- Most of the mass of RDX in the soil column is contained in the uppermost 2 feet as documented in the RI/FS for the OU5 area.
- Potential that significant quantities of unexploded ordnances (UXO) media is present across the area.
- Remedial goals can be achieved through excavation and capping.

In as much as the CERCLA soil remedy will be implemented years prior to the projected closure of the WMA in 2061, this Closure Plan focuses on areas that will potentially be affected by post-CERCLA-remedy OB and OD unit operations. The soil-sampling scheme will include both biased and unbiased components. Based on the ROD conclusion, the entire first round of samples will be collected from the upper 2 feet of soil, except for the areas immediately surrounding the OD shooting pits.

In addition to the ROD COCs in soil (RDX and TNT), soil characterization will include RCRA 8 metals because soil sampling and characterization during the operating life of the units already includes RCRA metals. The closure thresholds for RDX and TNT (10 and 25 mg/kg, respectively) in soil will be consistent with the CERCLA OU5 ROD, and the thresholds for RCRA metals will be the Regional Screening Levels (RSLs) or equivalent prevailing at the time of closure or background concentrations, whichever is higher. This is due to the fact that some metals (e.g., cadmium) are known to occur naturally in west Tennessee at concentrations above RSLs.

[1] Those thresholds were based on a CERCLA RI risk assessment using published toxicity levels. Those levels are currently under re-evaluation and they are likely to change in the future. Should those levels be revised significantly, MLAAP will revise this Closure Plan accordingly and resubmit it to USEPA and TDEC prior to final closure of the WMA.

Background Sampling
To establish site-specific background concentrations of RCRA metals, soil samples will be collected from multiple locations that are most unlikely to be impacted by MLAAP operations. Sample locations within the ammunition storage area, more than 4,000 feet south of the WMA, will be used to ensure that the following background criteria are met:

- Outside the byproduct deposition zone for byproducts of OB and OD units, as defined by the dispersion/deposition model.
- In grassland not previously cultivated for crop production
- Outside the current and past production areas

Background thresholds for metals in soils will be established by these steps:

- Collecting 10 samples from random locations within the ammunition storage area from 0 to 2 feet below ground level (bgl)
- Locating each sampling point near the center of an area bounded by two storage igloos and two access roads (approximately 500 feet by 500 feet)

The background threshold will be defined as the statistical upper confidence level at 95% confidence for each RCRA metal.

Biased Sampling
Soil samples will be collected at locations that are most likely to be impacted by releases from the OB and OD units including:

OB Unit
- One composite sample from within 2 feet of each edge of each of the burn pads, each comprised of three grab samples collected at one-quarter lengths along the edge (16 soil samples)
- One composite sample from 20 feet beyond each edge of each of the burn pads, comprised of three grab samples collected at points perpendicular to the center and each end of the edge of the pad (16 soil samples)
- One composite sample from the uppermost formation of the swale downstream of the OB Unit, comprised of one grab from the center and one from 2 feet on either side of the center (1 sample)
- One at 200 feet downstream from the uppermost sample location in the drainage swale, comprised of one grab from the center and one from 2 feet on either side of the center (1 sample)

OD Unit
Prior to sampling at the OD Unit, the area will be policed to pick up all exposed metal from fragmentations over 4 inches of munitions containers. The collected metal scrap will be flashed at the explosive contaminated burn pads to remove any untreated residues. Flashing will be

performed according to Standard Operation standard (SOP). MA-000-H-008 in, following the same protocol used to decontaminate the burn pads. Metal that is determined to be safe will be transferred to the MLAAP Salvage Yard for subsequent offsite recycling. Any ash and non-metallic debris will be analyzed and managed as the ash/debris is managed as described in SOP.

The open shooting pits at the OD Unit resemble an inverted cone in the ground, normally 10 to 15 feet deep. The operations at the shooting pits affect the sampling pattern in their immediate vicinity, specifically:

- Prior to each shot, the pit is backfilled above the waste ordnance to ground surface with soil graded from the surrounding area
- Each shot ejects the overburden from above the ordnance which then falls back to the ground surrounding that pit
- Repeated shots result in the gradual movement of the shooting pits
- Pits are routinely backfilled to prevent the accumulation of storm water
- Less than 10 pits are typically open at any given time
- Backfilled pits are dug out prior to a new shot

To account for the movement of the pits and to characterize the soil disturbed by the shots, the following sampling plan will be implemented:

- Prior to sampling, any open pits will be backfilled with surrounding soil as they would during normal operations
- Two rectangular grids, one along each line of shooting pits, will be established, each with these dimensions:
    - Each 25-foot interval grid will extend 25 feet beyond the last pit at each end of the line (approximately 1,000 feet) and 25 feet on either side of each node along that center line.
    - A sampling point will be located at each grid node.
    - A composite sample will be collected at each sampling point, comprised of grab samples from these depths:
        - 0 to 2 feet bgl
        - 4 to 6 feet bgl
        - 8 to 10 feet bgl

Approximately 123 samples will be collected from the potentially disturbed soils in the immediate vicinity of the shooting pits.

- Three from each of the three silt/sedimentation basins at the OD Unit: one at the mouth of the drainage ditch entering each pond, one adjacent to the discharge structure, and one midway between those, composited for one analysis (three samples)

- Three from the ditch downstream of each silt/sedimentation basin discharge structure outfall, one at the bottom and one from each embankment within 20 feet of the outfall, composited for one analysis (three samples)

Unbiased Sampling
These samples will be collected to assess any generalized contamination from fallout from emissions from either the OB or OD units. The unbiased samples will complement the 157 samples generated by the biased sampling pattern. The unbiased sampling approach will be:

- Establish a 200-foot grid over the entire WMA, and number each grid node

- Select 50 nodes for sampling using random numbers (to avoid duplication, no node within 100 feet of a biased sampling location will be included in the unbiased sample population)

- Collect a composite sample from each selected node, comprised of five grab samples: one at the node and one along each grid line at a distance of 50 feet from the node

Follow-Up Sampling
If any composite sample from the original (biased or unbiased) sampling program contains RDX, TNT or RCRA metals above risk-based thresholds, additional sampling will be performed to identify the extent of contamination, as follows.

- ***Surface Soil:*** At the location of each contaminated composite sample, a new grid, extending 100 feet from the original grid node, will be established, and samples will be collected at every node, and at each of the original sampling points. This pattern will extend beyond the original sampling pattern in all directions. At each location, samples will be collected at 0 to 2 feet and 2 to 4 feet bgl, and each of the resulting 26 grab samples will be analyzed individually to define the extent of localized contamination.

- ***Silt/Sedimentation Basins:*** A 20-foot grid will be established over the sediment in the basins. All grid nodes falling within the embankments will be numbered and samples will be collected at the original locations and at eight additional random locations from 0- to 2- and 2- to 4-foot depths. Each grab sample will be analyzed individually to define the extent of contamination within the basins.

- ***Ditch Sediment:*** Three new grab samples will be collected at the original location in addition to 20 and 50 feet downstream of the original location at depths of 0 to 2 and 2 to 4 feet bgl. At the OB Unit, three additional samples will be collected at 20 feet up-slope, spaced at 10-foot intervals across the ground slope. Each grab sample will be analyzed individually to define the extent of contamination within the drainage pattern.

- ***Shooting Pit Areas:*** At grid locations where contamination is identified, a second round of horizontal and vertical samples will be collected where adjacent samples do not define the extent of contamination:

— Horizontal: An additional soil sample will be collected 25 feet outside the location of any "hot" sample(s) on an outer node of the original grid, one immediately beyond that node and the adjacent nodes on either side.

— Vertical: One composite sample comprised of grab samples from depths of 12 to 14 feet bgl and 16 to 18 feet bgl.

Should the follow-up sampling at any area fail to define the extent of soil contamination, additional sampling events will be performed, each successively expanding the sampling network (horizontally and/or vertically) beyond locations still reporting excessive RDX/TNT concentrations, until the outermost samples are below the threshold concentrations.

Groundwater Characterization at the Point of Compliance
Attachment 1 addresses groundwater monitoring during the life of the WMA under this permit. That Attachment contains the following information that is relevant to this Closure Plan:

- The well network and groundwater monitoring program for the WMA.

- Table 1-4 documents the baseline groundwater quality for the WMA at the time of this permit.

- Attachment 1 describes the statistical analyses that will be used throughout the remaining operating life of the WMA, including the conditions under which compliance monitoring or corrective actions will be required. Semi-annual soil sampling around the pad and OD unit ensures releases are not taking place and adding to preexisting contamination that is being addressed under CERCLA.

By implementing the groundwater quality detection monitoring-program described in Attachment 1, any groundwater quality degradation will be detected in real time, thereby eliminating the need for closure-specific measures to assess groundwater quality. The groundwater-monitoring program applied during the operating life of the WMA will continue as an element of post-closure care.

Treatment of Contaminated Soil
The necessity for treatment of soil will depend on the outcome of the soil characterization described in this Attachment. Should the first round of sampling identify no RDX or TNT concentrations exceeding risk-based thresholds, no soil treatment will be performed. The WMA will be prepared for post-closure care, as described in this Attachment.

Should the first round of sampling identify contaminated soils, follow-up sampling will be conducted to define the extent of contamination. The extent of contamination will be defined when analytical results quantitatively identify soils beyond the excavation vertically and horizontally that do not contain RDX and TNT above the established risk-based thresholds.

Once areas of contamination are delineated, the approach to treatment/disposal of soil within each area will be addressed individually. The treatment/disposal approach for each area will depend on the volume of soil within the contaminated area, the cumulative volume of contaminated soil within the WMA, proven cleanup technologies available at the time of closure, and costs. The optimum set of remedial technologies for soil treatment/disposal (e.g., in-situ and/or ex-situ) will be negotiated between the U.S. Army and TDEC. Excavation with offsite

disposal and capping are likely candidate technologies that were evaluated in the CERCLA Feasibility Study (FS), and each is described in this Closure Plan. Other technologies may be proposed following the characterization of the WMA soils.

Each alternative approach will require excavation/grading where UXO may be encountered. Therefore, whenever soil excavation or grading is underway, Explosive Ordnance Disposal (EOD) — trained personnel will be present throughout any excavation/grading operations. The earthmoving equipment operators at the OD Unit, who are the most likely to operate the excavating/grading equipment during soil removal, are EOD-trained. Waste munitions discovered during excavation will qualify and be handled as a munitions emergency as defined by Tennessee Rule 0400-11-01-.02(2)(a). EOD-trained MLAAP personnel will determine if an emergency exists and handle or destroy the munitions onsite. If, at the time of closure, onsite personnel are not available, EOD personnel will be summoned from Fort Campbell, Kentucky, to handle the emergency.

Any waste munitions discovered that do not meet the requirements of a munitions emergency will be placed in DOT-approved containers, transported to MLAAP's permitted hazardous waste storage units. Within one year of generation, those waste military munitions will be shipped via a permitted contract carrier to a permitted offsite facility that treats waste military munitions. The implementation of each treatment alternative is presented in the following paragraphs.

Excavation and Offsite Disposal
This approach will most likely be applied to limited areas of soil contamination. MLAAP personnel trained and experienced in contaminated soil removal will excavate the soils in the designated localized area(s). Soils will be excavated using enclosed cab backhoes, trackhoes, or other earthmoving equipment, as required. Excavated soil will be containerized (typically in lined 20-cubic-yard roll-off boxes or directly into lined tractor/trailers) for transport offsite to a permitted facility. Excavation will continue until reaching the limits designated by the profile, at which point confirmation samples will be collected. One composite sample will be collected for each 100 square feet of excavation. Each composite sample will be comprised of one grab sample from each quadrant of the square. Soil samples will be analyzed according to the Sampling and Analysis Plan in Attachment 9.

If the analytical results indicate that RDX and TNT are below established risk-based cleanup levels, the excavation will be backfilled with clean native soil. The filled excavation will be compacted using the tracks of the backfill equipment and contoured to reduce or eliminate run-on and run-off.

If confirmation sampling indicates RDX or TNT concentrations remain above established risk-based cleanup levels, excavation and confirmation sampling will continue until RDX and TNT concentrations are acceptable. Over-excavated soils will be managed in the same manner as the excavated soil outlined above.

Onsite Composting
In the September 2004 ROD, onsite ex-situ composting was identified as the preferred remedy for any OU5 soils, based on the results of the CERCLA RI/FS. Under that remedial alternative approach, MLAAP successfully used composting to treat explosive contaminated soils.

Inasmuch as the RI/FS determined that composting was viable for onsite treatment of soil from OU5, that technology will be considered for treatment of WMA soils at closure. The current

MLAAP composting facility is no longer operational; therefore, a temporary, single-purpose composting unit would be constructed within the WMA, should that technology be selected.

The location and size of any composting unit within the WMA will be determined after delineating contaminated soil areas and determining the volume of soil to be treated. Criteria that will influence the location of the unit include its proximity to areas of soil contamination, access by off-road haul vehicles, and surface drainage.

The excavation of contaminated soil to be treated by composting will follow the same approach as the excavation/offsite disposal alternative described above, with transport of the soil by off-road vehicles. The specific design and operation of the composting unit will be determined at the time of closure.

Capping

The soil characterization may indicate that closure in-place with an engineered cap will be the most cost-effective technology. Should in-place closure of an area be implemented, typical engineered caps will have the following elements: the entire contaminated area will be contoured to reduce control run-on, run-off and compacted using MLAAP earthmoving equipment. During the contouring process, any metal objects, shreds, and/or parts encountered will be removed from the soil surface. After contouring and compaction, a 3-foot wide by 4-foot deep anchor trench will be excavated around the entire area. Soil from the excavation will be stockpiled adjacent to the outside of the excavated trench. Specific design requirements and construction will be based upon the most recent available techniques and will be negotiated with TDEC at the time of closure.

An engineered High Density Polyethylene (HDPE) liner will be placed over the entire area and welded together to form a continuous barrier. After welding, all seams and welds will be quality control- (QC) checked to insure the integrity of the seam and for leaks. Any leaks and/or tears will be repaired and QC checks performed on those areas. The edges of the HDPE liner will be folded into the anchor trench around the entire area. Soils excavated from the trench will be placed between the folds of the liner in the trench to provide the anchor. After anchoring, the HDPE liner will be covered with a geotextile fabric to protect the liner. After the fabric is in place, the area will be capped with a minimum of 2 feet of clean native soil.

The cover will be placed on the liner/fabric before any traffic is allowed on the surface. The cover soils will be placed on the liner/fabric in 6-inch lifts and compacted using the tracks of the spreading equipment. The earthen cover will be contoured to eliminate pockets of standing water, control run-off, and minimize run-on. After the earthen cover is completed, the entire covered area will be fertilized with 500 pounds per acre of 15% phosphorous, potassium, and nitrogen (PKN) and sown with a minimum of 8 pounds per acre of Kentucky 31 Tall Fescue. After fertilization and sowing, the seeds will be incorporated using a harrow.

Decontamination Pad

Equipment decontamination will be required for each proposed soil treatment alternative. A decontamination pad will be constructed to the south of the Shooting Barricade (Building W-53) to clean and decontaminate all equipment used onsite. The decontamination pad will be sized to accommodate any earthmoving equipment used for closure, and a berm will be constructed on three sides. The pad will be sloped to one corner and will be dewatered as necessary into a portable water wagon or tanker truck.

Wastewater, sludge, and solids removed from the decontamination pad will be sampled and analyzed for RDX and TNT. Decontamination wastewater will be transported to the MLAAP IWTF or MLAAP pink water facility for treatment. Sludges and solids containing RDX or TNT concentrations above threshold levels will be containerized and managed as waste for offsite disposal. All equipment used in the closure will be pressure-washed and triple-rinsed using the facility's potable water supply. After decontamination, any earthmoving equipment will be relocated at the MLAAP or utilized at other Department of Defense facilities. Once equipment decontamination is completed and wastewater, sludge, and solids are removed, the HDPE liner will be removed from the decontamination pad and containerized for disposal.

Re-Grading for Drainage Control

Following the treatment of contaminated soils, the denuded portions of the WMA will be finish-graded to manage surface water drainage. The finished grade will tie into any vegetated areas that were backfilled during the soil treatment actions. Naturally vegetated areas will be disturbed as little as possible. Those graded areas will then be fertilized with 500 pounds per acre 15% PKN and sown with a minimum of 8 pounds per acre of Kentucky 31 Tall Fescue. After fertilization and sowing of grass, the seeds will be incorporated using a harrow.

Description of Closure Schedule

The closure date for MLAAP's WMA is scheduled for 2061. There are no plans to close the OB Unit or OD Unit before that date. Within 90 days after receiving the final volume of hazardous wastes, MLAAP will treat and/or remove from the site all hazardous waste in accordance with the approved Closure Plan. MLAAP will notify the USEPA Regional Administrator and TDEC Commissioner at least 180 days prior to the date final closure is expected to begin. The closure schedule is presented is in Table 6-1.

Table 6-1 demonstrates that closure of the MLAAP WMA within 180 days can only occur if activities are fast-tracked and soil treatment is not required. Should soil treatment be required, a normal performance schedule would result in a closure duration of 745 days. Even on a fast-track schedule, closure with soil treatment would require 460 days to complete closure. Therefore, prior to commencement of closure, MLAAP will request an extension to accommodate proper closure of the WMA proposed in this Closure Plan.

Upon completion of closure, MLAAP will submit to the Regional Administrator and the TDEC Commissioner a certification by an independent Tennessee Registered Professional Engineer that the facility has been closed in accordance with the specifications in the approved Closure Plan.

Closure Plan Retention/Notification

MLAAP will maintain a copy of the approved closure plan onsite at the Environmental Manager's office, and all revisions to the plan until the certification of closure completeness has been submitted and accepted by USEPA Region 4 and TDEC. If changes in operation or facility design affect the Closure Plan, it will be amended. It will also be amended if there is a change in the expected year of closure. Modification requests, if required, will be made within 60 days after the change in operation or design occurs.

POST-CLOSURE PLAN

Post-Closure Care Mechanisms

The OU5 ROD specifies the following post-Remedial Alternative requirements, which are also applicable to the WMA.

- Maintenance of a natural vegetative cover that will serve as a natural barrier, degrade low-level RDX and TNT, prevent soil erosion, and reduce the potential for contaminant transport.

- Maintenance-related activities include mowing, storm water washout repairs and area-specific reseeding as necessary.

- Implementation of Land Use Controls (LUCs) to prevent contact with site soils and restrict land use and development for residential housing, schools, childcare facilities and playgrounds.

Physical LUCs could include site fencing and placement of warning signs. Administrative LUCs include prohibition of changes in land use by MLAAP and deed covenants and conveyance of title in the event of property transfer.

Post-closure care at the WMA will be integrated with the post-Remedial Alternative requirements of OU5 ROD and LUC Plan. This Post-Closure Plan reflects that integration.

Inspection Plan

Access to the WMA is already controlled by fences and gates, and warning signs are posted on the fencing as described in Attachment 4. The WMA is enclosed with a 6-foot chain-link fence with triple stranded barbed wire at the top. The fence has warning signs in English placed at 50-foot intervals. The signs face outward and have the warning “DANGER — UNAUTHORIZED PERSONNEL KEEP OUT” legible from a minimum distance of 25 feet. However, under post closure, the fence will not be maintained. All entry gates to the WMA will be locked when the area is vacant.

No post-closure inspections will be performed at areas within the WMA that contain residual concentrations of COCs in soil below closure thresholds.

For areas where contaminated soil is capped, ground cover will be inspected quarterly for erosion, establishment of vegetative cover, mowing of cover, warning signs, evidence of cap or cover failure, and security. These inspections will be performed by ground maintenance, contractor personnel, or Environmental office staff. Inspections will be recorded, with copies of the inspections maintained in the Environmental Manager’s office. After three (3) years, if no problems are noted and with the approval of TDEC, inspections will be conducted on a semi-annual basis for a minimum of 30 years.

If any areas are closed by capping, the capped areas will be surveyed and the survey placed on a survey plat. Additionally, permanent monuments will be set at each corner of the excavation. Those monuments will be used to monitor soil settling, subsidence, and/or displacement. The placement and elevation of the monument will also be recorded on the survey plats. In order to protect the surveyed benchmarks from mowing and other activities that may occur at the site, the monuments will be concrete encapsulated steel pins, set at or slightly below ground surface. The benchmarks will be marked with steel flag pins for an extra measure of protection.

Quarterly inspection of the monuments will be included in the inspection for mowing and vegetative cover, erosion, settling, and displacement.

The run-on and run-off structures associated with the closed units will be included in the quarterly inspection and inspected after a significant storm event. These inspections will be conducted semi-annually and recorded by the MLAAP Environmental office.

Monitoring wells will be inspected for damage from mowing or deterioration during semi-annual sampling according to the approved sampling plan. Those inspections will be conducted by the well sampling team designated by the MLAAP Environmental office. The inspections will be recorded in the field notebook used during the sampling event. Generally, the inspection program will follow the outline listed in Table 6-2.

The closed units are located within MLAAP, which has controlled access, security personnel, outer perimeter fencing, and restricted operation within the facility. The potential for damage via acts of nature are accounted for by requiring inspection after rainfall events that are significant enough to impact erosion and run-on/run-off.

Monitoring Plan

The current semi-annual groundwater-monitoring plan for the WMA in Attachment 9 is proposed to be continued post-closure for a minimum of three years. If the results of three years of groundwater monitoring demonstrate no degradation in groundwater quality at the point of compliance, the sampling frequency will be reduced to annual.

No post-closure soil sampling will be performed at areas within the WMA that contain residual concentrations of COCs below closure thresholds. For areas where contaminated soil is capped, any post-closure monitoring will be performed according to the approved LUC.

Maintenance Plan

To maintain the integrity of the WMA, any deficiencies noted during inspections will be corrected by MLAAP or contractor personnel using appropriate equipment. Actions taken will also be recorded. Telephone numbers for emergency notification and maintenance will be posted onsite. Records of inspection and maintenance actions will be maintained in the Environmental Manager's office. Groundwater monitoring reports, soil sampling results, and storm water discharge records will be maintained in Environmental office.

Maintenance of conditions noted during inspection, both routine and non-routine, will be handled as outlined in Table 6-3.

Personnel performing the inspection will be trained, experienced, and knowledgeable in the closure system employed for use at the WMA. Inspection personnel will make maintenance and repair decisions based on experience and the following criteria (Table 6-4).

Table 6-1
Closure Schedule - Waste Management Area
MLAAP

Closure Activity	Activity Duration (Days)	Cumulative Time (Routine Finish) (Days)	Cumulative Time (Early Finish) (Days)	Comment
Treatment of final inventory of waste	30	30	30	
Removal of ash/residue from the OB pans	20	50	50	
Removal/Decontamination of the OB pans	15	65	65	
Decontamination of concrete pads	15	80	65	Can be concurrent with pan decontamination
Soil characterization within the WMA				Sampling at the OB and OD units can proceed concurrently, if necessary
• OB Sampling	20	100	85	
• OD Sampling	45	145	110	
• Analysis	30	175	140	Analysis for RDX/TNT
• Data Analysis/Definition of Extent of Contamination	90	265	230	Should no soil treatment be required, closure of the WMA can be completed in 230-260 days.
Groundwater characterization at the point of compliance	60	325	230	Can be concurrent with Soil Characterization
Treatment of contaminated soil as necessary				A combination of alternative approaches, including application of new technologies. Soil treatment can be performed currently at multiple locations, if necessary. Longest duration will dictate schedule.
• Excavation/Offsite Disposal	180			
• Excavations for Composting	180			
• Installation of Caps	360	685	410	
				Soil treatment by on-site composting may take up to 18 months.
Re-grading the entire WMA for drainage control	60	745	460	
Closure Certification	60	N/A	N/A	This activity is not included in the duration of the closure period.

Table 6-2
General Program Inspection Schedule — Security Devices
Post-Closure Plan
Waste Management Area — Milan Army Ammunition Plant

Inspection	Frequency	Log	Issue
Signs	Quarterly	Closure	Damage, missing, illegible
Gates	Quarterly	Closure	Locked, damaged
Erosion	Quarterly and after significant rainfall	Closure	Loss of vegetation, damage to soil cover, pooling water
Subsidence	Quarterly	Closure	Cover settlement, subsidence, displacement
Run-on and Run-off	Quarterly and after significant rainfall	Closure	Blocked structures, damaged structures, erosion
Contoured caps	Quarterly	Closure	Damaged cover
Monitoring wells	Semi-annually	Log Book	Damage, security, protective measures
Benchmarks	Quarterly	Closure	Damage, stability

Table 6-3
Routine and Non-Routine Inspections Repair Timetable
Post-Closure Plan
Waste Management Area — Milan Army Ammunition Plant

Problem/Unacceptable Condition	Estimated Repair Timetable
Repair of security control devices (gates)	Gate within 14 days
Erosion damage	Capped area within 14 days Other areas within 30 days
Settlement, subsidence, displacement	Capped area within 14 days Other areas within 30 days
Mowing overgrown vegetative cover	Two times annually or more often as required by inspection
Poor vegetative cover	Reseed and fertilize within 30 days
Monitoring well repair	Within 30 days
Run-off/Run-on control structures	Within 14 days
Damaged surveyed benchmark	Within 30 days

Table 6-4
Inspections Repair Criteria
Post-Closure Plan
Waste Management Area — Milan Army Ammunition Plant

Items to be Inspected	Issue
Security control devices	Gate broken or down, or unserviceable, warning signs missing or illegible
Erosion damage	Soil below vegetation washed, pooling, or mounding of water on cap, liner exposed, mowing hazarded
Settlement, subsidence, displacement	Standing/pooling water, sinks in cap or adjacent soils
Vegetative cover	Cover too thin, showing exposed soils, cover too tall with potential to hide erosion or displacement, cover spotty allowing erosion
Run-on/Run-off controls	Caps; condition of caps; vegetative cover on caps
Monitoring well condition	Broken or unlocked well covers; broken, damaged, or undercut well pad or guards; broken or damaged riser pipe; excessive sand and/or silt in well (damaged screen); incompatible well constituent or well construction material; according to approved groundwater sampling plan
Benchmark integrity	Missing or damaged benchmark locators; unexplained movement or changes in a number of established measuring points

ATTACHMENT 7
CORRECTIVE ACTION

Milan is on the National Priority List (NPL). It also has an October 16, 1989 Federal Facility Agreement that ensures that the environmental impacts associated with past and present activities at the site are thoroughly investigated and appropriate cleanups developed.

Corrective Action at Solid Waste Management units and Area of Concerns at the facility are currently being addressed by the Tennessee Department of Environment and Conservation's Division of Remediation and the U.S Environmental Protection Agency's Superfund Division.

Facility: Milan Army Ammunition Plant
EPA Identification Number: TN0210020582
Permit Number: TNHW-153

ATTACHMENT 8. PROCESS DESCRIPTION

Attachment 8 consists of two separate sections as follows:

- Attachment 8.1 Process Description
- Attachment 8.2 Drawings

ATTACHMENT 8.1 PROCESS DESCRIPTION

Open Burning Unit

The open burning (OB) Unit has nine small pans, two large pans, and one large pan used as a spare. Each of the nine small pans can treat a maximum capacity of 333.3 pounds of reactive waste per burn, and the large pans can treat a maximum capacity of 500 pounds per burn. The maximum design capacity for the OB Unit is 4,000 pounds per treatment:

(333.3 pounds x 9 pans) + (500 pounds x 2 pans) = 3,999.70 pounds
(approximately 4,000 pounds)

The OB Unit operates five days a week during which six or fewer burns are conducted in a workday, providing a 24,000-pound-per-day treatment capacity.

Open Detonation Unit

The quantity of explosive waste treated at the open detonation (OD) Unit depends on the type and configuration of the military munitions. Subsurface detonation is limited to a prepackaged total explosive weight of 350 to 500 pounds net explosive weight (NEW) or less per pit, with a typical added donor charge of 50 to 325 pounds of high explosives to ensure total treatment. Milan Army Ammunition Plant (MLAAP) has a total of 20 pits at any one time within the OD Unit.

Aboveground detonation is only performed on materials believed to be armed or which have been dropped and are not considered safe to handle. Aboveground detonation is only conducted on an emergency basis and is limited to six shots per day with a maximum amount of 15 pounds NEW for both the munition item and the donor charge.

Operating Time Frame:

OB Unit

Burn pans are loaded by MLAAP personnel and then treated. The burn pans may contain waste for as long as 30 to 45 minutes with MLAAP personnel present within the OB Unit. That delay is to allow personnel working in the area to move to a safe distance or inside any necessary enclosure, to determine whether the area is clear, and to ensure proper weather conditions for treatment before initiating the burn. The waste is under direct observation at all times. After open burning is completed, the pans may be accessed after a 15-minute safety cool-down period, but cannot be reused for a minimum of 30 minutes; at the end of such time, the pans must be misted with water, cleaned of any residues, and inspected. If a misfire occurs, treatment personnel cannot return to the burn pans for 30 minutes for safety reasons. Therefore, during a misfire, waste may remain in the burn pans for up to one hour.

OD Unit

The typical subsurface open detonation process requires placing a configured pallet of explosive waste (shot) in a pit, covering the shot with 4 to 15 feet of soil, connecting the firing leads to the explosive train, clearing the area, checking the weather conditions, and notifying the Safety Department before detonating the shot. The waste typically remains in the pit for two to four hours. The waste explosives are in containers (such as shell bodies) and cardboard boxes with plastic liners, etc., and are under observation at all times.

If, during subsurface open detonation, an explosive train fails to fire, there is a minimum 30 minute wait before thermal treatment personnel may approach the pit. In case of misfires, the waste may be in the pit for up to 8 hours or longer, depending on safety measures taken to

ensure proper treatment and to protect Demil workers. During those situations, the pit is under observation and/or security. Open detonation shots are typically set in the morning hours to allow time for corrective action and treatment of misfires before darkness.

Subsurface treatment of military munitions at the OD Unit is as fast as the explosion will propagate. Typically, subsurface detonation does not produce a visible fireball. In a few cases, a small brief flash is noted at the mouth of the covered treatment pit. Typically, soil — as dust and clouds — is visible in the air during the treatment. Larger soil particles return to the shooting fields almost immediately, while fine soil particles may remain airborne for five to 10 minutes. Aboveground detonation of potentially armed/dangerous rounds (number of rounds must be approved by the Commanding Officer) with a maximum NEW of 15 pounds per shot are also treated at the rate of explosive propagation. This is due to the initiator (typically RDX and/or TNT) used to treat the rounds. In aboveground treatment, an instantaneous fireball is noted as a flash of light.

After detonation, the area may be re-entered immediately to allow policing of waste material and debris. Area access is restricted for 30 minutes in the case of a misfire or a low-order explosion.

Determine the Order of the Blast
The order of the blast is categorized into high or low order based upon the speed of the shock wave. Currently, all onsite blasts are classified as high order.

Meteorological Conditions
Due to the inherent nature of the OB and OD units, MLAAP has set meteorological guidelines for its operations, which are stated in MLAAP's Standard Operating Procedures (SOPs) and referenced in its Title V Air Operating Permit. The OB and OD units will not be operated under any of the following meteorological conditions[1]:

Wind speed in excess of 15 miles per hour (mph).

When ambient conditions do not promote good dispersion.

Times other than between 6:00 a.m. and 7:30 p.m.

Any day declared to be an Air Pollution Emergency Episode by the Tennessee Department of Environmental Conservation (TDEC) Division of Air Pollution Control.

The meteorological conditions (ambient air monitoring, wind direction, speed, cloud cover, and precipitation requirements) under which thermal treatment conducted in the OB and OD units is permitted at MLAAP are outlined below.

Open Burning and Open Detonation Weather Requirements
Open burning and open detonation weather requirements are as follows.

1. When an electrical storm is approaching, all personnel (except personnel required to remain in the firing barricade) are evacuated to the OD Unit entrance gate. Firing

[1] The only exception would be an emergency requiring immediate open burning of material, which requires next-day notification to state regulators.

circuits are automatically short-circuited and grounded at the firing panel end at all times except during testing and firing.

2. If an unfavorable change in meteorological conditions (electrical storms approaching, etc.), occurs during the day and a charge has already been prepared, the Demil Supervisor postpones the detonation.

3. If meteorological conditions permit, the firing circuits are short-circuited, grounded, and disconnected from the charge.

4. If meteorological conditions are such that entering the demolition field would be hazardous, the firing circuits are automatically short-circuited and grounded, and personnel evacuated to the entrance gate of the OD Unit.

5. If charges are to be left in the field overnight, the Safety Department and Guard Department are notified.

6. Open burning and open detonation will not be conducted during any of the following adverse meteorological conditions:

   (a) Precipitation or forecasted high probability of precipitation for the duration of operations

   (b) When surface wind speed is less than 1 mph or more than 15 mph or from a direction that will carry the smoke or other byproducts over any publicly accessible area within 1 mile of the site

   (c) Electrical storms or thunderstorms

   (d) Dense fog, blowing snow/sand, dust storms, or other situations that restrict visibility to 1,000 feet

   (e) Extremely cloudy days, defined as overcast (more than 80% cloud over) with a ceiling less than 2,000 feet

   (f) Dusk (30 minutes before sunset) to dawn (30 minutes after sunrise). TDEC Air Pollution Control OB Permit states detonation activities are permitted between 6:00 a.m. and 7:30 p.m.

   (g) During an inversion (air temperature increase with increasing altitude), the Title V Air Operating Permit states that the Division (State) will notify MLAAP that bad dispersion conditions exist

7. Provided weather conditions are suitable, the Demil Supervisor directs the preparation of ammunition/explosives for demolition. After shots have been prepared, the Demil Supervisor again obtains the above weather data and phones the necessary information to the Safety Office (extension 6973). If, at that time, weather conditions exceed limits set above, shooting will not begin unless authorized by the Safety and Health Manager or a designated representative.

8. Meteorological data statistics, OB Form AMC 2886-R-E-December 94 and OD Form AMC 2887-R-E-December 94, are maintained daily and include all required information obtained from the previously mentioned procedures. Any required information that is not obtainable from the MLAAP facilities will be obtained from the nearest U.S. Weather Station. The statistics are maintained in the OB/OD unit Buildings W-61A and W-2.

Wind Rose Direction
Figure 8.2-3 shows a wind rose of the frequency distribution of wind speed and wind direction for the area.

Manner of Placing the Waste in the Unit

OB Unit
After each burn pan has been loaded to the correct weight, an electric squib (explosive-initiating device) is placed in each pan. The squib is connected to a series of wires by a trained operator. After the waste to be treated is properly loaded and each burn pan has been supplied with an initiating device wired to the installed wire cable leads, the area is policed to eliminate other potential sources of combustible material. The firing circuit is checked for continuity and stray currents using a Blastmeter. Before treatment occurs, local weather conditions are checked using an onsite weather station at the OB Unit Building W-2. If all conditions are within set parameters, the squibs are set off from a remote distance using a firing machine to generate an electrical current to the squib, thereby igniting the waste.

OD Unit
After the pallet of waste is placed in the pit, detonators are affixed to the shot in each pit and 4 to 15 feet of soil from the excavation is placed over the shot as cover. All shots are "hard wired" to an underground shooting barricade.

Minimum Protective Distances
Table 8.1-1 lists minimum safety distances for open burning waste organic explosives.

Table 8.1-1

Minimum Safety Distances For OB/OD Unit Operations

Quantity of Waste Explosives or Propellants	Minimum Distance From Unit
0 to 100 pounds	204 meters (670 feet)
101 to 1,000 pounds	380 meters (1,250 feet)
1,001 to 10,000 pounds	530 meters (1,730 feet)
10,001 to 30,000 pounds	690 meters (2,260 feet)

Note:
All operator personnel are evacuated to a minimum distance of 1,250 feet

OPEN BURNING IN CONTAINMENT DEVICES

Appropriateness of Treatment Method
As part of routine operations, the Department of Defense (DOD) produces, stores, and uses large quantities of military munitions commonly referred to as PEP. Each year, large quantities

of munitions and munitions-related materials must be treated as waste including manufacturing wastes and residues; items in storage or manufacture that have failed quality assurance tests; outdated and obsolete explosives, propellants, and munitions items; and any unsafe munitions items, components, or explosives. Other related wastes include materials, which may have become contaminated by contact with PEP during production, storage, and handling.

At present, miscellaneous thermal treatment is one of several technologies used to demilitarize ammunition. Outside of miscellaneous thermal treatment, other technologies are used to treat a portion of the demilitarized ammunition. Those technologies, at present, are not fully developed or are not capable of treating the quantities and/or the reactive wastes involved in the demilitarization process. Currently, the thermal treatment of munitions and munitions components is the only proven safe, effective method of treating large quantities of those materials. Other methods of treatment have also proven to have a greater environmental impact, as is especially the case when using chemical destruction of these wastes.

Chemical decomposition is only practicable for small quantities of PEP. That methodology is expensive, poses a health risk to personnel working with the process, and has a much higher potential for generation of waste and spread of pollutants than methods currently used to demilitarize ammunition. According to the Engineering Design Handbook, Properties of Explosives of Military Interest, "Destruction by Chemical Decomposition, RDX-based Composition A-3 (RDX/was 91/9) is decomposed by adding slowly to 25 times its weight of boiling 5 % sodium hydroxide (NaOH). Boiling of the solution is continued for 30 minutes." As can be seen in a week's activity at MLAAP's OD Unit, approximately 1,000,000 pounds of 5% NaOH solution per week would have to be treated along with the decomposition products from the Composition A-3. Heating the 5% NaOH solution to boiling and maintaining, the temperature would require over 250,000,000 British thermal units per week from fossil fuel input. The total RDX treated would be less than 40,000 pounds.

Using fixed incinerators for treatment of explosives, especially shaped charges, is being studied but have been found to be unsafe to the operators and the surroundings. Their use also leads to frequent incinerator replacement. Burning propellants has also proven difficult in an incinerator system due to flashback to the operator at the feed portion of the unit.

The DOD will continue to evaluate any identified improvements to the above-referenced technologies along with other technologies for treating PEP waste materials as they become available.

Containment Device Description

Physical Characteristics, Construction Materials, and Dimensions of the Units

All open burning is conducted in portable burn pans, which can be moved from one location to another within the confines of the OB Unit, but always on steel-reinforced concrete pads. The portability of the burn pans allows for flexibility for replacement, relocation, cleaning, repair, and site investigation work.

MLAAP has a total of 12 elevated burning pans that are constructed of mild steel and lined with fire-resistant refractory material. Only 11 of the 12 are used at a time; one is a spare. The pans are constructed in two sizes, depending on specific needs, but are at least 6 inches deep. Nine of these pans are on three concrete pads (three pans each on three pads) and measure approximately 100 inches long by 52 inches wide by 12 inches high. The remaining two burn pans are on one concrete pad and measure 149 inches long by 60 inches wide by 12 inches

high. The spare burn pan measures 149 inches long by 60 inches wide by 12 inches high and is only used if another pan requires maintenance or becomes un-operational. The larger pans can be used to treat a smaller lot of munitions (propellants), e.g., three 140-pound drums of propellant can be placed in one large pan instead of two small pans. The larger pans are often used to treat metal parts containing tracers, because more metal parts can be placed in the larger pans.

The pans are raised a minimum of 12 inches off the concrete pad on steel supports frames. The frames are open to reduce weight and allow inspection of the pans from all directions. The burn pans and support stands are constructed of welded cold-rolled steel. All burn pans are grounded for safety using a copper cable secured to a copper grounding rod, and operators wear personal protective equipment as outlined in SOP MA-000-H-008 (maintained in the operating record).

Engineering Drawings
See Attachment 8.2 for engineering drawings showing design specifications and dimensions of the OB Units.

Lining Material within Devices
All surfaces of the burn pans that come in contact with waste military munitions are lined with a silica-based refractory material of the same type used to line the interior surfaces of high-efficiency coal-fired boilers. The refractory materials are placed on the burn contact surface of the burn pans approximately 4 inches deep. This material has been found to withstand the thermal shock of burning propellants and explosives without cracking, pitting, or losing adhesion to the metal surfaces. The refractory material is applied to the pans by MLAAP's trained maintenance personnel.

Lining Material Below the Devices
The burn pans are positioned on concrete pads; therefore, no lining material below the device is required. The concrete has 6-inch-by-6-inch woven steel wire reinforcement. As burning is not conducted directly on the concrete pad but in raised burn pans, no surface coating is required for the concrete surface to provide an impervious barrier to migration of any ejected media. Some pad surface pitting occurs due to exposure to freeze and thaw cycles during winter. Spilled waste PEP and munitions are swept and/or picked up before treatment is conducted. The concrete pads are inspected between open burning and cleaned as necessary to pick up any ash or debris. Pads are cleaned after the last burn of the day.

The four concrete pads, designated No. 1, No. 2, No. 3, and No. 4, have the following dimensions: Pad No. 1 (90 by 45 feet), Pad No. 2 (70 by 45 feet), Pad No. 3 (58 by 51 feet), and Pad No. 4 (70 by 45 feet). The concrete pads have a raised 6-inch-by-6-inch curb on three sides to prevent run-on and run-off. The raised portion of the concrete pad is towards the upgradient portion of the site. The non-curbed side of each concrete pad is designed to allow materials to be moved onto the pad.

Leak Detection Provisions
As outlined in SOP MA-000-H-008, before loading a pan for a burn, the trained operator inspects the integrity of the pan to ensure no munitions or donor charge will escape the pan during open burning. No liquid wastes are treated in the burn pans and treatment is not conducted during periods of precipitation.

Precipitation Cover
Each burn pan is equipped with a non-sparking 14-gauge aluminum cover designed to fit snugly over the pans when not in use and are equipped so that they may be chained to the pans on all four corners. (see Attachment 8.2).

Control of Releases of Ashes and Residue during Open Burning
Waste PEP, munitions, and/or explosive components are taken from waste containers and placed in the burn pan by the operator. All transfers are conducted at the burn pan location on the concrete pads.

Waste residues generated from open burning consist primarily of ash and residues, and the containers used to contain and transport waste reactives to the unit. Additional wastes generated from the treatment of some munitions consist of metal parts that contain reactive waste.

Ash residues are removed from the burn pans and concrete pad and are placed in containers in the immediate area. These containers are labeled as to their contents. As a container becomes full, a sample is collected and tested for the Toxicity Characteristic Leaching Procedure (TCLP) Toxicity metals, explosives, and other compounds known to be present in the reactive waste before treatment. Each container is tightly sealed and placed in a 90-day storage area (Building W-59) meeting the requirements outlined in 40 CFR 262 until results are returned from the laboratory. If the waste ash residue is found to contain metals or other TCLP Toxicity listed-material above toxicity characteristics, the waste is labeled hazardous waste, placed in a one-year permitted storage area, and then shipped offsite to a permitted facility for treatment and/or disposal. The generated waste must also meet the applicable treatment standard for open burning; if not, the waste will be retreated then handled as outlined above and/or containerized and shipped offsite for treatment and/or disposal.

Containers used to contain and transport reactive wastes to the OB Unit are removed before the treatment process, or as in the case of shell bodies, are treated along with the waste munitions. Containers that are considered RCRA empty are either flashed at a non-RCRA Subtitle C unit onsite or shipped directly to salvage sales. Flashing of those containers using high heat may be necessary to remove any explosive (munitions) residue compounds. Any salvageable materials from the flashing process are sold through salvage sales, while all ash generated is tested to determine whether it is a hazardous waste for disposal purposes.

All metal parts generated from the burn pans are flashed at the same location as the containers and then salvaged. Metal parts remaining from the treatment of tracers are sent to the Salvage Sales Yard or to storage, as in the case of depleted uranium projectiles.

Methods to Control Deterioration of Fabricated Devices
This section addresses the concern that ash, residue, or wastes may be released from the containment device in the event the device develops leaks, breaks, or cracks. The environmental contamination that could potentially result from such a loss of integrity of the containment device is minimized by the following three measures.

First, each containment device is situated above ground over concrete pads, which allows for visual inspection of leaks and/or structural problems including broken seams or joints. Second, the structural integrity of the steel burn pans has been shown to be reliable in previous U.S. Army tests at the Toole Army Depot (U.S. Army 1986) and at MLAAP for well over a decade.

Finally, all burn pans are thoroughly inspected before each use for structural damage, cleanliness, and structural support. If not in use, the burn pan is checked to ensure covers are in place and the pans are protected from blown rainwater by being placed inside a nearby building and/or tilted bottom side up.

Prevention of Accumulation of Precipitation
Precipitation accumulation within the burn pans provide a potential for release of ash or waste that otherwise would have remained within the device, and could also prevent complete thermal treatment of the waste. Precipitation accumulation during nonoperational periods is prevented by placing an aluminum cover on the burn pans, or by placing the burn pan in a protective enclosure. Each cover is equipped with handles to allow operations personnel to easily move the cover on and off. Covers for the burn pans are tight fitting and remain on during nonoperational periods. Because the burn pans and catch pans are cleaned following a day's treatment activities, the covers are put in place to eliminate any accumulation of precipitation. Precipitation covers are placed on the burn pans at the end of the treatment process and remain off during open burning and any cleanup, except during periods of threatened precipitation. Covers may remain off for as long as a shift. Covers are always replaced after the final open burning for the shift.

Handling of Precipitation Accumulated in Fabricated Devices
Each burn pan is equipped with an aluminum cover that prevents precipitation from accumulating in the pan. Open burning is not conducted during precipitation events; therefore, no precipitation is allowed to accumulate inside the pans. In the unlikely event that precipitation is accumulated due to human error or equipment failure, any liquids shall be characterized to determine the types and quantities of PEP present and acceptable treatment/disposal options. A sample of the liquid from each burn pan will be collected in a clean glass sample jar, labeled, and submitted to MLAAP's Environmental Laboratory for analysis. The analysis will be performed for nitrobodies and EP Toxicity metals. If the water is not hazardous, the water will be treated and subsequently discharged to the MLAAP National Pollutant Discharge Elimination System (NPDES)-permitted industrial waste treatment facility. If the water is hazardous, it will be shipped offsite for treatment and disposal.

Controls to Prevent Wind Dispersion of Ash and Other Residues Burn pans are wet down between burns, using a portable hand-held sprayer to reduce windblown loss and as a safety precaution. Burns are not conducted during inclement weather conditions, such as high winds, which reduces the potential for spread of ash and residues (see Meteorological Conditions Section) for description of inclement weather conditions). The burn pans are in a depression with slight rises to the south and west, which also reduces the impact of prevailing winds.

Inspection, Monitoring, and Maintenance Plan
All equipment at the OB Unit is inspected before, during, and after each use. Open burning operations are monitored and maintenance is conducted as required by MLAAP SOPs. The following summarizes the inspection, monitoring, and maintenance plan; the complete version of which is in the SOPs. Additional inspection requirements are in the SOPs.

The OB Unit is inspected before each use for structural integrity and cracks or damage to the refractory liner of the burn pans, damaged support structure, cleanliness, signs of remaining waste military munitions PEP, or residues and their suitability for continued operations. These inspections also include the concrete pad on which the pans are located. These inspections are logged on an inspection form maintained at Building W-2. During operations (loading, preparation of burn, actual burn, and cool down), the pans are also observed.

Inspections and observations that reveal any maintenance requirements (outside minor adjustments) are reported immediately to the Demil Supervisor. Repairs and maintenance that cannot be carried out by OB Unit personnel are placed on a work order given to the appropriate department for action. If an emergency repair is required, the arrangements may be made by telephone then documented by a written work order.

Ash and Residue Management

The pans and concrete pads are thoroughly cleaned by sweeping and containerizing all ash and residues daily after the burn is completed. Improper management of the ash residue generated at the treatment units could result in environmental contamination through air, soil, and surface water pathways.

Ash, metal debris, and residue is potentially generated at each location in and around the burn pans, within the burn pans as a result of the open burning process, and potentially surrounding the concrete pads due to the ejection of munition waste or ash and debris. Following open burning, any metal parts will be collected, flashed, and then sent to the Salvage Yard for salvage sales. The ash and residue generated will be collected in steel drums and temporarily retained before characterization via chemical analysis and subsequent removal to an approved hazardous or nonhazardous waste management facility, depending on the resulting characterization. The ash will be sampled periodically for the characteristic of reactivity, and each time for EP Toxicity.

The Bureau of Mines deflagration-to-detonation transition and Gap ignition tests will be used to determine if a waste sample is reactive. The ash, debris, and residue will be stored onsite only until transportation to a permitted hazardous waste landfill or disposal facility can be secured. Any ash, debris, and residue found to exhibit a hazardous waste characteristic will be stored, inspected, treated, and/or disposed of (managed) as RCRA hazardous waste. Analytical results will be kept for a minimum of three years following disposal at a RCRA-approved hazardous waste facility. Ash and debris/residue will be collected in DOT-approved containers (typically 55-gallon steel drums).

Soil samples are also taken from various locations including one from each concrete pad location. The soil is sampled from depths of 0 to 6 inches and analyzed for metals, explosives, and total petroleum hydrocarbons.

OPEN DETONATION

Appropriateness of Treatment Technology

At present, miscellaneous thermal treatment is one of several technologies used to demilitarize ammunition. Other technologies used to treat a portion of the demilitarized ammunition are not fully developed and/or are not capable of treating the quantities or types of reactive wastes involved in the demilitarization process at MLAAP. Currently, the thermal treatment of PEP, munitions, and munition components is the only proven safe, effective method of treating large quantities of these materials. Other methods of treatment have also proven to have a greater environmental impact, as is especially the case when using chemical destruction of these wastes.

As other technologies become available for treatment of these waste materials, along with improvement to the above-mentioned processes, they will be evaluated and as appropriate implemented for use by the DOD.

Description of OD Unit

Physical Characteristics, Construction Materials, and Dimensions of the Units

Open detonation is conducted in both aboveground and subsurface pits. The materials treated are bulk military high explosives, completed large caliber military ammunition, dropped and/or potentially dangerous rounds (military munitions), and other explosive military munitions. The OD Unit is an approximately 40-acre area containing up to 20 earthen pits in two adjacent shooting fields for subsurface treatment. Each pit is approximately 20 to 25 feet in diameter and 10 to 15 feet deep (shaped like an inverted cone), and are located approximately 90 feet apart.

The excavations are entirely natural earth (native soils), consisting of enough silt and clay to act as binders that provide a stable configuration. The soil also contains enough sandy material to ensure effective cover and reduce blast noise during treatment.

Depth to bedrock averages greater than 600 feet, and depth to groundwater is 80 to 100 feet bgl, based on static groundwater elevations in monitoring wells at the WMA.

The waste to be treated is typically shell bodies of munitions constructed of steel. The munitions may also contain metals such as aluminum, brass, and copper, and other materials including paper, plastic, and rubber.

The quantity of explosive waste treated at the OD Unit depends upon the type and configuration of the military munitions. Typical subsurface detonation is limited to a prepackaged total explosive weight of 350 to 500 pounds or less (as NEW) per pit. Typically, there are 10 to 20 subsurface "shots" conducted per 10-hour shift. A maximum 10,000 pounds (as NEW) of waste military munitions may be treated below ground daily. Depending on weather conditions, process may be conducted year-round.

Waste military munitions, due to the variety of shapes and sizes, must often be configured to allow for thermal treatment. Trained and experience demilitarization workers at the OD Unit configure and palletize waste munitions at the Explosive Waste Transfer Facility. As the waste is palletized, a donor charge (typically 50 to 325 pounds of high explosives to ensure total treatment) is added to the waste munitions. Each pallet of waste munitions is transported via forklift to a prepared treatment site. After placement into the location, a Demil operator inserts a detonation cord into the donor charge with a sufficient length, extending outside the pit. Earth-moving equipment is then used to cover the waste munitions with approximately 4 to 15 feet of soil. The overland cable is checked using a multimeter. If the firing circuit is acceptable, the blasting cap is taped to the detonation cord. After all shots are wired to the shooting barricade, W-53, the treatment area is cleared of personnel, except those in the shooting barricade.

The waste is then treated by firing the munitions on an average 15-second interval until all shots are fired. The operator determines initial treatment based on the noise and impact of the explosion. After treatment, personnel return to the area to remove exposed scrap metal.

Upon detonation, the backfilled soil is blasted from the excavation and falls back to earth in the clear zone surrounding the detonation site. That soil is recovered and reused to cover the next shot and reform the pit using earth-moving equipment. During the treatment process, soils may be moved as far as 300 meters from the excavation and must be recovered for reuse.

If a new pit is required due to soil problems or location, it is excavated by a track excavator. Any new pit is added at or near the existing pits. The soil excavated from the pit is used as cover for the shot. Often, during the very wet winter months, the shooting pits will be backfilled with site soil to keep surface water from ponding, and then re-excavated in the same location in the spring.

Aboveground thermal treatment is conducted at the OD Unit to treat machine-damaged and/or potentially armed munitions that are too dangerous to manage via normal subsurface treatment. As those items leave the production line, they are placed in a box on sand and stored in a steel barricade until transported to the OD Unit via a special barricaded truck. At the OD Unit, dropped or dangerous rounds are stored in a special steel barricade (ZX-9). The damaged munitions are then picked up by OD Unit personnel for treatment at the OD Unit. OD Unit personnel move the munitions to a clear area at one of the shooting fields near the pits. A donor charge of high explosives, a detonation cord (if needed), and an electric blasting cap are added to the damaged munitions, then the munitions are wired to the existing terminal boxes via overland lines. From that point, the treatment follows the same procedure as a subsurface shot.

NEW for aboveground open detonation is limited to 15 pounds for both the munition item and the donor charge. No special soil is laid out or other changes made. After treatment, Demil personnel monitor the site to ensure treatment was complete and the area is safe for operation. The reason this activity is conducted aboveground is safety. Damaged or potentially armed munitions cannot be added to the subsurface shot, as they may detonate before the shot is placed in the pit, setting off a large explosion with personnel and equipment in the area. If placed in the pit, the damaged round may not function and be blown out of the pit to an unknown location, where it may function later, resulting in injury/damage to personnel and/or equipment. The aboveground process on 15 pounds NEW is conducted no more than 6 times a day, unless approved by the commanding officer

The amount of waste military munitions and the configuration for aboveground treatment is limited to a maximum total explosive weight of 15 pounds (except during an emergency that may threaten human health and/or the environment).

Ancillary equipment associated with the OD Unit consists of an earthen-covered, steel-reinforced concrete structure (Shooting Barricade W-53) used as a firing control/observation post, and material storage area. Various earth-moving equipment, typically two to three bulldozers and a pan scraper, are also used at the site.

Inspection, Monitoring, and Maintenance Plan

All equipment at the OD Unit is inspected before, during, and after each use and process operations are monitored during use. Maintenance is conducted as required by MLAAP SOPs, which includes a complete inspection, monitoring, and maintenance plan. References to monitoring during operations are either visual or noise (sound) monitoring of the process. The results of the monitoring processes are not recorded unless there is a noted failure or problem.

The OD Unit is inspected before each use for structural configuration, cleanliness (presence of metal), signs of remaining munition residues, testing of firing circuits, and the suitability for continued operations. These inspections also include the associated structures and communication equipment, which is essential for safe operation. These inspections are logged on an inspection form maintained at the OD Unit. During operation (configuration of shot,

placing of shot in firing position, preparation of firing, actual firing, and policing and removal of scrap metal) the process is monitored.

Monitoring is conducted by a Field Observer from the shooting barricade (W-53), or on the hill between the East and West shooting fields. The Demil Supervisor acts as the safety officer, directing site visitors and traffic on the site. The field observer reports any abnormalities and/or problems to the Demil Supervisor. Inspections and monitoring that reveal any maintenance requirements (outside minor adjustments) are reported immediately to the Demil Supervisor. Repairs and maintenance that cannot be carried out by demil personnel are placed on a work order to the appropriate MLAAP department for action. If an emergency repair is required, the arrangements may be made by telephone followed by a written work order.

Ash and Residue Management
Thermal treatment conducted at the OD Unit generates little ash, debris, and residue due to the high pressures and heat produced. The ash, debris, and residue that are produced are completely mixed with site soil during treatment so the only distinguishable material produced is metal fragments. The metal fragments are periodically policed, sent to the OB Unit for flashing, and then sent to salvage sales. Open detonation procedures require that the visible fragments be collected following a detonation event in order to reduce the amount of residue remaining in the soil.

The nature of open detonation results in some potential for soil contamination. The materials detonated are highly reactive, and explosion results in very nearly complete treatment (combustion). The residues remaining tend to be present in soil in very low concentrations minimizing any impacts.

Run-On and Run-Off Management
Storm water run-on/run-off controls are limited for the OD Unit due to the nature of the operations in that area. Earth ejected by the blast during detonation is spread thinly over a large area; most of the soil is recovered and used to reform the next pit. To prevent run-on from entering the shooting pits, the mouth of the pit is higher than the surrounding soil. Additionally, the recovered soil is mounded around the pit to a height of over 50 inches, which also prevents storm water from running into the pits. The shooting pits are placed close to the top of a gentle slope to reduce the amount of run-on/run-off generated near the pits. There are three silt basins at the OD Unit to capture all run-off and allow the silt to settle before releasing the storm water.

Copy of SOPs
MLAAP SOPs for open burning and open detonation shall be maintained in the operating record. The SOPs are reviewed and updated periodically to allow MLAAP to be current with changing environmental regulations and technology.

ATTACHMENT 8.2 LIST OF MAPS AND DRAWINGS

Figure Number	Title
8.2-1	Open detonation noise zone
8.2-2	Map of air blast receptors
8.2-3	Wind rose
8.2-4	8´ Waste explosive burning pan “Support Stand”
8.2-5	8´ Waste explosive burning pan
8.2-6	8´ Waste explosive burning pan “Aluminum Cover”
8.2-7	12´ Waste explosive burning pan “Support Stand”
8.2-8	12´ Waste explosive burning pan
8.2-9	12´ Waste explosive burning pan “Aluminum Cover”

ATTACHMENT 9

SAMPLING AND ANALYSIS PLAN

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SAMPLING AND ANALYSIS PLAN

1.0 PURPOSE

The purpose of this plan is to provide a written Sampling and Analysis Plan for an alternative monitoring program for groundwater monitoring at MLAAP Area W in accordance with the groundwater monitoring as required under Tennessee Rule 0400-12-01-.06(6)6 [Federal Regulation 40 CFR 264.90(f)]. Area W includes the Burning Ground (BG) and Ammunition Destruction Area (ADA) that contain the permitted miscellaneous thermal treatment units.

The Sampling and Analysis Plan includes written requirements for soil monitoring around the miscellaneous thermal treatment units. The procedures herein are required to ensure that all data obtained from sampling are of acceptable quality. This plan serves as a reference document for MLAAP employees, contractors and subcontractors, regulatory agencies, and laboratories involved with groundwater monitoring and soil monitoring at MLAAP. For purposes of the Sampling and Analysis Plan for Area W will also be referred to as the MLAAP RCRA Waste Management Area.

Quality assurance (QA) is the activity required to assure desired and verifiable levels of quality in all aspects of a sampling and testing program. Quality control (QC) is the functional mechanism to achieve quality data. The QA program will ensure that the QC program will result in high quality data. This document will describe the QA/QC procedures for each aspect of the confirmation sampling activities, which will meet the data quality objectives of this project. Procedures in this Plan were referenced from Chemical Quality Data Management for Hazardous Waste Remedial Activities, ER-1110-1-263 (Ref. 3), a U.S. Army Corps of Engineers (USACE) regulation, with additional guidance from Development of an RFI Work Plan for RCRA Facility Investigations, SW-87-001 (Ref. 8), "Minimum Chemistry Data Reporting Requirements," (Ref. 2), and RCRA Groundwater Monitoring Technical Enforcement Manual (Ref. 5).

2.0 SITE DESCRIPTION AND BACKGROUND

MLAAP is located in Western Tennessee, east of the City of Milan on State Route 104. MLAAP covers over 22,000 acres and contains numerous production, maintenance, and storage areas.

The geography of MLAAP and the surrounding area is that of gently rolling hills with wet-weather streams draining numerous small watersheds. No mountains, lakes, or ridges are a significant part of the regional geography. The land is covered with scattered wood lots, crops, and pastureland. Elevation of the installation above mean sea level ranges from about 590 feet in the southern portion to 320 feet at the northern boundary; predominant slope and drainage are to the north and west.

Three major watersheds drain MLAAP. They are the Middle Fork of the Forked Deer River, which drains a small portion of the igloo storage area; Wolf Creek which drains about 11,000 acres in the southern, central, and northwestern portions; and the Rutherford Fork of the Obion River which drains approximately 6,460 acres in the east and northeastern portion of the plant. Ultimately, all drainage empties into the Obion River which empties into the Mississippi River. Johns Creek is the only continuous flowing stream at MLAAP.

The surface soils at MLAAP consist chiefly of a reddish-brown to yellow mottled silty clay that grades into a clay unit with depth. The soil types include the Memphis, Loring, Grenada, Calloway, Henry, Falaya and Waverly soil associations. Based on topography, the Memphis and

Loring series occur on higher elevations and are well-drained soils. The Henry soil series is somewhat poorly drained and is usually associated with flat terrain while the Falaya and Waverly occur in the low areas and are poorly drained.

Drill logs from borings installed at the site indicate that the upper 12 to 15 feet of soil consists of reddish-brown to tan silty lean clay with some layers of sandy and fat clay. Below these depths, sands with varying amounts of silts and clays have been encountered. Occasional gravel, up to 3/8-inch in diameter, has been encountered during boring operations. A more sandy alluvium of lesser thickness (5-10 feet) was observed in several areas across the site. Natural and artificial drainage systems have incised into the alluvium in several locations.

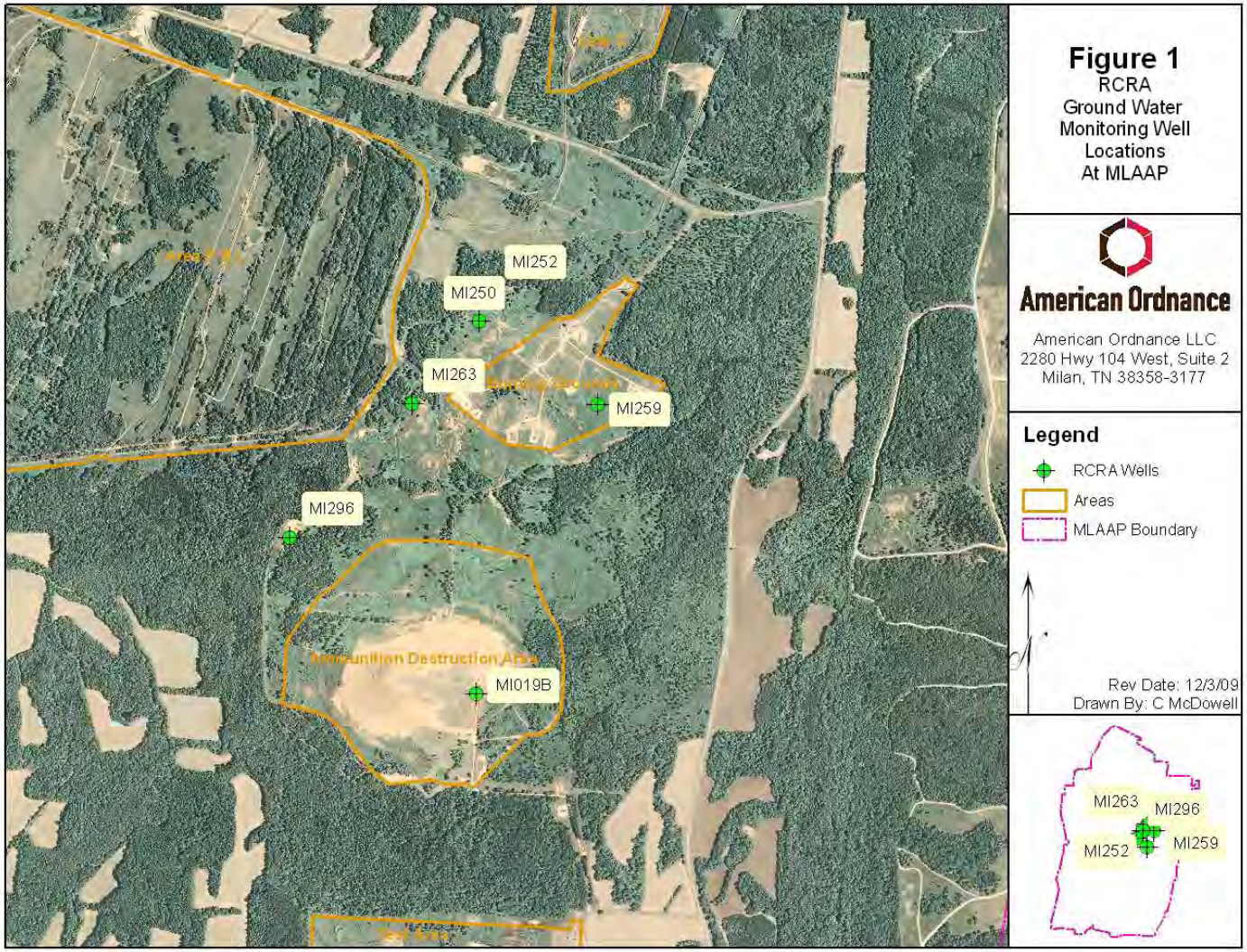
3.0 SAMPLING & ANALYSIS REQUIREMENTS

Sampling will be performed at the BG and ADA in order to meet the requirements of 40 CFR 265.90. Table 3-1 illustrates the monitoring plan at Area W, or MLAAP RCRA Waste Management Area.

Field measurements will be taken onsite during sampling events and recorded in a bound notebook. These field measurements will include the following:

- Time and date of arrival onsite and sampling
- Recording of weather conditions, including temperature
- Total depth of well to the nearest 0.01 ft
- Depth to ground water to the nearest 0.01 ft
- Amount of purge water in gallons
- pH, specific conductance and temperature of ground water collected
- Sampling equipment used, site personnel present and calibration procedures

2.1 MLAAP Burning Ground and Ammunition Destruction Area



3.1 Monitoring Well Sampling

Groundwater monitoring wells will be purged with a dedicated, disposable Teflon bailer or portable purging system. The portable system typically consists of a submersible or purge pump and a discharge pipe. The purge pump will be operated by a portable generator. After purging is completed, the equipment will be removed from the well and cleaned thoroughly. The wells will then be sampled with clean/new disposable Teflon bailers.

Cleaning is to include decontamination in three (3) separate consecutive cleaning tubs as follows:

(1) The equipment will be washed with a phosphate-free detergent and nylon brush in distilled water in the first tub;

(2) The equipment will be washed with distilled water and a nylon brush in the second tub, and

(3) Step two will be repeated.

For the purging pump and associated tubing, water from the cleaning tubs will be pumped through these pieces of equipment and into waste containers prior to cleaning with subsequent tubs. The bailers will be rinsed and will be treated as solid waste. The cleaning/purge water will be sent to the Industrial Wastewater Treatment Plant (IWTP) for processing then discharged to the MLAAP Sewage Treatment Plant. Clean plastic sheeting is to be placed beneath all field sampling equipment in order to alleviate any contamination from the soil. The used sheeting will be disposed of as PPE and stored onsite in accordance with MLAAP SOP Book 12 "Management of Solid and Hazardous Waste".

3.1.1 Monitoring Well Inspection

During any sampling event, upon arrival at the wellhead, the Ground Water Monitoring Well Inspection Form will be filled out completely. The completed form will be returned to the AO Environmental office. The inspection forms will be reviewed to determine if the wells need some type of maintenance. AO staff will perform routine maintenance of the well. If a well needs significant repairs, the Army Environmental Coordinator will be consulted to determine what action should be taken.

Each groundwater monitoring well will be inspected whenever it is sampled and not less than twice a year. All completed inspection forms will be on file at the MLAAP Contractor Environmental office.

Table 3-1
Burning Ground/Ammunition Destruction Area Testing Plan for Groundwater

Location	Frequency of Testing	Well Identification	Well Gradient	Parameters	Test Method
RCRA Waste Management Area (includes Open Burning Ground, Ammunition Destruction Area, and Electric Primer Firing Unit)	Semi-Annual	1. MI-019 2. MI-259 3. MI-250 4. MI-252 5. MI-263 6. MI-296	1. Up gradient 2. Up gradient 3. Down gradient 4. Down gradient 5. Down gradient 6. Down gradient	1. Groundwater Indicators a. pH b. Specific Conductance c. Temperature 2. Explosives a. 2,4-DNT b. 2,6-DNT c. 1,3,5-TNB d. 2,4,6-TNT e. RDX f. HMX g. Nitroglycerine h. Diphenylamine	1. a. 150.1 b. 120.1 2. 8330B a. 2,4-DNT b. 2,6-DNT c. 1,3,5-TNB d. 2,4,6-TNT e. RDX f. HMX g. HPLC 8330B Modified h. HPLC 8330B Modified

Table 3-2
Burning Ground/Ammunition Destruction Area Testing Plan for Soil

Location	Frequency of Testing	Parameters	Test Method
RCRA Waste Management Area	**Semi-Annual**	**1. Total Petroleum Hydrocarbons** **2. Nitrate** **3. Explosives** **a. 2,4-DNT** **b. 2,6-DNT** **c. 1,3,5-TNB** **d. 2,4,6-TNT** **e. RDX** **f. HMX** **g. Nitroglycerine** **h. Diphenylamine** **4. RCRA Metals**	**1. 8260B** **2. 300.0** **3. 8330B** **a. 2,4-DNT** **b. 2,6-DNT** **c. 1,3,5-TNB** **d. 2,4,6-TNT** **e. RDX** **f. HMX** **g. HPLC 8330B Modified** **h. HPLC 8330B Modified** **6010B/7471A**

3.1.2 Measurement of Static Water Level Elevations in Monitoring Wells & Piezometers

All groundwater monitoring wells at MLAAP have steel protective covers, which are secured with padlocks.

Before well evacuation and sampling is performed, the depth of the well and the static water level of the well are measured. Measurements are made from the notch in the top of the well casing and recorded in the field journal and on other appropriate forms. This measurement, with the date and time, is recorded to 0.01 feet on the field data log sheet.

The electronic Model 6000 or similar portable static water level meter is used to measure water levels. If the electronic device is not operational, a second standby electronic measuring device is used. Both devices are identical and are capable of measurement with a reliability of 0.01 feet. The probe will be rinsed in Type II reagent grade water immediately before being lowered into the well and immediately after removing it from the well. If the well/piezometer is heavily contaminated, additional cleaning of the probe may be required.

Water level measurements are then used to calculate the volume of groundwater in the well. The measuring device is decontaminated between uses in separate wells to prevent cross-contamination of wells.

3.1.3 Monitoring Well Evacuation Procedures

Prior to sampling, stagnant water within the well (three casing volumes) will be removed so that fresh formation water can enter. If after removing three volumes of water, the pH, temperature, and conductivity have not stabilized, then additional volumes will be removed. These parameters will be considered to be stabilized within approximately 10% over at least two measurements. As a guide, measurements will be taken at the end of purging each casing volume. In the case where the well runs dry before three well casings can be removed, then the sampling will take place as soon as the well has recharged (i.e. there is no need to remove any more casing volumes). The purged water will be sent to the IWTP for processing. The wells will be sampled as soon as possible after purging, but not before they achieve 85% (percent) recovery.

If full recovery time exceeds two hours, sampling will take place as soon as sufficient volume is available to retrieve samples for each required parameter. If the recharge rate is high for a well, the purge water is removed at a slower rate to prevent agitation of the recharge water. For slowly recharging wells, sampling will take place as soon as sufficient recharge has occurred to fill sampling containers. In all cases, sampling will take place within 24 hours of purging. The sampling crew will record the recharge rate, the date, time, and rate of purging, and any unusual conditions noted with this operation. Non-dedicated purging equipment will be thoroughly cleaned as described in decontamination procedures.

The well casing volume is first determined by using the well depth and water level measurements. A sampling pump or a dedicated sampling bailer (if the well does not have a pump) is then used to remove three volumes of water from the well.

Volumes for the well being purged are determined using the following formula:

Three Casing Volumes =

$$((T\text{-}W)) \times \frac{D^2}{4} \times 7.48) \times 3 = \text{Minimum Purge Amount (gallons)}$$

Where: T = Total depth of well in feet;
W = Depth to static water level in feet;
π = 3.1412;
D = Diameter of the well pipe in feet.

For each well diameter size, a factor may be calculated to simplify the formula.

2 in. well: (T-W) X 0.49 = 3.0 casing volumes
4 in. well: (T-W) X 1.96 = 3.0 casing volumes

If the well does not yield the three volumes, it will be evacuated to dryness once. When the well recovers sufficiently, in situ or field analyses are done on water samples to measure pH, temperature, and specific conductance. As soon as the well has recovered sufficiently samples will then be collected and containerized in the order of parameter volatilization sensitivity. The well will be retested for pH, temperature, and specific conductance after sampling as a measure of purging efficiency. Four replicate measurements for field analyses on each well are taken and recorded on the Field Data Logsheet.

The pH and conductivity meters are calibrated each morning before purging and sampling, and the calibration is checked in the field several times throughout the day. Meters will be checked to more than one standard to ensure accuracy. Calibration data is recorded in the calibration logbook.

3.1.4 Monitoring Well Sampling and Testing

Groundwater monitoring wells will be sampled with a dedicated or disposable Teflon bailer that will be slowly lowered into the well. Each sample container will be filled directly from the bailer. Sampling equipment and containers will be kept from ground contact, and may be laid on plastic sheets on the ground. Upgradient wells will be sampled before downgradient wells. Samples of groundwater for chemical analysis will be taken in the following order:

1. Field parameters (including: pH, conductivity, temperature, water levels, and water volumes)

2. Explosives

The sample from each well is collected with as little agitation as possible. If using a bailer to sample a well, the bailer is not dropped into the well, but lowered gently. Samples are put into clean glass containers, which have Teflon-lined lids or septa.

Table 9B-1 in Appendix 9B lists container, preservation, and handling requirements for each parameter and Table 9B-2 in Appendix 9B lists holding times.

The sequence of operations for groundwater sampling is as follows:

- Purge slow recharging wells (if any) at the outset of the sampling day.

- Purge and sample other wells.
- Sample slow rechargers, if possible.
- Preserve the samples.
- Package and ship the samples to the laboratory or deliver samples to onsite laboratory.

3.2 Soil Sampling

Soil sampling is conducted semi-annually around each of the "operational" thermal treatment units to demonstrate that units have not contaminated surrounding soil. Soil is analyzed for total explosives, RCRA metals, total petroleum hydrocarbons and perchlorate. Soil analysis results are on file at MLAAP and available for review upon request.

Three soil samples will be collected from active units at the BG and ADA. Due to the size of Area W, the ADA will have three soil samples collected from the east field and three soil samples collected from the west field. The samples will be taken from open pits used to treat explosive wastes. At the BG, samples will be taken from each burn pan placed on a slab. Three samples will be collected from each burn pan from the soils immediately surrounding the pad.

Only the open burn pan areas will be sampled for total petroleum hydrocarbons due to the use of fuel oil to desensitize some pyrotechnic waste. Units that have been out of service for the previous six-month period will not be sampled if they have been sampled since the unit was taken out of service.

4.0 TRAINING & STAFFING REQUIREMENTS FOR SAMPLING

All field operations will be conducted by the Environmental Department or qualified subcontractors. All personnel collecting groundwater samples at MLAAP will have completed Hazardous Waste and Emergency Response (HAZWOPER) training in accordance with 29 CFR 1910.120.

Personnel Protective Equipment (PPE) will vary according to which site is to be monitored. Various areas at MLAAP are known to have high concentrations of explosives in the groundwater and high concentrations of metals in the soil.

Most metals are carcinogenic, and most are toxic by ingestion, inhalation, and/or skin absorption. Wearing personal protective clothing and maintaining good work practices will minimize the possibility of exposure to metals. Exposure to metals through skin contact will be controlled through proper PPE. Exposure to metals via inhalation is expected to be minimal as little dust is generated from soil sampling.

Explosives identified in the groundwater at MLAAP include TNT, RDX, HMX (see Table C-1 for a list of explosives compounds). The exposure route for explosives may be by inhalation, absorption, ingestion, or skin or eye contact. Exposure to explosives via inhalation is expected to be minimal as little dust is generated from groundwater sampling. PPE will control the possibility of exposure through skin contact. Protective gloves will be changed between each well.

In order to minimize contact with potentially hazardous materials the following personal protective equipment may be worn:

- Cotton or Tyvek full body coveralls

- Chemical resistant gloves (nitrile)
- Steel Toe leather or rubber safety work boots
- Hard Hat (if overhead hazards are present)
- Safety glasses

All personnel involved in groundwater sampling will have access to a NIOSH approved air purifying respirator (full-face) appropriate cartridges will be made available to the field personnel as necessary by MLAAP Safety. Respirators will be added to the personnel protective equipment as determined by the onsite safety officer.

5.0 DECONTAMINATION OF SAMPLING EQUIPMENT

The sampling equipment will be transported in sealed, clean containers, and care will be taken to avoid contamination.

General Cleaning:

Cleaning is to include decontamination in three (3) separate consecutive cleaning tubs as follows:

1. The equipment will be washed with a phosphate free detergent. Fully immerse hose, measuring tape, and other equipment and brush clean,

2. Distilled water and a nylon brush in the second tub, and,

3. Step two will be repeated,

4. Spray equipment with hexane, and

5. Allow sampling equipment to dry thoroughly.

Sampling equipment will then be rinsed with hexane and allowed to air dry and are sealed back into clean containers. The spent cleaning water will be sent to the IWTP for processing. A cleaning seal will accompany each bailer with the following information: equipment identification number, date and time cleaned, and signature of the person who cleaned the equipment. The inclusion of the cleaning seal and numbering of the equipment allows for the tracking of any cleaning or cross contamination problems between samples. Each member of the sampling crew will don a new pair of gloves at each sampling location. The person collecting samples will wear disposable nitrile or latex gloves and will change them between each sampling interval for each sampling site.

6.0 FIELD QUALITY ASSURANCE/QUALITY CONTROL

6.1 Quality Control Personnel

All program personnel are responsible for monitoring and reviewing all procedures used in every stage of the work to ensure that data generated during the execution of the Sampling and Analysis Plan is accurate, complete, precise and representative of the site conditions. Mr. Charles McDowell is designated as the Quality Control Manager (QCM) and will be responsible for the proper execution of the field QC.

6.2 Chemical Samples

QA/QC samples for groundwater and soil will be used to verify that the sampling and analytical techniques are being performed properly. QC samples will be taken in the field and analyzed with the field samples by the same off-site laboratory. QA samples will be analyzed by a MLAAP approved laboratory to check the performance of the contract laboratory. QC samples required for groundwater and soil sampling include equipment blanks, and replicates. QA samples also include replicates. QA/QC samples are described below.

Equipment/Field Blanks

Equipment blanks for soil and/or water samples will consist of ASTM Type II water that has been poured over or through non-dedicated sampling equipment such as augurs, knives, spoons, or split spoon samplers. Equipment blanks will be shipped in the ice chest with associated samples from the site. Equipment blanks will be prepared and preserved in the same manner as a water sample. Equipment blanks measure the effectiveness of equipment decontamination. One set of equipment blanks will be taken during each sampling event and analyzed for the same constituents as the associated soil or water samples.

Replicate Samples

Replicate samples or splits are extra samples as identical as possible to the original. They may consist of a composite, or as a series of grab samples from the same source. At each sampling event, one random well will be sampled in triplicate. One of each set of these replicates will be sent to a separate laboratory as an audit sample (QA sample) for the contract laboratory and the other two samples will be sent to the analytical lab as a field sample and a QC sample, each with a unique sample number. In cases where only sufficient amount of sample exists for a duplicate set, every fifth sample is a duplicate. This duplicate alternates as a QC and QA sample.

Field Calibration

All field testing equipment is calibrated in the MLAAP onsite laboratory each day before field use. Calibration is checked in the field several times during the day. Readings are recorded in the Calibration Logbook.

7.0 SAMPLE HANDLING AND TESTING

7.1 Sample Numbering System

Sample numbers are assigned by the project manager and are unique to each site. Sample numbers identify the site, sample location, and type of blank or replicate. Sample numbers are assigned as follows:

hhhh-wwww-bb

hhhh is the well, boring number, sampling port/valve, or monitoring location, wwww is only used during soil monitoring to designate the sample location for each site, and bb is a QA/QC modifier, when needed, where

QA = a QA sample (split for SWD Lab)
QC = a QC sample (split for contract lab)
TB = travel blank
EB = equipment blank.

7.2 Preparing Samples

When soil or groundwater samples are taken in the field, they are preserved according to Table B-1. They are then placed in the ice chest and wrapped with bubble wrap or placed in styrofoam inserts with holes to accommodate the jars. The ice chest is filled with ice sealed in large Ziploc bags. The Chain-of-Custody (COC) form and field data form are placed inside in a zip-lock plastic bag placed on top of the ice or taped to the underside of the lid of the ice chest. The ice chest is taped closed with packing tape. A COC seal is placed across the interface of the lid and the body of the ice chest. The samples are then delivered to the shipper. If possible, samples are shipped on the day they are sampled. Samples analyzed on site are not required to be sealed if they are under control of the sampler until they are delivered to the on site lab. However, a COC form is still required.

7.3 Receiving Samples

After the ice chests are received at the laboratory, the samples are logged in, the COC is signed, and a cooler receipt form is filled out. This form documents the condition of the samples as received. The samples are checked for breakage or leakage and the temperature of the ice bath is checked. If the temperature exceeds 4º Centigrade or if any other problems are noted, this information is recorded on the COC and QCM is notified of the problem. Samples are repackaged and shipped to contract laboratories using similar procedures as described in Section 6.2.

7.4 Sample Containers

The type of sample container used for each parameter, the required preservatives, and the maximum holding times are listed in Table 9B-2 in Appendix 9B. Pre-cleaned containers provided by the laboratory are used for sample collection; therefore, sampling containers will not require additional cleaning prior to collecting the sample.

7.5 Sample Preservation

The proper method of sample preservation for each parameter is listed in Table 9B-1 in Appendix 9B. Soil samples require no chemical or temperature preservation. Since groundwater samples are only analyzed for explosives, no chemical preservation is required; however, all groundwater samples must be kept on ice to maintain a temperature of 4° Centigrade until they are received by the laboratory.

All groundwater samples taken in the field are placed on ice and shipped to the off-site laboratory for next day delivery. When samples are to be shipped off-site for analysis, the samples are packed in shipping containers (ice chests) containing ice or blue ice to maintain an

internal temperature not greater than 4° C, during shipment to the laboratory analyzing the samples. The internal temperature of each container is measured and recorded on the COC form prior to sealing the container. The internal temperature will be recorded on the COC form upon opening by the receiving laboratory.

8.0 DATA QUALITY OBJECTIVES

The data quality objectives (DQO's) of this project have been chosen to meet the goals of the RCRA groundwater monitoring program. DQO's are qualitative and quantitative statements that specify the quality of data required to support decisions made during detection monitoring activities. These DQO's will be used throughout the groundwater monitoring process. Data developed will be used to determine compliance with 40 CFR 265.90. These objectives can be achieved with analytical support between Level III and Level IV, as described in Reference 7. Level I will be used for field testing. The minimum internal data reporting requirements (from Ref. 2) which will be required of all analytical laboratories includes the following:

- Sample identification numbers cross-referenced with laboratory ID's and QC sample numbers.
- Problems with arriving samples noted on an appropriate form (not applicable to on-site testing).
- Each analyte reported as an actual value or less than a specified quantitation limit as reported by the laboratory.
- Dilution factors, extraction dates, and analysis dates also reported.
- QC samples to be included as laboratory blanks, surrogate spikes, matrix spikes, laboratory duplicates, field duplicates, and field blanks.

The data developed from the scope of work described in this plan will meet the objectives discussed below with respect to precision, representativeness, accuracy, completeness, and comparability. The majority of this data will be developed in the laboratory from the analysis of field samples and the remainder will be measured in the field.

8.1 Accuracy

Accuracy is the degree to which a measurement agrees with the actual value, i.e., and the amount of measurement bias. Accuracy is expressed as a percent recovery of a known concentration of reference material. The accuracy of an analytical procedure is determined by the addition of a known amount of material (matrix spike) to a field sample matrix or a standard matrix. A standard matrix is made up of distilled water or sterile, clean soil with approximately the same physical properties (porosity, permeability, plasticity, grain size, etc.) as the field sample. The field sample matrix is described as all components of the sample mixture except the analyte (the compound being analyzed). The lab will be required to perform matrix spiking on 5% of field samples, as well as on 5 to 10% of standard matrix samples. Field sample matrix and standard matrix sample spiking show how the sample matrix-analyte chemical interactions affect the analytical results. The matrix behavior of the spiked field sample will be comparable to that of the matrix of the original sample. After analysis for the spike is completed, the accuracy of the procedure is expressed as a percent recovery as shown by the following equation:

$$\text{PERCENT RECOVERY} = \frac{(C_2 - C_1)}{C_0} \text{ X } 100\%$$

where C_0 = amount of analyte added to the sample matrix,
C_1 = amount of analyte present in the unspiked sample matrix (equal to zero for the standard matrix),
and C_2 = amount of spiked material recovered in the analysis.

Typically, the amount of a reference analyte spiked into a field sample matrix is specified by the laboratory quality control program, or 3 to 5 times the background concentration of the analyte in the sample matrix. Samples cannot be spiked for all organic compounds which could possibly exist in the field sample matrix; however, a set of surrogate compounds, each of whose physical and chemical properties is similar to a class of organic compounds, is used as surrogate matrix spikes, or surrogates. Acceptable recovery ranges for each class of organic compounds are discussed in the analytical methods for each parameter.

8.2 Precision

Precision is a measure of the degree of reproducibility of an analytical value and is used as a check on the quality of the sampling and analytical procedures. Precision is determined by analyzing replicate samples. The significance of a precision measurement depends on whether the sample is a field replicate, lab replicate, or a matrix spike replicate. Field replicates are taken at the rate of 10% or one per batch (each daily shipment of samples from a site whichever is greater. Precision of the analytical method, at each stage, is determined by calculation of a relative percent difference (RPD) between duplicate analytical results of a sample component, relative to the average of those results),

$$\text{RPD} = \frac{|C_2 - C_1|}{(C_2 + C_1)/2} \text{ X } 100\%$$

where C_1 = analyte concentration in the sample,
C_2 = analyte concentration in the sample replicate,

and $|\ |$ = an absolute value (It is customary to express RPD as a positive number).

These calculations are usually performed on matrix spikes and matrix spike duplicates.

8.3 Completeness

Field completeness will be assessed by comparing the number of samples collected to the number of samples planned. Analytical completeness will be assessed by comparing the total number of samples with valid analytical results to the number of samples collected. The overall project completeness is, therefore, a comparison between the total number of valid samples to the number of samples planned. The results will be calculated following data validation and reduction. Completeness (c) is determined by:

$$C = \frac{P_1}{} \text{ X } 100\%$$

$$P_0$$

where P_0 = total number of samples planned,
and P_1 = number of valid data points.

A value of 90% or higher is the goal. For values less than 90%, problems in the sampling or analytical procedures will be examined and possible solutions explored.

8.4 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent actual site conditions. The determination of the representativeness of the data will be performed by:

- Comparing actual sampling procedures and COC forms to those described in the sampling and analysis plan;
- Identifying and eliminating non-representative data;
- Evaluating holding times and condition of samples on arrival at the laboratory (not applicable to on site testing), and
- Examining blanks for cross contamination.

Representativeness is a qualitative determination. The representativeness objective of this sampling and analysis plan is to eliminate all non-representative data.

8.5 Comparability

Comparability is a qualitative measure of the confidence with which one data set can be compared to another. These data sets include data generated by different laboratories performed under this sampling and analysis plan, data generated by laboratories in previous investigative phases, data generated by the same laboratory over a period of several years, or data obtained using differing sampling techniques or analytical protocols. The comparability objectives of this sampling and analysis plan are (1) to generate consistent data using standard test methods, and (2) to salvage as much previously generated data as possible. Comparability will be evaluated by comparing the QA samples analyzed by an independent laboratory to their field replicates.

8.6 Sensitivity

Sensitivity is a general term that refers to the calibration sensitivity and the analytical sensitivity of a piece of equipment. The calibration sensitivity is the slope of the calibration curve evaluated in the concentration range of interest. The analytical sensitivity is the ratio of the calibration sensitivity to the standard deviation of the analytical signal at a given analyte concentration. The detection limit, which is based on the sensitivity of the analysis, is the smallest reported concentration in a sample within a specified level of confidence. Quantitation limits represent the sum of all of the uncertainties in the analytical procedure plus a safety factor. The detection limit is a part of the quantitation limit. Quantitation limits are given in Tables 9C-1 and 9C-2 in Appendix 9C.

8.7 Field Measurements

Field measurements will be performed to Level I standards. These will include measurements of pH, conductivity, and temperature on groundwater samples. Precision on field measurements will be assessed by four replicate measurements to determine reproducibility. These consecutive readings should be ± 1° for temperature, ± 0.02 units for pH, and ± 10% for conductivity. In addition, the percent moisture of pretreated soil will be determined as a operational parameter. It will not be necessary to perform replicate analyses for this test.

9.0 LABORATORY QA/QC REQUIREMENTS

The laboratory will be able to perform analyses for the parameters listed above by the applicable test methods described in "Test methods for Evaluation of Solid Waste, Physical/Chemical Methods", SW-846, 3rd Ed., and "Methods for Chemical Analyses of Water and Wastes, EPA-600/4-79/020. A listing of the specific test methods for the above parameters can be found in Table 9B-2 in Appendix 9B.

The laboratory performing analysis for MLAAP will use as a guide and reference the "Handbook for Analytical Quality Control in Water and Wastewater Laboratories", U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory EPA-600/4-79-02, March 1983, Cincinnati, OH 45268.

The laboratory will follow good laboratory practices for laboratory cleanliness as applied to glassware, apparatus, and facilities in general: reagent preparation and solvent and/or gas usage.

9.1 General Laboratory QA/QC Requirements for Inorganic Parameters

General Laboratory QA/QC requirements for inorganic parameters are as follows:

1. Initial Calibration Curve

The initial calibration curve is checked by analyzing EPA Reference Standard Solutions or other suitable reference solutions. If these measurements differ statistically from the accepted value, the standard stock solution is prepared again or adjusted until analysis of the reference solution provides acceptable measurements.

Fresh stock of calibrating solutions for each analyte is prepared at least monthly or before each set of existing calibration standards is depleted. A nalysis of each new set of calibration solutions must agree statistically with the old set before use.

2. Blank Analysis

A calibration blank must be analyzed each time an instrument is calibrated.

3. Duplicate Sample Analysis

Duplicate sample analysis is run at least once for each group of samples, and in most cases for each individual sample. The relative percent difference (RPD) is calculated and reported on a QC report form. If the duplicate results fail to meet the precision requirements, the following steps are taken until the requirements are met; checking of data for calculation or transcription errors, preparation of new standards, recalibration of instrument, and reanalysis of duplicate samples.

4. Spiked Sample Analysis

Spiked samples are used to provide information about the effect of the sample matrix on the analytical methodology. A spiked sample is analyzed at least once for each set of samples. The results of the spiked sample analysis are recorded on the QC report form. If the spiked sample results fail to meet accuracy requirements, the following steps will be taken until the requirements are met; checking of data for calculation or transcription errors, preparation of new standards, recalibration of instruments, and reanalysis of spiked samples.

9.2 General Laboratory QA/QC Requirements for Organic Analytes

General Laboratory QA/QC requirements for organic analytes are as follows:

1. Instrument Calibration

Instrument calibration is performed following guidelines given in Section 7 of EPA Methods SW846.

2. Blank Analysis

A reagent blank analysis is performed at least once for each set of samples. A reagent blank is a volume of distilled water carried through the entire analytical procedure. The volume of the blank is approximately equal to the sample volume. The reagent blank is used to determine if measurements of samples reflect contamination.

3. Matrix Spiked Duplicate Analysis

Matrix spiked duplicate analysis is performed on at least one sample from each batch or five percent of all samples, whichever is larger. To accomplish this, three additional duplicate samples will be collected and designated for matrix spiked duplicate analysis. The matrix spike will consist of a standard mix of specific organic compounds. The recoveries of the compounds in the mix will provide information about the matrix effect of the sample on the analytical methodology. Results of the spiked sample analyses are recorded on the QC report form.

Recoveries for individual components of the matrix spike as well as the relative percent differences for each component are calculated and recorded. If the recovery or relative percent difference of the spiking matrix does not meet the requirements for accuracy and precision, the

following steps are taken until the requirements are met; checking for errors in calculation or transcription, recalibration of instrumentation, re-analysis of matrix spike duplicate, and re-analysis of all samples analyzed with matrix spike.

Analytical methods from these sources are given in Table 9B-2 in Appendix 9B. Method detection limits are given in Tables 9C-1 and 9C-2 in Appendix 9C. Quantitation limits are not provided in this plan because they are dependent on the laboratory analyzes the samples, on the concentration of the components in the matrix to be analyzed and on other factors which may come into play such as interferences in the sample. Quantitation limits will be provided with the analytical data reports provided by the laboratory.

9.3 Laboratory Logbook

The laboratory analyzing samples for MLAAP will maintain a logbook detailing such information as sample preparation techniques, experimental conditions, instrument reading, and sample and QA/QC results.

10.0 SAMPLE INTEGRITY

The quality of analytical data is suspect if the integrity of the sample cannot be ensured. Integrity includes the procedures and written records which, when taken together, verify that the sample is as represented.

10.1 Security

Security involves procedures that ensure sample integrity. Security is required until final disposal of the sample after laboratory analysis is complete. Aspects of sample security are discussed below.

10.1.1 Security of the Well and Samples in the Field

Each well will have a locking cap and keys will be given out only to those who need them. Samples, once taken, will be in the possession of the sampling crew or locked in the field laboratory. QA and QC samples will be taken, which, when analyzed, will also document the integrity of the sample.

10.1.2 Security of the Sample in the Lab

Samples will be stored in a secure area in the laboratory with limited access to authorized laboratory personnel. Upon receipt of the ice chests, laboratory personnel will check the temperature of the ice bath, the condition of the samples, and the accuracy of the accompanying paper work.

10.2 Custody

Custody consists of formal records that document integrity. These records are described below.

10.2.1 Chain-of-Custody Form

The COC form is a record that describes the sample, the date and method of sampling, the analyses required, and also contains the following information:

1. Sample and well identification number;
2. Signature or collector;
3. Date and time of collection;
4. Number of containers;
5. Parameters requested for analysis;
6. Signature of person accepting samples at the lab;
7. Dates samples changed possession;
8. Internal temperature of shipping container when sealed for shipment;
9. Internal temperature of shipping container upon receipt by lab; and
10. Laboratory-assigned sample number.

It has spaces for signatures of those receiving and relinquishing the samples. The form is normally signed by the sampler, the individual preparing the samples for shipment, and the receiving individual at the laboratory. The individual preparing the samples for shipment maintains a copy. The original COC is incorporated into the hard copy laboratory report, where it is placed on file. An example of this form is given in Appendix 9A.

10.2.2 Bill of Lading

A bill of lading (airbill) documents the receipt of samples by the carrier. It is not possible for the carrier's representative to sign the COC since it is sealed in the ice chest. Bills of lading are kept on file in the MLAAP Transportation Department.

10.2.3 Cooler Receipt Form

The cooler receipt form or similar documentation is completed by the laboratory and documents the condition of the samples as received by the lab. This documentation is available in the hard copy laboratory report.

10.3 Sample Tracking and Identification

Other than the items listed in Section 6.2, there is additional documentation which demonstrate sample integrity. These are listed as follows:

10.3.1 Field Log Book

The field logbook is a bound record, kept by the sampling crew, in which sampling information is recorded. It is taken to the field to record all items of interest. It is used in the field lab to record preservation and preparation procedures for shipment. It is also used to record equipment calibration and decontamination of sampling equipment. In case of concurrent operations, sampling information will be transferred to the field log book in the field lab. The information for the COC and field data form comes from the field log book.

10.3.2 Field Data Form

Sample collectors complete a field log sheet for each well sampled. Field measurements such as pH, conductivity, and water levels as well as problems with the location or the sample are noted on this form. Field data forms are taken for all sampling events.

The log sheet contains the following information:

1. Well identification number;
2. Depth of well;
3. Date and time well was purged;
4. Static water level;
5. Minimum amount purged;
6. Total amount purged;
7. Name of collector;
8. Well identification number
9. Date and time samples are collected;
10. Four replicates of pH;
11. Four replicates of specific conductivity/temperature;
12. Preservatives used;
13. Climatic conditions w/ambient air temperature, and
14. Sample collector’s name.

Field log books are kept on file in the American Ordnance Environmental Office.

10.3.3 Sample Labels

Labels on each jar or air monitoring container include the well number, boring number, valve/port, or sample location, the sample number, the date & time of collection, preservation (if any), parameters requested, and the initials of the sampler.

11.0 DATA REDUCTION, VALIDATION, AND REPORTING

11.1 Field Data

Field data reduction will be performed by AO Environmental staff. Data validation in the field is determined primarily by making several readings (QC checks for reproducibility). Periodic QA oversight is also a part of the validation process. The field data is sent to the AO Environmental Office on the field data form.

11.2 Laboratory Data

Laboratory data are reduced at the MLAAP lab or the contract lab, which generates a laboratory report containing the analytical data, field and quality control duplicate data comparisons, and lab quality control data. Laboratory deliverables include the following:

1. Results of field samples, laboratory blanks, surrogate spikes, surrogate recoveries, matrix spikes, laboratory control samples, laboratory duplicates, matrix spike duplicates, relative percent differences, field duplicates, and field blanks.

2. Sample identification numbers will be cross-referenced with laboratory ID's and QC sample numbers. Table(s) which cross-reference field samples with associated method blanks, matrix spikes, and matrix spike duplicate samples.

3. Legible copies of the fully executed COC forms and cooler receipt forms on which the laboratory has documented the condition of the samples on arrival.

4. Each analyte will be reported as an actual value or less than a specified quantitation limit. Actual sample results, sample quantitation limits, and practical quantitation limits will be reported in a tabular format. Data qualifiers will be used to address sample/analytical anomalies associated with an analyte.

5. Soil samples will be reported on a dry weight basis with moisture content. Sampling dates, dilution factors, extraction dates, and analysis dates will also be reported.

6. A data validation report, which addresses the accuracy, precision, completeness, and representativeness of each analysis will be prepared by the laboratory or the MLAAP Environmental office. This report will contain a table that indicates the sample field identification number, the date the sample was collected, and what methods of analysis (biological/chemical/physical) were conducted at various laboratories. A discussion regarding the data quality goals and their achievement will be included. The report will also include the name, address, telephone number, and point of contact of all laboratories involved with the analytical effort.

7. ASCII, DBASE, EDD or similar format data files.

8. Confirmation of 10% of the field analyses by a suitable laboratory.

9. Calibration and internal standards information, raw data (which includes equipment/analyst worksheets/logbooks, mass spectra, GC/MS tuning calibrations,

chromatograms, sample extraction volumes, etc.), and all instrumentation graphs and traces will be available from the laboratory, if needed.

11.3 Technical Data

Technical data refers to data of several types, such as groundwater flow calculations, stratigraphic maps generated from geologic and geophysical field data, isopleth profiles of contaminants, and groundwater models. Technical data will be reduced, validated, and reported by the project staff.

11.4 Reports to Tennessee Department of Environment and Conservation

A semi-annual summary report will be provided to the Tennessee Department of Environment and Conservation, Division of Solid Waste Management (TDEC, DSWM) in accordance with regulatory requirements.

12.0 CORRECTIVE ACTION

12.1 Field Data

Corrective action for poor field data quality (as determined by replicate measurements or prior expectation) consists of re-measurement until successive readings agree within reasonable limits. Examples of frequently made measurements and limits to which they should agree include:

- pH — measurements should agree within 0.02 pH unit.
- Conductivity — measurements should agree within two numbers of the last significant digit.
- Depth and water level measurements — readings should agree within 0.01 foot.

If re-measurement is not successful, then instrument calibration and operation and the user's technique will be evaluated.

12.2 Laboratory

Laboratory corrective action is described in the analytical method for that analysis.

12.3 Implementing and Reporting

Corrective action will be initiated at the lowest level possible. Corrective action, which involves correcting a mistake for little potential of repetition, need not be reported as long as the error was not reported. For example, an erroneous water level measurement, such as 40 feet in a 30-foot well would be corrected by making several additional readings that agreed with each other and looked reasonable. It would not be necessary to report this error. Corrective action involving a potentially repetitive error or one that had been reported will be documented in writing. For example, an erroneous water level measurement due to a low battery in the water level indicator will be documented because previous suspect water levels may need to be flagged and/or checked. The corrective action report would state the nature of the problem and the potential ramifications, as well as the types of actions taken. In this case, it would be necessary to replace the battery and check the last several days of readings of the indicator. This report will be sent to the AO Environmental Manager.

13.0 REFERENCES

1) American Public Health Association, 1989, "Standard Methods for the Examination of Water and Wastewater", 17th Ed., APHA, Washington, DC.

2) U. S. Army Corps of Engineers, August, 1989, "Minimum Chemistry Data Reporting Requirements for DERP and Superfund HTW Projects", CEMRD-ED-GC Memorandum.

3) U. S. Army Corps of Engineers, January, 1990, "Chemical Data Quality Management for Hazardous Waste Remedial Activities", ER-1110-1-263.

4) U. S. Environmental Protection Agency, March, 1983, "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020.

5) U. S. Environmental Protection Agency, September, 1986, "RCRA Groundwater Monitoring Technical Enforcement Guidance Document.

6) U. S. Environmental Protection Agency, November, 1986, "Test Methods for Evaluating Solid Waste", SW 846, 3rd Ed.

7) U. S. Environmental Protection Agency, Sept. 1993, "Data Quality Objectives Process for Superfund", EPA 540-R-93-071.

8) U. S. Environmental Protection Agency, 1987, "Development of an RFI Work Plan and General Considerations for RCRA Facility Investigations", SW-87-001.

9) U. S. Environmental Protection Agency, Sept. 1994, "Guidance for the Data Quality Objectives Process", EPA/QA/G-4 and U. S. Environmental Protection Agency, Sept. 1993, "Data Quality Objectives Process for Superfund, Workbook", EPA 540-R-93-078.

APPENDIX 9A

GROUNDWATER MONITORING AND INSPECTION FORMS

CHAIN OF CUSTODY FORM

CONTRACTOR P.O. NO:_____ **LAB DESTINATION:**_____

PROJECT NAME/NUMBER:_____ **PHONE NO:** **(731) 686-6911**
FAX NO: **(731) 686-6787**

REPORT RESULTS TO:_____

SAMPLE NUMBER	SAMPLE LOCATION & DESCRIPTION	DATE & TIME COLLECTED	ANALYSIS TYPE	CONTAINER & PRESERVATIVE	NO. OF BOTTLES	SAMPLE MATRIX	C

Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	Temperature

SPECIAL INSTRUCTIONS:_____

Monitoring Well Parameter Information Sheet

Monitoring Well No. _____

Well Diameter & Construction: _____

Method of Purging: _____ Pumping Rate: _____ Method of Sampling: _____

Date	Time	Total Depth	Depth to Water	Three Casing Volumes for Purging (gallons)	pH	Specific Conductanc (mS/cm)

Date	Time		pH	Specific Conductance (mS/cm)	Temperature °C	Parameters Within 10%? (Yes/No) I not after Three casing volumes, additional volumes will be removed.

Monitoring Well No. _____

Well Diameter & Construction: _____

Method of Purging: _____ Pumping Rate: _____ Method of Sampling: _____

Date	Time	Total Depth	Depth to Water	Three Casing Volumes for Purging (gallons)	pH	Specific Conductanc (mS/cm)

Date	Time		pH	Specific Conductance (mS/cm)	Temperature °C	Parameters Within 10%? (Yes/No) I not after Three casing volumes, additional volumes will be removed.

Notes:

4" well casing diameter purge calculation = total depth – depth to water x 1.96

2" well casing diameter purge calculation = total depth – depth to water x 0.49

1" well casing diameter purge calculation = total depth – depth to water x 0.041

MONITORING WELL INSPECTION FORM

MILAN ARMY AMMUNITION PLANT

INSPECTION FREQUENCY REQUIRED: __SEMI-ANNUAL__

DATE: _____ TIME: _____ WELL No: _____

Direction: Indicate conditions as acceptable or unacceptable. Explain observations and the date and nature of any repairs or other corrective action.

INSPECTION ITEM	ACCEPTABLE	UNACCEPTABLE
OUTER CASING		
INNER CASING		
SLAB		
BUMPER POLES		
PAINT ON OUTER CASING		
WELL NUMBER LEGIBLE		
LOCKING CAP		
INNER CASING COVER CAP		
LOCK OR SEAL		
VEGETATION		
EROSION		
DEBRIS		
FIREANTS		

OBSERVATIONS:

_____

_____

_____

_____

CORRECTIVE ACTION:

_____

_____

_____

_____

INSPECTORS NAME: _____

TITLE: _____

SIGNATURE: _____

Appendix 9B: Table 9B-1
Sample Containers, Preservation, and Preparation

Sampling Media	Parameter	Size of Container	Type of Container	# of Containers	Ice	Method of Preservation
Groundwater	pH	25 mL	T, P, G	1	Field Determined	NA
Groundwater	Specific Conductance Temperature	100 mL	T, P, G	1	Field Determined	NA
Groundwater & Soil	Explosives	1,000 mL	G amber	2	Yes	NA
Soil	Perchlorate	40 mL	G Clear	1	Yes	NA
Soil	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	1,000 mL; Dark Bottle	T, P	1	No	NA
Soil	Nitrate	1,000 mL	T, P, G	1	Yes	H2SO4 to pH <2
Soil	Total Petroleum Hydrocarbons	16 ounces	G	1	Yes	NA

Note:
Container size may vary according to laboratory requirements.

Appendix 9B: Table 9B-2

Maximum Holding Times and Analytical Methods in Soil and Water

Parameter	Extraction	Analysis	Reference	Method Number
Field Tests:				
pH	—	immediate	SW-846	150.1
Conductivity	—	immediate	SW-846	120.1
temperature	—	immediate	—	—
Metals:				
Arsenic	—	6 months	SW-846(1)	6010
Barium	—	6 months	SW-846	6010
Cadmium	—	6 months	SW-846	6010
Chromium	—	6 months	SW-846	6010
Lead	—	6 months	SW-846	6010
Selenium	—	6 months	SW-846	6010
Silver		6 months	SW-846	6010
mercury in water		28 days	SW-846	7471
mercury in soil		28 days	SW-846	7841
Explosives:				
2,4-DNT				
2,6-DNT				
1,3,5-TNB				
2,4,6-TNT				
RDX				
HMX				
in water	7 days	40 days	SW-846	8330B
in soil	14 days	40 days	SW-846	8330B
Nitrate	—	14 days	SW-846	300
Total Petroleum Hydrocarbons	—	28 days	EPA-600	418.1

Note:
(1) SW-846 reference 6

Table 9C-1
Method Detection Limits for Analysis in Soil and Water by Method 8330

Parameter: Explosives Compounds	Water (ug/L)	Low Level Soil/Sediment (mg/Kg)
HMX	0.500	0.7
RDX	0.500	2.2
1,3,5-TNB	0.200	1.0
1,3-DNB	0.300	0.25
Tetryl	0.300	0.25
NB	0.300	0.65
2,4,6-TNT	0.300	0.25
4-Am-DNT	0.300	—
2-Am-DNT	0.300	—
2,6-DNT	0.400	0.26
2,4-DNT	0.300	0.25
2-NT	0.300	0.25
4-NT	0.200	0.25
3-NT	0.400	0.25

Table 9C-2
Method Detection Limits for Analysis in Soil and Water

Parameter:	Water (mg/L)	Low Level Soil/Sediment (mg/Kg)
Metals:		
Arsenic	0.01	1.0
Barium	0.02	10.0
Cadmium	0.005	1.0
Chromium	0.01	1.0
Lead	0.002	1.0
Mercury	0.002	0.1
Selenium	0.01	1.0
Silver	0.17	1.0
Common Anions:		
Nitrate	0.1	0.1
Miscellaneous:		
Total Petroleum Hydrocarbons	1	—

Appendix 9D: Table 9D-1

Monitoring Well Construction Details

WELL DESIGNATION	DATE INSTALLED	SCREEN TOP	SCREEN BOT	TOTAL DEPTH	WELL DIAMETER	STICKUP	GROUND ELEVATION	TOP OF CASING	TOP OF SCREEN	BTM OF SCREEN	EASTING	NORTHING
		(ft bgs)	(ft bgs)	(ft bgs)	(inches)	(feet)	(ft AMSL)	(ft AMSL)	(ft AMSL)	(ft AMSL)	SPTN_83_X	SPTN_83_Y
MI019B	4/22/2008	85.0	99	100	4.0	2.96	480.68	483.64	395.68	381.68	1205450.74	549228.11
MI250	8/30/1994	117.0	127.0	130	4.0	1.45	516.50	517.95	399.50	389.50	1174047.26	575548.80
MI252	8/30/1994	125.0	135.0	136	4.0	1.68	509.60	511.28	384.60	374.60	1174233.37	575953.86
MI259	8/16/1994	68.0	78.0	75	4.0	0.98	479.60	480.58	411.60	401.60	1175582.79	574449.14
MI263	8/31/1994	115.0	125.0	130	4.0	1.79	527.10	528.89	412.10	402.10	1173154.37	574478.25
MI296	1/31/1995	85.0	95.0	100	4.0	1.70	487.2	488.9	402.20	392.20	1171574.88	572755.64