ADEM
Alabama Department of Environmental Management

HAZARDOUS WASTE FACILITY PERMIT

PERMITTEE:	U.S ARMY GARRISON - REDSTONE
ADDRESS:	HUNTSVILLE, MADISON COUNTY
PERMIT NUMBER:	AL7 210 020 742
UNITS PERMITTED:	(9) HAZARDOUS WASTE STORAGE UNITS (2) THERMAL TREATMENT UNITS (SUBPART X OB Unit and SUBPART X OD Unit) SOLID WASTE MANAGEMENT UNIT (SWMU) CORRECTIVE ACTION
ISSUANCE DATE:	SEPTEMBER 30, 2010
EXPIRATION DATE:	SEPTEMBER 29, 2020

This Permit is issued pursuant with the Code of Alabama 1975, §§ 22-30-1-et. seq., as amended, and regulations adopted thereunder and the Hazardous Wastes Management and Minimization Act and in accordance with the plans and specifications and applications filed with the Department subject to the conditions appended hereto, all of which are considered a part of this Permit. This Permit shall be subject to all applicable laws of the State of Alabama, rules and regulations and orders of the Department of Environmental Management and shall be effective from the date of issuance.

Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
HAZARDOUS WASTE PERMIT

Permittee:

OWNER:
U.S. Army Garrison – Redstone
IMSE-RED-PWE
Redstone Arsenal, Alabama 35898
Madison County

Permit Number: AL7 210 020 742
Identification Number: AL7 210 020 742

Pursuant to the Alabama Hazardous Wastes Management and Minimization Act (AHWMMA), Code of Ala. 1975, Section 22-30-1, et. seq., as amended, and attendant regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM or the Department), a permit is issued to U.S. Army Garrison – Redstone, to operate a hazardous waste treatment and storage facility located in Madison County, Alabama, at latitude N34^0 37' 00" and longitude W86^0 39' 00".

The hazardous waste treatment and storage facility consists of a hazardous waste storage area, a Subpart X Open Burning (OB) treatment unit and a Subpart X Open Detonation (OD) treatment unit, as well as multiple solid waste management units (SWMUs) and areas of concern (AOCs).

The hazardous waste storage area consists of nine container storage igloos. The maximum storage capacity of each hazardous waste storage igloo is 240 fifty-five gallon containers (13,200 gallons) and the maximum storage capacity of all nine units in not to exceed 2160 fifty-five gallon drums or 118,800 total gallons. Two of the storage units are used by the Defense Reutilization and Marketing Office (DRMO) of U.S. Army Garrison – Redstone and are identified as building 8621 and 8630. The remaining seven units (Buildings 8622, 8623, 8624, 8625, 8631, 8632, and 8633) are managed by the Environmental Management Division (EMD) of U.S. Army Garrison - Redstone.

The OB and OD units are used to burn and detonate hazardous energetic waste having the characteristic of reactivity. The open burning unit consists of five metal burn pans 9' x 20' elevated on support steel and placed on top of concrete pads. The open detonation takes place in an area inside the designated OB and OD Units. The OD unit is surrounded on three sides by earthen mounds and each detonation is completed in a newly excavated pit. This permit also sets forth the requirements for existing operating hazardous waste management units known as the OB and OD areas to bring those units into compliance with Federal Subpart X regulations, promulgated in 1987.

The facility also includes current and former solid waste management units (SWMUs). This permit sets forth SWMU corrective action requirements and associated activities that must be concluded by the Permittee.

The Permittee must comply with all terms and conditions of this permit, which consists of the conditions set forth herein (including those in any attachments), and the regulations applicable to the Permittee's facility contained in Chapters 335-14-1, 335-14-2, 335-14-5, 335-14-8, and 335-14-9 of the ADEM Administrative Code of Regulations (hereinafter referred to as the "ADEM Admin. Code Rule or ADEM Admin. Code R."). Applicable regulations are those which are in effect on the date of issuance of this permit.

This permit is based on the assumption that the information submitted in the permit application attached to the Permittee's letter dated October 15, 2007 as modified by subsequent amendments dated August 14, 2008, September 4, 2008, and July 31, 2009 (hereby incorporated by reference and hereafter referred to as

the Application) is accurate and that the facility will be constructed and operated as specified in the Application. Any inaccuracies found in this information could lead to the termination or modification of this permit in accordance with ADEM Admin. Code Rules 335-14-8-.04(2), 335-14-8-.04(3), and 335-14-8-.04(4) and could lead to potential enforcement action. The Permittee must inform ADEM of any deviation from or changes in the information provided in the Application that would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

This permit is effective as of September 30, 2010 and shall remain in effect until September 29, 2020 unless revoked and reissued, or terminated under ADEM Admin. Code Rules 335-14-8-.04(2) and 335-14-8-.04(4) or continued in accordance with ADEM Admin. Code Rule 335-14-8-.05(2).

Alabama Department of Environmental Management

9/30/10
Date Signed

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Documents Incorporated By Reference:

Part A and Part B Permit Application submitted on October 15, 2007, as modified by subsequent amendments dated August 8, 2008, September 4, 2008 and July 31, 2009

Record of Decision (ROD) for Surface Media at RSA-011 (September 5, 2007)
Final ROD for Surface Media at RSA-057, (September 10, 2007)
Final Remedial Action Work Plan RSA-057 (March 31, 2008)
Final ROD for Surface Media at MSFC-002/087 (June 20, 2008)
Land Use Control Remedial Design (LUC RD) for RSA-049 (July 2, 2009)
Installation-Wide Groundwater LUC RD (August 18, 2009)
Final ROD for Surface Media at RSA-094 (September 3, 2009)
Final ROD for Surface Media at RSA-196/098 (Sept 11, 2009)

Redstone Arsenal Installation Restoration Site Access Control Program (Redstone Regulation 200-7), as enacted May 27, 2003

Alabama Department of Environmental Management (ADEM) Memorandum #304 – Subject: Compliance With Land Use Control Requirements for Federally – Owned Property, as enacted September 3, 2010

PART I

STANDARD FACILITY CONDITIONS

I.A. EFFECT OF PERMIT

The Permittee is allowed to store hazardous waste in designated storage units; and perform hazardous waste treatment (specifically OB and OD) actions in designated treatment units. Both of the above mentioned actions must be conducted in accordance with the conditions of the permit. The Permittee is also required to perform investigation and/or corrective action at the solid waste management units (SWMUs) identified herein.

Issuance of this permit does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any action brought under the AHWMMA, or any other law governing protection of public health or the environment, for any imminent and substantial endangerment to human health, welfare, or the environment. (ADEM Admin. Code R. 335-14-8-.01(4)).

I.B. SEVERABILITY

The provisions of this permit are severable and if any provision 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.

I.C. DUTIES AND REQUIREMENTS

1. Duty to Comply

   The Permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance, other than noncompliance authorized by an emergency permit, constitutes a violation of the AHWMMA, and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

2. Duty to Reapply

   a. Operating Units

      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 application for a new permit must be submitted at least 180 days before the expiration of this permit, as required by ADEM Admin. Code R. 335-14-8-.03(1)(b)2.

   b. SWMU Corrective Action Requirements

The Permittee must submit an application for a new permit for both post-closure and Solid Waste Management Unit (SWMU) corrective action at least 180 calendar days before the expiration of this permit. The Permittee must reapply in order to fulfill the 30-year post-closure care period required by ADEM Admin. Code Rule 335-14-5-.07(8)(a)1. The Department may shorten or extend the post-closure care period applicable to the hazardous waste facility in accordance with ADEM Admin. Code Rules 335-14-5-.07(8)(a)2. and 335-14-8-.03(1)(b).

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 this 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 storage, monitoring, 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 (O&M) 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 backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

6. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause as specified in ADEM Admin. Code Rules 335-14-8-.04(2), (3) and (4). The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.

7. Property Rights

Issuance of this permit does not convey any property rights of any sort, nor any exclusive privilege.

8. Duty to Provide Information

The Permittee shall furnish to the Department, within a reasonable time as determined by the Department, any relevant information which the Department 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 Department, upon request, copies of records required to be kept by this permit.

9. Inspection and Entry

The Permittee shall allow duly designated officers and employees of the Department or their authorized representative, upon the 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 facility 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; and,

d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the AHWMMA, any substances or parameters at any location. The Permittee shall have the opportunity to split samples during sampling.

10. Monitoring and Records

a. 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 ADEM Admin. Code Rule 335-14-2-Appendix I or the methods specified in the Waste Analysis Plan, Section C-2 and Section II.B, of the permit renewal application. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846 (latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Standard Methods for the Examination of Water and Wastewater (latest edition), the methods specified in the Waste Analysis Plan, Section II.B, of the permit application, or an alternative method approved by ADEM. [ADEM Admin. Code Rule 335-14-8-.03(1)(j)1.]

b. The Permittee shall maintain at the facility records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, the certification required by 335-14-5-.05(4)(b)9, records of all data used to prepare documents required by this permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the certification, application, sample, measurement, report or record, or until corrective action is completed, whichever date is later. This period may be extended by the Department at any time and is automatically extended during the course of any unresolved enforcement action regarding this facility. [ADEM Admin. Code Rules 335-14-5-.05(5)(b) and 335-14-8-.03(1)(j)2.]

c. The Permittee shall maintain at the facility records of all groundwater monitoring wells, piezometers and associated groundwater surface elevations throughout the term of this Permit. These records shall include the surveyed location, surveyed elevation, surveyed elevation reference point, total depth, screened interval, construction details, well log, and all other pertinent information for each well and piezometer.

d. Records for monitoring information shall include:

i. The date(s), exact place, and times of sampling or measurements;

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

iii. The date(s) analyses were performed;

iv. The names of individual(s) who performed the analyses;

v. The analytical techniques or methods used; and,

vi. The results of such analyses.

e. The following documents and information shall be maintained throughout the term of this Permit at the facility:

i. Complete copy of this permit and the permit application.

ii. Operating record as required by ADEM Admin. Code Rule 335-14-5-.05(4) and this permit.

iii. Copies of all plans, reports, inspection schedules, inspection logs as required by ADEM Admin. Code Rule 335-14-5 and this permit.

11. Signatory Requirements

All applications, reports or information required by this permit and submitted to the Department shall be signed and certified in accordance with ADEM Admin. Code Rules 335-14-8-.02(2) and 335-14-8-.03(1)(k).

12. Reporting Requirements

a. Planned Changes

The Permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility and any solid waste management units identified under Part VI, and the OB and OD units under Part IV of this permit.

b. Anticipated Noncompliance

The Permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

c. Transfer of Permits

This permit may be transferred to a new owner or operator only if it is modified or revoked and reissued pursuant to ADEM Admin. Code Rule 335-14-8-.04(1) or 335-14-8-.04(3)(a)1.(vii). Before transferring ownership or operation of the facility during the term of this Permit, the Permittee shall notify the new owner or operator, in writing, of the requirements of ADEM Admin. Code Rules 335-14-5 and 335-14-8 and this permit.

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 to the Department no later than 14 calendar days following each schedule date.

f. Twenty-Four Hour Reporting

i. The Permittee shall report to the Department any noncompliance with this permit that may endanger human health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the circumstances. This report shall include, but is not limited to, the following:

(I) Information concerning the release of any hazardous waste which may endanger public drinking water supplies; and,

(II) Information concerning the release or discharge of any hazardous waste, or hazardous waste constituents, or of a fire or explosion at the facility, which could threaten the environment or human health outside the facility.

ii. The description of the occurrence and its cause shall include:

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

(II) Name, address, telephone number, and EPA Identification 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, where this is applicable; and,

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

iii. A written submission shall also be provided within 5 calendar days of the time that the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected, and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

g. Other Noncompliance

The Permittee shall report to the Department all instances of noncompliance not otherwise required by Permit Conditions I.C.12.d., I.C.12.e., or I.C.12.f. at the time any other reports required by this permit are submitted. The reports shall contain the information required by Permit Condition I.C.12.f..

h. Other Information

When 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 report to the Department, it shall promptly submit such facts or information. In addition, upon request, the Permittee shall furnish to the Department any information related to compliance with this permit.

13. Obligation for Corrective Action

Owners and operators of hazardous waste management units must have permits during the active life (including the closure and post-closure period) of the unit, and for any period necessary to comply with the SWMU corrective action requirements (Part VI) of this permit. Therefore, the Permittee must reapply in accordance with Condition I.C.2. of this permit until this obligation is fulfilled.

14. Certification of Construction

The Permittee may not commence treatment, storage or disposal of hazardous waste or contaminated media at any new or modified portion of the facility until the Permittee has submitted to the Department, by certified mail or hand-delivery, a letter (together with the certification by the Construction Quality Assurance (CQA) officer required by ADEM Admin. Code Rule 335-14-5-.02(10)(d) and any other certifications required by this permit or ADEM Admin. Code Rule 335-14) signed by the Permittee and a registered Professional Engineer (State of Alabama) stating that the facility has been constructed or modified in compliance with this permit where appropriate; and,

a. The Department has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of this permit; or

b. The Department has either waived the inspection or has not notified the Permittee, within 15 calendar days of the notification from the Permittee, of its intent to inspect. [ADEM Admin. Code Rule 335-14-8-.03(1)(1)2.]

15. The Permittee shall assure that all measures necessary to maintain and/or achieve compliance with all applicable requirements of ADEM Admin. Code Rules 335-14 are taken during the active life of the facility, post-closure care period, corrective action period, and throughout the term of this permit.

16. In the event that circumstances beyond the Permittee's control arise to prevent achievement of any deadline set forth by this permit, the Permittee may immediately, upon the occurrence thereof, request an extension by sending a written request to the Department explaining the need for the extension. The Department may, after consideration of the circumstances, grant the extension. Requests for extensions may require a permit modification pursuant to ADEM Admin. Code Rule 335-14-8-.04(2) or (3).

I.D. CONFIDENTIAL INFORMATION

The Permittee may claim confidential any information required to be submitted by this permit if the information is protectable under Code of Alabama 1975, §22-30-18, as amended. The term "trade secret" as used in §22-30-18 is defined in Code of Alabama 1975, §22-30-3(12).

I.E. DEFINITIONS

For the purposes of this permit, terms used herein shall have the same meaning as those in ADEM Admin. Code Rules 335-14-1, 335-14-2, 335-14-5, and 335-14-8, unless this permit specifically provides otherwise. Where terms are not defined in the regulations or this permit, a standard dictionary reference or the generally accepted scientific or industrial meaning of the term shall define the meaning associated with such terms.
"Action levels" for the purposes of this permit are health-based concentrations of hazardous constituents determined to be indicators for the protection of human health and/or the environment.

An "Alternate concentration limit" (ACL) for the purposes of this permit refers to a groundwater concentration limit which is established pursuant to ADEM Admin. Code R. 335-14-5-.06(5)(b).

"Area of concern" (AOC), for the purposes of this permit, includes any area having a probable release of a hazardous waste or hazardous constituent which is not from a solid waste management unit and is determined by the Department 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 under Section 3005(c)(3) of the Resource Conservation and Recovery Act and ADEM Admin. Code Rule 335-14-8-.03(3)(b)2. in order to ensure adequate protection of human health and the environment.

"Contamination," for the purposes of this permit, refers to the presence of any hazardous constituent in a concentration that exceeds the naturally occurring concentration of that constituent in the immediate vicinity of the facility (i.e., areas not affected by the facility).

"Corrective action" for the purposes of this permit is the sum of all corrective measures, and may include all corrective measures 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 by ADEM Admin. Code R. 335-14-5-.06(11) and/or 335-14-5-.06(12). Corrective measures may address releases to air, soils, surface water, or groundwater.

"Corrective Action Management Unit" (CAMU) for the purposes of this permit, includes any area within a facility that is designated by the Department under ADEM Admin. Code 335-14-5-.19 for the purpose of implementing corrective action requirements under ADEM Admin Code Rule 335-14-5-.06(12), 22-30-19 et seq.,Code of Alabama 1975, and/or RCRA section 3008(h). A CAMU shall only be used for the management of remediation waste pursuant to implementing such corrective actions requirements at the facility.

"Corrective measures" for the purposes of this permit, include all individual measures taken and/or necessary to remedy releases and 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 ADEM Admin. Code R. 335-14-5-.06(12). Corrective measures may address releases to air, soils, surface water, or groundwater. The sum of all individual corrective measures is known as corrective action.

"Extent of contamination," for the purposes of this permit, is defined as the horizontal and vertical areas 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 Department.

"Hazardous constituents," for the purposes of this permit, are those substances listed in ADEM Admin. Code Rule 335-14-2-Appendix VIII and/or ADEM Admin. Code Rule 335-14-5-Appendix IX and include hazardous constituents released from solid waste, hazardous waste, and hazardous waste constituents that are reaction by-products.

"Interim measures" for the purposes of this permit 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.

"Land Disposal" for the purposes of this permit and ADEM Admin. Code R. 335-14-9 means placement in or on the land 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.

"Landfill" for the purposes of this permit, 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.

"Land Use Controls," for the purposes of this permit, is as defined by ADEM Admin. Code Rule 335-15-1-.02.

A "maximum concentration limit" (MCL) for the purposes of this permit refers to a groundwater concentration limit listed in Table 1 of ADEM Admin. Code R. 335-14-5-.06(5), or which is listed in ADEM Admin. Code R. 335-7-2 (Primary Drinking Water Standards) or ADEM Admin. Code R. 335-7-3 (Secondary Drinking Water Standards) or analogous Federal safe drinking water regulations (40 CFR 141). In cases where a constituent is listed in multiple sources (ADEM Admin. Code R. 335-14 and/or ADEM Admin. Code R. 335-7, and/or 40 CFR 141), the most stringent standard shall apply.

"Method detection limit" (MDL), for the purposes of this permit, means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

"Mixed waste," for the purposes of this permit, means a solid waste that is a mixture of hazardous waste (as defined in ADEM Admin. Code Rule 335-14-2-.01(3)) and radioactive waste (as defined in 10 CFR 61.2). The radioactive component of mixed waste is subject to regulation by the Atomic Energy Act (AEA)/Nuclear Regulatory Commission (NRC). The non-radioactive chemically hazardous component of mixed waste is subject to regulation by the AHWMMA and ADEM Admin. Code Rule 335-14.

"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, unit eligible for a research, development and demonstration permit under 335-14-8-.06(4); or staging pile.

"Munitions Debris" for the purposes of this permit means remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

"Non-regulated waste" for the purposes of this permit means waste that is not otherwise regulated as RCRA listed and/or characteristic hazardous waste. In this case, non-regulated includes, but is not limited to, solid and universal waste, used oil, PCB, etc. Universal waste and used oil are subject to ADEM Admin. Code 335-14-11, Standards for Universal Waste Management and ADEM 335-14-17, Standards for the Management of Used Oil, respectively.

"Open burning" means the combustion of any material without the control of combustion air to maintain adequate temperature for efficient combustion, containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion, and control of emission of the gaseous combustion products.

"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.

"Operating day," for the purposes of this permit, means any day on which hazardous waste is treated, stored, or disposed of in a unit. For example, each day that a hazardous waste storage

unit contains hazardous waste is an operating day; as is each day that a disposal unit contains or receives hazardous waste, or each day that hazardous waste is treated in a treatment unit.

"Operational range" for the purpose of this permit, as defined in Section 101(e) of the United States Code means a range that is under the jurisdiction, custody, or control of the Secretary of a military department and (a) that is used for range activities, or (b) although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities.

"Practical quantitation limits" (PQL) for the purposes of this permit, are the lowest concentrations of analytes in groundwater that can be reliably determined within specified limits of precision and accuracy by a given method under routine laboratory operating conditions, as listed in ADEM Admin. Code R. 335-14-5-Appendix IX.

"Release," for the purposes of this permit, includes any spilling, leaking, pouring, emitting, emptying, discharging, injecting, escaping, leaching, pumping, or disposing into the environment of any hazardous waste or hazardous constituent.

"Remediation waste" for the purposes of this permit includes all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action requirements under ADEM Admin. Code R. 335-14-5-.06(12) and RCRA Section 3008(h). For a given facility, remediation wastes may originate only from within the facility boundary, but may include waste managed in implementing RCRA Sections 3004(v) or 3008(h) for releases beyond the facility boundary.

"Solid waste" for the purposes of this permit means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded materials, including solid, liquid, semisolid, or contained gaseous materials resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which 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).

"Solid waste management unit" (SWMU), for the purposes of this permit, 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. RCRA-regulated hazardous waste management units are also solid waste management units. SWMUs 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).

"Storm event," for the purposes of this permit, is defined as a 1-year, 24-hour storm event or rainfall that measures 1-inch or greater in 1 hour or less. Rainfall measurements may be taken at the site, or the closest official weather monitoring station may be used.

"Temporary Unit" (TU) for the purposes of this permit, 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 Department,

such units must conform to specific standards, and may only be in operation for a period of time as specified in this permit.

"Thermal treatment" for the purpose of this permit, includes open burning and open detonation of hazardous energetics and energetic contaminated waste.

A "unit" for the purposes of this permit includes any contiguous discernable area used for the management of hazardous waste (or non-hazardous waste in the case of a SWMU) and may include, but is not limited to, any 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, recycling unit or the OB and OD units.

I.F. EXPIRATION AND CONTINUATION OF PERMIT

This permit and all conditions herein will remain in effect beyond this permit's expiration date if the Permittee has submitted a new application as required by Permit Condition I.C.2. and, through no fault of the Permittee, the Department has not issued a new permit (ADEM Admin. Code R. 335-14-8-.05(1) and 335-14-8.05(2)).

I.G. WASTE MINIMIZATION

1. Certification Requirements

   Pursuant to ADEM Admin. Code Rule 335-14-5-.05(4)(b)9, the Permittee must certify, no less often than annually, that:

   a. The Permittee has a program in place to reduce the volume and toxicity of hazardous waste to the degree determined by the Permittee to be economically practicable; and,

   b. The proposed method of treatment, storage, or disposal is the most practicable method available to the Permittee and that it minimizes the present and future threat to human health and the environment.

2. Recording Requirements

   a. The Permittee shall maintain copies of this certification in the facility operating record as required by ADEM Admin. Code R. 335-14-5-.05(4)(b)9.

   b. The Waste Minimization Program required under I.G.1.a. and I.G.1.b. above should at a minimum address the following topics:

      i. Identity of each hazardous waste stream and the source of generation.

      ii. Types and amounts of hazardous waste that is generated at the facility.

      iii. Present and proposed method of treatment, storage or disposal that is available to the Permittee.

iv. Description of techniques implemented in the past for hazardous waste reduction and their effectiveness.

v. An evaluation of technically and economically feasible hazardous waste reduction techniques.

vi. A program and schedule for implementing the selected hazardous waste reduction technique.

3. Solid Waste Minimization Objectives

a. If Condition I.G. of this permit is applicable, then the Waste Minimization program required under Condition I.G. above should address the objectives listed in Appendix A of this permit

I.H. COST ESTIMATES

1. The Permittee shall maintain detailed written cost estimates, in current dollars, at the location specified in Permit Condition I.C.10.e. and on file with ADEM in accordance with ADEM Admin. Code Rules 335-14-5-.08(3), (5), and (10).

2. All cost estimates must be updated annually as required by ADEM Admin. Code Rules 335-14-5-.08(3)(b), 335-14-5-.08(5)(b), and 335-14-5-.08(10)(b).

3. The cost estimate shall be maintained and submitted in the form designated by the Department.

4. The Permittee must update the cost estimate no later than 30 calendar days after the Department has approved a modification to the Closure Plan, Post-Closure Plan, or Corrective Action Plan, or any other plan required or referenced by this permit, if the change in the plan results in an increase in the amount of the cost estimate.

I.I. FINANCIAL ASSURANCE (RESERVED)

I.J PERMIT MODIFICATIONS

The Permittee shall request a permit modification whenever changes in operating plans or facility design affect any plan (e.g., closure, groundwater monitoring, post-closure, or corrective action) required or referenced by this permit. The Permittee must submit a written request for a permit modification pursuant to the requirements of ADEM Admin. Code Rule 335-14-8-.04(2) at least 60 calendar days prior to the proposed change in facility design or operation.

I.K. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE DEPARTMENT

All reports, notifications, or other submissions that are required by this permit should be sent via certified mail, private courier service (which has package tracking/tracing), or hand delivered to:

Chief, Land Division
Alabama Department of Environmental Management
P.O. Box 301463 (Zip 36130-1463)
1400 Coliseum Boulevard (Zip 36110-2059)
Montgomery, Alabama

and

Director, RCRA Division
US EPA Region-4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta Georgia-30303-3104

PART II

GENERAL FACILITY CONDITIONS

II.A. DESIGN AND OPERATION OF PERMITTED UNITS

The Permittee shall maintain and operate such units to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or constituents to air, soil, surface water, or groundwater which could threaten human health or the environment.

Stored hazardous waste may only be released to those who are authorized to handle and/or manage such hazardous waste. OB and OD operations may only be conducted by those who are authorized to handle the hazardous waste and conduct such operations.

II.B. HAZARDOUS WASTE FROM OFF-SITE SOURCE

The Permittee shall not receive hazardous waste from an off-site source for storage, without prior approval of the Department. The Permittee shall only treat hazardous waste by OB and/or OD that is generated onsite or that is generated at the contiguous Marshall Space Flight Center (EPA ID AL1 800 013 863).

II.C. GENERAL WASTE ANALYSIS

1. The Permittee shall comply with all requirements set forth under ADEM Admin. Code R. 335 14-5-.02(4) and shall follow the procedures described in the Waste Analysis Plans, Section C -2 and Section II.B, of the permit renewal application.

2. The Permittee shall utilize the analytical methods specified in the Waste Analysis Plan, Section C-2 and Section II.B, of the permit renewal application. These laboratory methods will address the wastes listed in Section C-2 and Section II.B, of the permit renewal application. Modification of the Waste Analysis Plan shall require a modification of this permit pursuant to ADEM Admin. Code R. 335-14-8-.04(2).

3. The Permittee shall subject samples from incoming waste shipments to the fingerprint parameters identified in Section II.B and Section C-2 of the permit renewal application.

4. The Permittee shall classify waste as non-conforming when the receiving analysis does not match the information contained in the accompanying manifest, profile, and/or equivalent information described in Section II.B and Section C-2 of the permit renewal application.

5. Before treatment of waste by OB or OD, the Permittee shall ensure that waste sent for treatment corresponds with the applicable Waste Profile Form, Appendix II.B-A, of the permit renewal application, for that waste. All waste that does not conform to the information contained in the applicable Waste Profile Form shall be classified as non-conforming and returned to the generator.

6. Before storing, treating, or disposing of a hazardous waste, the Permittee shall obtain a detailed chemical and physical analysis of a representative sample of the waste, as described in Section C-2 and Section II.B.2.3 of the permit renewal application.

II.D. SECURITY

1. The Permittee shall comply with the security provisions set forth under ADEM Admin. Code R. 335-14-5-.02(5) and as described in Section F-1 and Section II.C of the permit renewal application.

2. In order to comply with ADEM Admin. Code R. 335-14-5-.02(5), the hazardous waste storage areas and the OB and OD areas of the facility shall remain fenced with at least a six-foot high chain link fence. The fence shall be kept in good repair. All entrances to the permitted hazardous waste management areas shall be closed and locked when security and/or operations personnel are not present.

3. The Permittee shall maintain signs along the perimeter fence of the permitted hazardous waste management areas and the OB and OD areas. The signs shall read "Danger - Unauthorized Personnel Keep Out". At least one sign must be legible from a distance of at least 25 feet from any approach to each area (ADEM Admin. Code R. 335-14-5-.02(5)(c)).

II.E. GENERAL INSPECTION REQUIREMENTS

1. The Permittee shall comply with all requirements of ADEM Admin. Code R. 335-14-5-.02(6), and 335-14-5-.09(5),

2. The Permittee shall follow the inspection procedures and schedules, as described in Section F-2 and Section II.C.2 of the permit renewal application.

3. The Permittee shall remedy any deterioration or malfunction (of equipment or structure(s)) discovered during any inspection as required by ADEM Admin. Code R. 335-14-5-.02(6)(c).

4. Records of inspections shall be maintained at the facility as required by ADEM Admin. Code R. 335-14-5-.02(6).

II.F. PERSONNEL TRAINING

The Permittee shall conduct personnel training as required by ADEM Admin. Code R. 335-14-5-.02(7). This training program shall follow the procedures and outline, described in Section H and Section II.E of the permit renewal application. The Permittee shall maintain training documents and records as required by ADEM Admin. Code R. 335-14-5-.02(7)(d) and (e).

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

1. The Permittee shall comply with all requirements for ignitable, reactive or incompatible wastes set forth under ADEM Admin. Code R. 335-14-5-.02(8).

2. "No Smoking" signs must be conspicuously placed wherever there is a potential hazard from ignitable waste.

II.H. LOCATION STANDARDS AND UNIT MAINTENANCE

1. The Permittee shall comply with all location standards set forth under ADEM Admin. Code R. 335-14-5-.02(9).

2. If changes are made to the design or operation of a hazardous waste management or treatment unit, these changes must receive approval by the Department before they are implemented, and may require permit modification pursuant to ADEM Admin. Code R. 335-14-8-.04(2).

II.I. PREPAREDNESS AND PREVENTION

1. Required Equipment

   The Permittee shall comply with ADEM Admin. Code R. 335-14-5-.03(3) and at a minimum, shall equip the facility with the equipment set forth in the Contingency Plan, Section G and Section II.D of the permit renewal application.

2. Testing and Maintenance of Equipment

   The Permittee shall test and maintain the equipment specified in the Contingency Plan, Section G and Section II.D of the permit renewal application, as necessary to assure its proper operation in time of emergency as required by ADEM Admin. Code R. 335-14-5-.03(4).

3. Access to Communication or Alarm System

   The Permittee shall maintain access to the communications or alarm system as required by ADEM Admin. Code R. 335-14-5-.03(5).

4. Arrangements with Local Authorities

   The Permittee shall maintain arrangements with state and local authorities as required by ADEM Admin. Code R. 335-14-5-.03(8). The Permittee shall develop and maintain a Preparedness and Prevention Plan providing information on the type, approximate quantities and locations of hazardous wastes within the facility. The Plan shall be provided to state and local authorities in both written paper format and in an appropriate electronic format that is most useful to emergency responders, and updated copies of the Plan shall be provided as needed to reflect significant changes in operations (e.g., significant changes in waste streams and/or volumes, facility design changes, etc.). A copy of the Plan and documentation that the Plan has been submitted to all local police departments, fire departments, hospitals and local emergency response teams that may be called upon to provide emergency services, shall be submitted to the Department within 45 days from the effective date of this permit for review. If state or local officials refuse to enter into preparedness and prevention arrangements with the Permittee, the Permittee must document this refusal in the operating record.

5. Required Aisle Space

   The Permittee must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination

equipment to any area of facility operation in an emergency (ADEM Admin. Code R. 335-14-5-.03(6)).

II.J. CONTINGENCY PLAN

1. Implementation of Plan

The Permittee shall immediately carry out the provisions of the Contingency Plan, (Section G and Section II.D of the permit renewal application) and follow the emergency procedures as required by ADEM Admin. Code R. 335-14-5-.04(2) whenever there is a fire, explosion, or release of hazardous waste or hazardous constituents which threatens or could threaten human health or the environment.

2. Copies of Plan

A copy of the Contingency Plan and all current revisions to the plan must be maintained at the facility and 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, as described in Section G and Section II.D of the permit renewal application, and as required by ADEM Admin. Code R. 335-14-5-.04(4).

3. Amendments to Plan

The Permittee shall review and immediately amend, if necessary, the Contingency Plan, as required by ADEM Admin. Code R. 335-14-5-.04(5).

4. Emergency Coordinator

The Permittee shall comply with the requirements of ADEM Admin. Code R. 335-14-5-.04(6) concerning the emergency coordinator as specified in the Contingency Plan, (Section G and Section II.D of the permit renewal application).

II.K. RECORDKEEPING AND REPORTING

1. Operating Record

The Permittee shall maintain a written operating record at the facility in accordance with ADEM Admin. Code R. 335-14-5-.05(4).

2. Availability, Retention, and Disposition of Records

The Permittee shall comply with the Availability, Retention, and Disposition of Records at the facility in accordance with ADEM Admin. Code R. 335-14-5-.05(5).

3. Biennial Report

The Permittee shall comply with the biennial report requirements of ADEM Admin. Code R. 335-14-5-.05(6).

II.L. CLOSURE

1. Performance Standard

The Permittee shall close the permitted hazardous waste management areas, as required by ADEM Admin. Code R. 335-14-5-.07(2), 335-14-5-.09(9), 335-14-5-.10(8), and in accordance with the Closure Plan, Section I-1 and Section II.F of the permit renewal application.

2. Amendment to Closure Plan

The Permittee shall amend the Closure Plan as required by ADEM Admin. Code R. 335-14-5-.07(3)(c).

3. Notification of Closure

As required by ADEM Admin. Code R. 335-14-5-.07(3)(d), the Permittee shall notify the Department at least 60 days prior to the date closure activities are initiated at either unit.

4. Time Allowed for Closure

The Permittee shall comply with the requirements of ADEM Admin. Code R. 335-14-5-.07(4). After receiving or treating the final volume of hazardous waste, the Permittee shall complete closure activities in accordance with the schedule specified in the Closure Plan, Section I-1 and Section II.F of the permit renewal application.

5. Disposal or Decontamination of Equipment

The Permittee shall decontaminate or dispose of all facility equipment as required by ADEM Admin. Code Rules 335-14-5-.07(5), 335-14-5-.09(9), 335-14-5-.10(8), 335-14-5-.11(9), and 335-14-5-.12(9) and as specified in the Closure Plan, Section I-1 and Section II.F of the permit renewal application.

6. Certification of Closure

The Permittee shall certify that each individual unit has been closed in accordance with the specifications presented in the Closure Plan, (Section I-1 and Section II.F of the permit renewal application), as required by ADEM Admin. Code R. 335-14-5-.07(6). The Permittee shall maintain copies of this closure certification in the facility operating record as required by ADEM Admin Code R. 335-14-5-.05(4).

II.M. POST-CLOSURE

If at closure, not all waste and contaminated structures and soils at a unit can be removed or decontaminated, the Permittee shall close the container storage or treatment unit as a landfill and perform post-closure care as specified in ADEM Admin. Code R. 335-14-5-.09(9)(b) and 335-14-5-.14(11).

1. Post-Closure Care Period

The Permittee shall begin post-closure care at all units where closure by removal is not achieved, after completion of unit closure and shall continue for the duration of the post-closure period. The post-closure care period shall continue for a period of 30 years after the closure of each hazardous waste management unit, unless shortened or extended Pursuant to ADEM Admin. Code Rule 335-14-5-.07(8). Each post-closure care period is initiated upon certification by a registered Professional Engineer (State of Alabama) and upon acceptance by the Department pursuant to ADEM Admin. Code R. 335-14-5-.07(6), that closure has been completed and waste has been left in place. The post-closure care period shall automatically extend through the end of the compliance period specified in Part VII.B.4 of this permit.

2. Post-Closure Security

The Permittee shall maintain security at the facility during post-closure care in accordance with the post-closure plan included in the permit application.

3. Amendment to Post-Closure Plan

The Permittee shall amend the Post-Closure Plan in accordance with ADEM Admin. Code R. 335-14-5-.07(9), whenever necessary.

4. The Permittee shall maintain continuous compliance with the following:

   a. Post closure care of property. (ADEM Admin. Code R. 335-14-5-.07(8))

   b. Notice to local land authority and in deed to property. (ADEM Admin. Code R. 335-14-5-.07(10))

II.N. LAND DISPOSAL RESTRICTIONS

1. General Restrictions

ADEM Admin. Code R. 335-14-9 identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances in which an otherwise prohibited waste may continue to be placed on or in a land treatment, storage or disposal unit. The Permittee shall maintain compliance with the requirements of ADEM Admin. Code R. 335-14-9. Where the Permittee has applied for an extension, waiver, or variance under ADEM Admin. Code R. 335-14-9 the Permittee shall comply with all restrictions on land disposal under this Part once the effective date for the waste has been reached pending final approval of such a land disposal permit application.

2. Land Disposal Prohibitions and Treatment Standards

   a. A restricted waste identified in ADEM Admin. Code R. 335-14-9-.03 may not be placed in a land disposal unit without further treatment unless the requirements of ADEM Admin. Code R. 335-14-9-.03 and/or .04 are met.

   b. The storage of hazardous wastes restricted from land disposal under ADEM Admin. Code R. 335-14-9 is prohibited unless the requirements of ADEM Admin. Code R. 335-14-9-.05 are met.

II.O. ORGANIC AIR EMISSION REQUIREMENTS

1. General Introduction

a. Process Vents and Equipment

Phase I Organic Air Emission Standards consist of ADEM Admin. Code R. 335-14-5-.27 and 335-14-5-.28 for hazardous waste treatment, storage, and disposal (TSD) facilities. ADEM Admin. Code R. 335-14-5-.27 contains emission standards for process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations that process hazardous waste with an annual average total organic concentration of at least ten (10) parts per million by weight (ppmw). ADEM Admin. Code R. 335-14-5-.28 contains emission standards that address leaks from specific equipment (i.e., pumps, valves, compressors, etc.) containing or contacting hazardous waste with a total organic concentration of at least ten-percent by weight.

b. Tanks, Containers, Surface Impoundments and Miscellaneous Units

The Phase II Organic Emission Standards consist of ADEM Admin. Code R. 335-14-5-.29 for hazardous waste treatment, storage, and disposal facilities, including certain hazardous waste generator standards for accumulating waste on-site in RCRA permit–exempt (90-day) tanks and containers. In general, under these standards air emission controls must be used for tanks, surface impoundments, containers, and miscellaneous units that contact hazardous waste containing an average organic concentration greater than 500 ppmw at the point of origination determined by the procedures outlined in ADEM Admin. Code R. 335-14-5 .29(4), except as specifically exempted under ADEM Admin. Code R. 335-14-5-.29(1) and 335-14-5-.29(3).

2. Notification of New Units

a. Process Vents and Equipment

Prior to constructing any equipment with process vents subject to the requirements of ADEM Admin. Code R. 335-14-5-.27, or installing any additional equipment subject to the requirements of ADEM Admin. Code R. 335-14-5-.28, or prior to modifying the current process such that existing equipment previously not subject to the requirement of ADEM Admin. Code R. 335-14-5-.28 the Permittee shall supply the specific Part B information required pursuant to ADEM Admin. Code R. 335-14-8-.02(15) and. 335-14-8-.02(16) as applicable, and shall obtain a permit modification in accordance with the requirements of ADEM Admin. Code R. 334-14-8-.04(3) and condition I.J of this permit.

b. Tanks, Containers, Surface Impoundments, Miscellaneous Units

Prior to installing any tank, container, surface impoundment or miscellaneous unit subject to ADEM Admin. Code R. 335-14-5-.29, or modifying an existing process waste handling or tank or container such that the unit(s) will become

subject to ADEM Admin. Code R. 335-14-5-.29, the Permitte shall obtain a permit modification under ADEM Admin. Code R. 335-14-8-.04(3), and provide specific Part B application information required under ADEM Admin. Code R. 335-14-8-.02(5) –(8) and 335-14-8-.02(18), as applicable, with the modification request.

II.P. MANIFEST SYSTEM

The Permittee shall comply with the requirements of ADEM Admin. Code Rules 335-14-5-.05(2), 335-14-5-.05(3), and 335-14-5-.05(7).

II.Q. WASTE REJECTION NOTIFICATION (RESERVED)

PART III

MANAGEMENT IN CONTAINERS

III.A. WASTE IDENTIFICATION

1. The Permittee may store the hazardous and PCB wastes listed in Part A of the permit renewal application in containers at the facility, subject to the terms of this permit. The storage of any waste not listed in Part A of the permit renewal application is prohibited.

2. The Permittee shall not store mixed waste in containers at the facility.

3. The maximum quantity of waste that can be stored at one time in the container storage area (9 storage igloos) is 2160 fifty-five gallon drums or 118,800 gallons. Individual igloo storage limits for hazardous waste storage buildings are specified in Table III.1.

III.B. STORAGE IN CONTAINERS

1. The container capacity is distributed throughout the container storage area as shown in Table III.1 of this permit, and as described in Section D-1 of the permit renewal application. The maximum quantity of hazardous waste stored in each unit or containment area shall not exceed the capacity listed in Table III.1 of this permit.

2. The Permittee shall maintain and operate the container storage areas in accordance with the procedures specified in Section D-1 of the permit renewal application.

3. The maximum combined quantity of hazardous and non-hazardous waste stored in a given area shall not exceed ten times the capacity of the containment system for that area. No individual container may be stored in a given area whose volume exceeds the capacity of the containment system for that area.

4. The sampling and staging of drums shall not exceed 72 hours. All containers that are to be fingerprinted or are awaiting analysis shall be segregated from other containers in the container storage area. Each container shall be marked with the date of receipt.

III.C. TREATMENT IN CONTAINERS

The Permittee shall not treat hazardous waste in containers at the storage facility.

III.D. CONDITION OF CONTAINERS

If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, upon discovery the Permittee shall immediately transfer the hazardous waste from such container to a container that is in good condition or otherwise manage the waste in compliance with the conditions of ADEM Admin. Code R. 335-14-5-.09(2).

III.E. COMPATIBILITY OF WASTE WITH CONTAINERS

The Permittee shall assure that the ability of the container to contain the waste is not impaired, as required by ADEM Admin. Code R. 335-14-5-.09(3).

III.F. MANAGEMENT OF CONTAINERS

1. The Permittee shall manage containers as required by ADEM Admin. Code R. 335-14-5-.09(4) and Section D-1-1 of the permit renewal application.

2. A container holding hazardous waste must always be closed during storage, except when it is necessary to add, remove, sample, or inspect the waste.

3. A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

4. Adequate aisle space will be maintained at all times, as shown in Section D-1 of the storage permit application, and as necessary to provide adequate access for emergency equipment and inspection.

5. Containers having a capacity greater than or equal to 30 gallons shall not be stacked over two containers high at any time.

III.G. CONTAINMENT

1. The Permittee shall maintain the containment systems of the container storage in accordance with the requirements of ADEM Admin. Code R. 335-14-5-.09(6)(b), and as specified in Section D-1 of the permit renewal application.

2. The Permittee shall maintain an impervious coating that is free of cracks, gaps, or other deterioration on all containment system surfaces which may be exposed to hazardous wastes or hazardous constituents (or releases of hazardous wastes or hazardous constituents).

III.H. INSPECTIONS

Weekly, the Permittee shall inspect areas where containers are stored or handled to detect leaking containers and deterioration of containers or containment systems and to ensure stacking is no more than two high as specified in Section III.F.5. of this permit and as required by ADEM Admin. Code R. 335-14-5-.09(5). The Permittee shall note the number and capacity of hazardous waste containers present.

III.I. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

1. The Permittee shall not locate containers holding ignitable or reactive waste within 15 meters (50 feet) of the facility's property line as required by ADEM Admin. Code R. 335-14-5-.09 (7).

2. The Permittee shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste and follow the procedures specified in Section C-2g of the permit renewal application and as required by ADEM Admin. Code R. 335-14-5-.02(8).

III.J. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTE

The Permittee shall separate containers of incompatible wastes as specified in Section C-2g of the permit renewal application.

1. Incompatible wastes, or incompatible wastes and materials, must not be placed in the same container unless the Permittee is in compliance with ADEM Admin. Code R. 335-14-5-.02(8)(b).

2. The Permittee shall not place hazardous waste in an unwashed container that previously held an incompatible waste or material.

3. The Permittee must document compliance with Conditions III.J.1. and III.J.2. of this permit as required by ADEM Admin. Code R. 335-14-5-.05(4) and place this documentation in the operating record.

4. The Permittee shall separate containers of incompatible wastes as required by ADEM Admin. Code R. 335-14-5-.09(8)(c).

Table III.1

HAZARDOUS WASTE STORAGE IGLOOS

Igloo	Storage Dimensions	Max. Volume (gallons)**
Bldg 8621	26'5" x 81	13,200
Bldg 8622	26'5" x 81	13,200
Bldg 8623	26'5" x 81	13,200
Bldg 8624	26'5" x 81	13,200
Bldg 8625	26'5" x 81	13,200
Bldg 8630	26'5" x 81	13,200
Bldg 8631	26'5" x 81	13,200
Bldg 8632	26'5" x 81	13,200
Bldg 8633	26'5" x 81	13,200

Note: ** Max. Volume includes all waste (regulated and non-regulated) stored in the igloos.

PART IV

THERMAL TREATMENT

IV.A. DESCRIPTION

1. The OB and OD Units occupies approximately 59 acres located in the southwestern portion of RSA at approximately N 34°34' and W 86°40'. The unit(s) locations are shown in Figures II.A-1, 4, and 5 of the permit renewal application. Thermal treatment of hazardous waste by means other than as specifically authorized by this permit is prohibited. The following units are permitted for treatment of hazardous wastes:

   a. Open Burning (OB) Units – SWMU 12

   b. Open Detonation (OD) Unit – SWMU 131

2. The Permittee is allowed to thermally treat (via open burning and open detonation) hazardous energetic and energetic-contaminated waste that is generated on-site or at the contiguous facility, Marshall Space Flight Center (AL1 800 013 863). Structural dimensions and other details for the burn pans and OD area are found in Section III.A of the permit renewal application.

3. Treatment by open burning (OB) may be conducted in the OB unit, consisting of five burn pans dedicated to the thermal destruction of propellants, explosives, energetic-contaminated waste and propellant and D003-contaminated solvents. All burn pans shall be similarly constructed, as shown in Appendix III.A-A of the permit renewal application. One burn pan, pan No. 3, shall be exclusively used to thermally treat D003-contaminated solvents and shall have spill containment surrounding the base structure as shown in Appendix III.A-A of the permit renewal application. The OB of any waste not described in this section, is prohibited without prior approval from the Department.

4. Treatment by open detonation (OD) may be conducted in the designated area for the detonation of energetic wastes in pits. The OD unit consists of seven detonation pit areas surrounded on three sides with earthen bunkers as depicted in Section III.A3 of the permit renewal application. The OD of any waste not described in this section is prohibited, without prior approval from the Department.

IV.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

This permit allows RSA to treat United Nations Organization (UNO) Class 1 materials at the OB and OD units, as noted in the permit renewal application. Waste treated at the OB and OD units exhibits the RCRA hazardous characteristic of reactivity (i.e. D003). Such waste may consist of (1) fired and unfired munitions items (rocket motors, warheads, shells, grenades, flares), (2) munitions components (e.g., fuses, detonators, rocket motor igniters), (3) bulk energetics (propellants and explosives), and (4) energetic-contaminated materials. The wastes treated at the OB and OD units shall not contain pesticides, herbicides, dioxins, or PCBs. Pentachlorophenol (PCP)-treated wood and beryllium and/or waste containing beryllium are

prohibited from treatment at the OB and OD units. Waste types and waste characteristics are detailed in Sections II.A and II.B of the permit renewal application.

Thermal treatment of hazardous waste by means other than as specifically authorized by this permit is prohibited. Treatment of recovered liquid-filled rounds, chemical warfare materiel or components thereof, liquid agent-contaminated explosive components, and items containing depleted uranium, either loaded or expended, are prohibited. Treatment of loaded munitions or components containing colored smokes, white phosphorous, red phosphorous, hexachlorethane, or riot control agents is prohibited.

IV.C. OPERATION

1. Meteorological Restrictions

   The listed meteorological restrictions are applicable to both open burning and open detonation treatment operations. Treatment is allowed subject to the requirements of this permit under the following weather conditions:

   i. Less than a 50 percent chance of precipitation (including thunderstorms or electrical storms),

   ii. Average wind speed between 3 and 20 miles per hour,

   iii. Cloud cover less than 80 percent and ceilings greater than 2,000 feet, and

   iv. Wind direction is not from 29° to 121° measured east of north.

2. Other Restrictions

   i. Operations are limited to the period between ½ hour after sunrise and ½ hour before sunset,

   ii. Open burning will be conducted in each pan no more than once per day, and

   iii. Open detonation will be conducted in each pit no more than twice per day.

3. Treatment Quantities Per Unit

   The following quantity of material may be treated at the OB and/or OD units, expressed as net explosive weight (NEW). NEW is the total quantity of energetics (explosives, oxidizer propellant, and pyrotechnics). Explosive limits have also been established for the OB and OD units and these limits also cannot be exceeded at any time. The operating limits are as follows:

   i. 25 pounds NEW per open detonation pit (total of 175 pounds NEW for the seven detonation pits)

   ii. 100 pounds NEW consisting of hazard class 1.1 material per burn pan (total limit of 500 pounds NEW of hazard class 1.1 material for the five open burn pans)

iii. 2000 pounds NEW consisting of hazard class 1.3 material per burn pan (total limit of 10,000 pounds NEW of hazard class 1.3 material for the five open burn pans)

iv. 1000 pounds NEW consisting of oxidizer material per burn pan (total limit of 5000 pounds oxidizer NEW for the five open burn pans)

v. D003-contaminated solvents containing 900 pounds NEW or less including demolition material at burn pan No. 3

vi. 50 pounds NEW consisting of dynamite per burn pan (total limit of 250 pounds dynamite NEW for the five open burn pans)

vii. 100 pounds NEW consisting of test rocket motors, including ignition materials at any one of the five open burn pans

4. Maximum Operating Rates

The daily maximums and annual treatment quantities are as follows:

i. Daily Maximums:

OD - 1.1 or 1.3 hazard class materials
7 pits x 25 pounds NEW/pit x 2 operations/day = 350 pounds NEW/day

OB - 1.1 hazard class materials
5 burn pans x 100 pounds NEW/pan x 1 operation/day = 500 pounds NEW/day

OB - 1.3 hazard class materials
5 burn pans x 2000 pounds NEW/pan x 1 operations/day = 10,000 pounds NEW/day

ii. Annual Maximum Treatment Quantities:

OD - 1.1 hazard class materials = 5,250 pounds NEW/year
OD - 1.3 hazard class materials = 12,250 pounds NEW/year
OB - 1.1 hazard class materials = 20,000 pounds NEW/year
OB - 1.3 hazard class materials = 100,000 pounds NEW/year

5. Residue Control

The open burning operation of waste materials results in the generation of ash and scrap metal. Ash residue and scrap metal residue shall be handled in the following manner:

Ash Residue:

i. At the completion of each burn, the Permittee will allow a reasonable cooling period and then verify via visual inspection that all of the reactive material has been properly treated.

ii. Ash shall be removed from the burn pan. The ash is to be placed into DOT-approved 55-gallon drums with lids and closure rings. One drum shall be dedicated to each burn pan and ash from different pans shall not be co-mingled.
iii. The drums shall be properly labeled with the appropriate hazardous waste designation including the pan number, applicable RCRA waste codes, and the date the waste was first placed into the drum.
iv. The drums shall be removed to the satellite accumulation area and kept closed except to add more ash or to collect samples.
v. When the drum is determined to be full, it shall be given a 90-day accumulation start date and moved to the 90-day area for sampling in accordance with Section II.B.2 (Waste Analysis Plan) of the permit renewal application.
vi. All drums shall be managed in accordance with all state and Federal regulations governing hazardous waste handling and disposal. Wind dispersal of ash shall be controlled by limiting burns in accordance with Permit Condition IV.C. When ash is present, lids are to be placed on the burn pans. Lids shall be used to prevent precipitation from accumulating in the burn pans.

Scrap Metal:

i. At the completion of each burn, the Permittee will allow a reasonable cooling period and then verify via visual inspection that all the reactive material has been properly treated.
ii. The scrap metal shall be collected, sorted according to type (light metal, heavy metal, aluminum, brass, etc.), loaded onto trucks, and transported to the Permittee's Defense Reutilization Marketing Office (DRMO) for recycling or disposal.

a. The open detonation operation generates metal fragments, unexploded items, and non-metallic residuals ejected from the open detonation area.

i. Metal Fragments (Shrapnel)

At the completion of each detonation series, the Permittee will 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 shall be visually inspected to verify that the energetic component of the waste munition has been successfully treated. If shrapnel is observed or suspected to contain unreacted energetics, it shall be retreated with the next available detonation. If shrapnel is found to be free of energetics, it will be certified as explosive-free and removed as scrap metal.

ii. Other residuals

At the completion of each operating day the immediate area surrounding the active portion of the detonation pits shall be visually inspected for the presence of unexploded items or ejected items including munitions or components thereof.

All items found shall be re-treated in the next available detonation. At least monthly the inspection area shall include a boundary designated by the facility which shall encompass all potential areas where ejected material may fall beyond the immediate area of the active portion of the unit.

IV.D. INSPECTION

The Permittee is required to conduct routine inspections at the OB and OD units, as established in Section II.C.2 of the permit renewal application. During such inspections, the Permittee will check for malfunction and/or deterioration, operator error, and evidence of discharge, that may cause or lead to the release of hazardous constituents or that may have caused or lead to a potential threat to human health or the environment. These inspections shall be conducted at frequencies specified in Table II.C-1 of the permit renewal application to correct non-compliances before they can harm human health or the environment.

Any equipment or structure deterioration or malfunction (i.e., non-compliance) identified in the inspection must be promptly remedied to ensure the non-compliance does not cause environmental or human health hazard. If a hazard is determined to be imminent, or has already occurred, remedial action must be taken immediately. No further OB or OD operations are allowed to commence if the non-compliance has the potential to cause imminent hazard. If a non-compliance cannot be remediated within 48 hours, the Permittee shall notify the Department within 3 working days and submit a written report to the Department within 14 days of discovering the non-compliance.

Inspections shall be performed in accordance with Section II.C.2 of the permit renewal application. Documentation of the required inspections shall be documented in accordance with Table II.C-1, Inspection Items and Schedule, of the permit renewal application. All areas subject to spills (loading and unloading areas, and burn pans) are required to be inspected daily when in use.

IV.E. GROUNDWATER MONITORING PROGRAM

A groundwater monitoring program shall be established for the OB and OD units in accordance with the requirements in Section VII of this permit.

Groundwater underlying the OB and OD units is required to be monitored throughout the operating life of the OB and OD units per Permit Condition IV.E. and Section II.G of the permit renewal application. If at the time of closure the current and historical groundwater monitoring results indicate no evidence of contamination from the OB and OD units, then the groundwater will be considered un-impacted by OB and OD operations. If groundwater contamination is present from OB and OD operations, then the Permittee must address continued groundwater monitoring and corrective action in the post-closure plan.

IV.F. AIR MONITORING

Operating limits presented in Table III.C-1 of the permit renewal application are established by this permit to minimize the potential for impacts from OB and OD Units air releases at RSA and to ensure protection of human health and the environment.

IV.G. CLOSURE AND POST-CLOSURE PLAN

The Permittee shall close the OB and OD Units in accordance with ADEM Admin. Code R. 335-14-5-.07 and Section II.F of the permit renewal application. If clean closure according to ADEM Admin. Code R. 335-14-5-.07(2) can not be obtained, then the Permittee will submit a post-closure plan as part of a permit modification per Permit Condition I.J.

1. Closure Procedures

   a. All untreated reactive hazardous wastes, contaminated ash residue, unexploded ordnance (UXO), contaminated concrete pads, and contaminated soils shall be removed from the OB and OD units as described in Section II.F of the permit renewal application and disposed in accordance with all state and Federal regulations governing hazardous waste handling and disposal.

   b. All burn pans and lids shall be decontaminated or disposed as required by ADEM Admin. Code R. 335-14-5-.07(5) and as described in Section II.F of the permit renewal application. Burn pans and lids may be removed from the OB and OD units and disposed as scrap metal or may be put to other use at RSA.

   c. The concrete pan supports and concrete pads shall be decontaminated and/or cleaned to remove untreated waste and/or ashes as required by ADEM Admin. Code R. 335-14-5-.07 and as described in Section II.F of the permit renewal application. The supports and pads may be left in place if decontaminated to acceptance criteria or disposed of as a non-hazardous waste. If concrete can not be cleaned and properly decontaminated, it shall be disposed per Permit Condition IV.G.1.a.

   d. All soil in the area of the OB and OD units will be sampled for contamination per the ADEM approved closure plan (as described in Section II.F of the permit renewal application) required by Permit Condition IV.G. If decontamination of soil can not be attained during approved closure activities, the OB and OD unit will be closed in accordance with ADEM Admin. Code R. 335-14-5-.07 and an approved post-closure plan.

   e. If the OB and OD units can not be clean-closed and certified for unrestricted use pursuant to the Uniform Environmental Covenant Act (UECA)[ADEM Admin. Code R. 335-5 and ADEM Policy Memorandum #304], then a Land Use Control Plan must be developed and submitted in the post-closure plan.

PART V

SWMUs and AOCs ON OPERATIONAL RANGES

V.A APPLICABILITY

The conditions of this Part apply to the management, investigation and remediation of SWMUs and AOCs located on operational ranges identified in Section L-1 (Table L7) of the permit renewal application and which are defined in Condition 1.E of this permit and ranges listed on the Department of Defense Operational Range Inventory.

V.B. IDENTIFICATION AND ASSESSMENT OF SWMUs and AOCs ON OPERATIONAL RANGES

1. The Permittee shall ensure proper policing and management of operational ranges at the facility to minimize the present and future impacts to human health and the environment resulting from range operations and to ensure compliance with ADEM Admin. Code R. 335-14-7-.13(3). The Permittee may demonstrate compliance with this requirement at the facility as follows:

   a. The Permittee has prepared a draft final Phase I Operational Range Assessment (ORA) dated August 24, 2009 in concert with the Army's Sustainable Range Program to evaluate possible off-range migration of munitions constituents from operational ranges. The Phase I ORA is designed to evaluate the potential for releases of munitions constituents from range operations to off-range areas. The Phase I ORA shall be provided to the Department for informational purposes within 60 days following the effective date of this Permit.

   b. The Permittee must maintain a copy of the August 24, 2009 Phase I ORA and any subsequent updates at the location specified in Condition 1.C.10.e of this permit.

   c. The Operators of each range shall maintain a copy of each Standard Operating Procedure (SOP) for tests conducted on its operational test ranges. The SOPs will include the protocol for removal and disposal of munitions debris associated with the test activity. To the extent such information is not classified, the SOPs will be made available upon request.

   d. The Permittee will complete a Phase II Operational Range Assessment within two (2) years from the effective date of this permit renewal. The Phase II ORA will consider whether there are current and/or future risks to human health and the environment from off-range migration of munitions constituents. The Phase II ORA shall be provided to the Department for informational purposes within 60 days following completion of the assessment.

   e. The information required by Conditions V.B.1.b., V.B.1.c., and V.B.1.d. of this permit shall be maintained as part of the facility operating record as required by ADEM Admin. Code Rule 335-14-5-.05(4) and Condition II.K. of this permit, and shall be made available upon request.

2. The requirement to submit a comprehensive RFI pursuant to Condition VI.D. of this permit for the following units listed as SWMUs and/or AOCs in Table VI.2 will be deferred until the areas in which they are located are removed from the Army's operational range inventory or otherwise no longer qualify as operational ranges pursuant to Condition V.D. of this permit: RSA-046, RSA-071, RSA-072, RSA-073, RSA-074, RSA-129, RSA-254, and RSA-260. These are units that have been identified as RCRA regulated SWMUs and/or AOCs which have also been identified by RSA as directly related to range operations subject to the Munitions Rule (ADEM Admin. Code R. 335-14-7-.13). Any contamination on the ranges resulting from exempted military munitions use is covered under the Munitions Rule's "used for its intended purpose" exemption pursuant to ADEM Admin. Code R. 335-14-7-.13(3)(a)1. This deferral of the requirement to submit a comprehensive RFI is related to contamination from exempted military munitions use only, and does not constitute a deferral of the requirements to investigate, remediate, perform interim measures or otherwise properly address any activities or contamination co-located on such SWMUs and/or AOCs which are/were not directly related to range activities and which do not qualify for exemption pursuant to ADEM Admin. Code Rules 335-14-7-.13(3)(a), 335-14-7-.13(4)(a), 335-14-7-.13(5), or 335-14-7-.13(6)(a), as required by Conditions V.C., VI.F.1.e., or other portions of this permit.

3. The Permittee shall develop and implement a plan establishing the protocol and frequency for conducting periodic evaluations (at least annual) of range activities (e.g., review of SOPs, etc.) and inspections on ranges. This plan shall be designed and implemented in order to determine compliance with the requirements of ADEM Admin. Code R. 335-14-7-.13; to identify past and present solid waste management activities and units, including those related to ordnance activities and munitions debris, which do not qualify for exemption pursuant to ADEM Admin. Code Rules 335-14-7-.13(3)(a), 335-14-7-.13(4)(a), 335-14-7-.13(5), or 335-14-7-.13(6)(a); and to ensure that materials removed from ranges, disposed, or otherwise managed are handled in accordance with all applicable rules and regulations, and in a manner protective of human health and the environment. This plan shall be submitted to the Department within 120 days following the effective date of this permit.

4. The Permittee shall include the findings of the evaluations and inspections required in Condition V.B.3. of this permit in the operating record as required by ADEM Admin. Code R. 335-14-5-.05(4) and Condition II.K. of this permit, and shall report said findings in accordance with the requirements of Conditions VI.B. and VI.C. of this permit.

V.C INVESTIGATION AND REMEDIATION OF SWMUs and AOCs LOCATED ON OPERATIONAL RANGES

The Permittee shall coordinate with range personnel in order to determine the scheduled use of the operational ranges and conduct in a timely manner the required investigation and remediation activities (such as described in Parts VI.A.5 of this permit) for SWMUs and/or AOCs that are located on the operational range but not related to range activities, or which do not qualify for exemption pursuant to ADEM Admin. Code Rules 335-14-7-.13(3)(a), 335-14-7-.13(4)(a), 335-14-7-.13(5), or 335-14-7-.13(6)(a). The investigation and remediation of SWMUs and/or AOCs located on an operational range which are not directly related to range activities (e.g., burial pits,

prior manufacturing areas, waste management areas, etc.) shall be conducted in a timely and expeditious manner and shall not be deferred until closure or cessation of range activities or the removal of the range from the Operational Range Inventory. (ADEM Admin. Code R. 335-14-7-13(3)(a)1(iii)).

V.D REMOVAL FROM OPERATIONAL RANGE INVENTORY

1. The Permittee shall notify the Department within 30 days following removal of a range, or a portion of a range, from the Operational Range Inventory or otherwise determining that a range or portion of a range no longer qualifies as an operational range. This notification shall be accompanied by a request for permit modification (pursuant to Condition I.J of this permit) to remove the range from the Operational Range Inventory included in Section L-1 (Table L-7) of the permit renewal application.

2. Upon removal of a range, or a portion of a range, from the Operational Range Inventory, the Permittee shall comply with the requirements of Part VI (Solid Waste Management Unit/Area of Concern Identification and Evaluation) of this Permit for the entire range area (or the portion removed), including areas and activities utilized as a part of previous operational range activities. Additionally, the range will remain subject to all other requirements of this permit.

PART VI

SOLID WASTE MANAGEMENT UNIT IDENTIFICATION AND EVALUATION

VI.A. APPLICABILITY

The Conditions of this Part apply to:

1. The solid waste management units (SWMUs) and areas of concern (AOCs) identified in Table VI.1;

2. The SWMUs/(AOCs) identified in Table VI.2, which require investigation and/or remediation;

3. The SWMUs/AOCs identified in Table VI.3, which require no further investigation under this permit at this time;

4. The SWMUs/AOCs identified in Table VI.4, which are regulated by Parts I-IIII and VI of this permit;

5. The SWMUs/AOCs identified in Table VI.5, which require Interim Measures and/or Source Removal;

6. The SWMUs/AOCs identified in Table VI.6, which require a Corrective Measures Implementation (CMI) Plan.

7. Any additional SWMUs or AOCs discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means; and,

8. Contamination beyond the facility boundary, if applicable. The Permittee shall implement corrective actions beyond the facility boundary where necessary to protect human health and the environment, unless the Permittee demonstrates to the satisfaction of the Department that, despite the Permittee's best efforts, as determined by the Department, the Permittee was unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. Assurances of financial responsibility for completion of such off-site corrective action will be required.

VI.B. NOTIFICATION AND ASSESSMENT REQUIREMENTS FOR NEWLY IDENTIFIED SWMUs AND AOCs

1. The Permittee shall notify the Department in writing, within 15 calendar days of discovery, of any additional AOC(s) as described under Permit Condition VI.A.7. The notification shall include, at a minimum, the location of the AOC(s) and all available information pertaining to the nature of the release (*e.g.*, media affected, hazardous

constituents released, magnitude of release, *etc.*). If the Department determines that further investigation of an AOC is required, the permit will be modified in accordance with ADEM Admin. Code Rule 335-14-8-.04(2).

2. The Permittee shall notify the Department in writing, within 15 calendar days of discovery, of any additional SWMUs as described under Permit Condition VI.A.7.

3. The Permittee shall prepare and submit to the Department, within 90 calendar days of notification, a SWMU Assessment Report (SAR) for each SWMU identified under Permit Condition VI.B.2. At a minimum, the SAR shall provide the following information:

   a. Location of unit(s) on a topographic map of appropriate scale such as required under ADEM Admin. Code Rule 335-14-8-.02(5)(b)19.

   b. Designation of type and function of unit(s).

   c. General dimensions, capacities and structural description of unit(s) (supply any available plans/drawings).

   d. Dates that the unit(s) were operated.

   e. Specification of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous constituents in the wastes.

   f. All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include groundwater data, soil analyses, air, and/or surface water data).

4. Based upon the results of the SAR, the Department shall determine the need for further investigations at the SWMUs covered in the SAR. If the Department determines that such investigations are needed, the Permittee shall initiate an investigation as outlined in Permit Condition VI.D.1 immediately upon receiving notification of the Department's determination.

VI.C. NOTIFICATION REQUIREMENTS FOR NEWLY DISCOVERED RELEASES AT PREVIOUSLY IDENTIFIED SWMUs or AOCs

1. The Permittee shall notify the Department in writing of any newly discovered release(s) of hazardous waste or hazardous constituents discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means, within 15 calendar days of discovery. Such newly discovered releases may be from SWMUs or AOCs identified in Permit Condition VI.A.3 or SWMUs or AOCs identified in Permit Condition VI.A.7 for which further investigation was not required.

2. If the Department determines that further investigation of the SWMUs or AOCs is needed, the Permittee shall initiate an investigation as outlined in Permit Condition VI.D. immediately upon receiving notification of the Department's determination.

VI.D. RCRA FACILITY INVESTIGATION (RFI)

1. The Permittee must perform a RCRA Facility Investigation (RFI) for any SWMU and AOC identified by the Department in accordance with Permit Conditions VI.A.2, VI.B.4, and VI.C.2.

2. The RFI must completely identify the concentration of hazardous constituents released from each SWMU and AOC and fully delineate the area where such hazardous constituents have come to be located.

3. The RFI must fully characterize the nature and extent of contamination released from each SWMU or AOC under investigation.

4. The RFI must be performed in a manner consistent with the most recent edition of the Alabama Environmental Investigation and Remediation Guidance.

5. Except as provided by Permit Condition VI.D.6., the RFI must be completed within 180 calendar days from the effective date of this permit or, for SWMUs or AOCs identified pursuant to Permit Condition VI.B. and C., within 180 calendar days from the receipt of notification from the Department that an RFI is required. If, prior to the effective date of this permit, the Department has approved a work plan that includes a schedule for completing the RFI, the RFI shall be completed in accordance with the approved schedule.

6. RFI Schedule of Compliance

   a. For RFIs expected to require greater than 180 calendar days to complete, the Permittee may submit a schedule of compliance subject to Departmental approval and/or modification.

   b. Submittal of an RFI Schedule of Compliance does not delay or otherwise postpone the Permittee's obligation to initiate the RFI.

   c. The Schedule of Compliance must include:

      i. A detailed narrative discussion, which explains why the RFI cannot be completed within 180 days; and,

      ii. A detailed and chronological listing of milestones with estimated durations that provides sufficient information to track the progress of the investigation.

   d. The RFI Schedule of Compliance shall be reviewed by the Department in accordance with Permit Condition VI.G.

   e. The Permittee shall complete the RFI in accordance with the approved RFI Schedule of Compliance.

7. RFI Progress Reports

a. For an RFI being conducted in accordance with the approved RFI Schedule of Compliance, the Permittee must submit progress reports on a monthly basis.

b. The RFI Progress Reports must include:

i. A description of the RFI activities completed during the reporting period;

ii. Summaries of any problems or potential problems encountered during the reporting period;

iii. Actions taken to rectify problems;

iv. Changes in relevant personnel;

v. Projected work for the next reporting period;

vi. Any proposed revisions to the RFI Schedule of Compliance. Modifications of the RFI Schedule of Compliance are subject to approval by the Department; and,

vii. A summary of any data collected during the reporting period, including:

A. The location of each sampling point identified on a site map;

B. The concentration of each hazardous constituent detected at each sampling point; and,

C. Submittal of RFI Progress Reports, work plans, or other documents during the RFI does not alter the approved RFI Schedule of Compliance.

8. RFI Reports

a. The Permittee shall prepare and submit to the Department an RFI Report within 60 calendar days from the completion of investigation activities in accordance with the approved RFI Schedule of Compliance, if applicable.

b. The RFI Report must provide a detailed description of all required elements of the investigation as described in the most recent edition of the Alabama Environmental Investigation and Remediation Guidance.

c. The RFI Report shall be reviewed by the Department in accordance with Permit Condition VI.G.

VI.E. SELECTION OF CORRECTIVE MEASURES AND PERMIT MODIFICATION

1. The Permittee shall develop and submit to the Department a Corrective Measures Implementation (CMI) Plan for any areas of the Permittee's site where hazardous

constituents have come to be located at concentrations exceeding those appropriate for the protection of human health and the environment. The CMI Plan must include all applicable elements of the proposed remedy pursuant to the most recent edition of the Alabama Environmental Investigation and Remediation Guidance.

2. The CMI Plan shall be submitted to the Department within 120 calendar days following the Permittee's submittal of the RFI Report indicating that hazardous constituents have come to be located at any area of the Permittee's facility, or beyond the facility, at concentrations exceeding those appropriate for the protection of human health and the environment, or within 120 calendar days following notification from the Department that a CMI Plan is required, whichever occurs earlier.

3. The CMI Plan shall be submitted along with a request for permit modification pursuant to ADEM Admin. Code R. 335-14-8-.04(2), and shall include any applicable fees pursuant to ADEM Admin. Code R. 335-1-6. This modification will serve to incorporate the proposed final remedy, including all procedures necessary to implement and monitor the remedy, into this permit.

4. The CMI Work Plan shall be submitted for the SWMUs/AOCs listed in Table VI.6 within 120 days from permit issuance.

VI.F. INTERIM MEASURES (IM)

1. IM Work Plan(s)

   a. Upon notification by the Department, the Permittee shall prepare and submit an Interim Measures (IM) Work Plan for any SWMU or AOC that the Department determines is necessary. IM are necessary in order to minimize or prevent further migration of contaminants and limit human and environmental exposure to contaminants while long-term corrective measures are evaluated and, if necessary, implemented. The IM Work Plan shall be submitted within 30 calendar days of such notification and shall include the elements listed in Permit Condition VI.F.1.b. Such IM may be conducted concurrently with investigations required under the terms of this permit. The Permittee may initiate IM by submitting an IM Work Plan for approval and reporting in accordance with the requirements under Permit Condition VI.F.

   b. The IM Work Plan shall ensure that the IM are designed to mitigate any current or potential threat(s) to human health or the environment and is consistent with and integrated into any long-term solution at the facility. The IM Work Plan shall include: the IM objectives, procedures for implementation (including any designs, plans, or specifications), and schedules for implementation.

   c. The IM Work Plan must be approved by the Department, in writing, prior to implementation. The Department shall specify the start date of the IM Work Plan schedule in the letter approving the IM Work Plan.

   d. The IM Report shall be reviewed by the Department in accordance with Permit Condition VI.G.

e. The Permittee shall submit IM WPs for the SWMUs and AOCs listed in Table VI.5 of this permit to the Department for review and approval. The IM WPs shall be submitted within 180 days from the effective date of this permit.

2. IM Implementation

a. The Permittee shall implement the IM in accordance with the approved IM Work Plan.

b. The Permittee shall give notice to the Department as soon as possible of any planned changes, reductions or additions to the IM Work Plan.

c. Final approval of corrective action required under ADEM Admin. Code Rule 335-14-5-.06(12), which is achieved through IM, shall be in accordance with ADEM Admin. Code Rule 335-14-8-.04(2) and Permit Condition VI.E.

3. IM Reports

a. If the time required for completion of IM is greater than one year, the Permittee shall provide the Department with Progress Reports at intervals specified in the approved work plan. The Progress Reports shall, at a minimum, contain the following information:

i. A description of the portion of the IM completed;

ii. Summaries of any deviations from the IM Work Plan during the reporting period;

iii. Summaries of any problems or potential problems encountered during the reporting period;

iv. Projected work for the next reporting period; and,

v. Copies of laboratory/monitoring data.

b. The Permittee shall prepare and submit the IM Report to the Department within 90 calendar days of completion of IM conducted under Permit Condition VI.F. The IM Report shall, at a minimum, contain the following information:

i. A description of IM implemented;

ii. Summaries of results;

iii. Summaries of all problems encountered;

iv. Summaries of accomplishments and/or effectiveness of IM; and,

v. Copies of all relevant laboratory or monitoring data, *etc.*, in accordance with Permit Condition I.C.10.

VI.G. SUBMITTALS

1. All work plans, reports, schedules, and other documents ("submittals") required by this permit shall be subject to approval by the Department to assure that such submittals and schedules are consistent with the requirements of this Permit and with applicable regulations and guidance. The Permittee shall revise all submittals and schedules as directed by the Department.

2. The Department will review all submittals in accordance with the conditions of this permit. The Department will notify the Permittee in writing of any submittal that is disapproved, and the basis therefore. If the Department disapproves a submittal, the Department shall: (1) notify the Permittee in writing of the submittal's deficiencies and specify a due date for submission of a revised submittal, (2) revise the submittal and notify the Permittee of the revisions, or (3) conditionally approve the submittal and notify the Permittee of the conditions. Permit Condition VI.H. shall apply only to submittals that have been disapproved and revised by the Department, or that have been disapproved by the Department, then revised and resubmitted by the Permittee, and again disapproved by the Department.

3. All submittals shall be submitted within the time frame specified by the Department and in accordance with the approved schedule of compliance. Extensions of the due date for submittals may be granted by the Department based on the Permittee's demonstration that sufficient justification for the extension exists.

4. All submittals required by this permit shall be signed and certified in accordance with ADEM Admin. Code Rule 335-14-8-.02(2).

5. Two (2) copies of all submittals shall be provided by the Permittee to the Department in accordance with Permit Condition I.K.

VI.H. DISPUTE RESOLUTION

Notwithstanding any other provision in this permit, in the event the Permittee disagrees, in whole or in part, with the Department's revision of a submittal or disapproval of any revised submittal required by this Part, the following may, at the Permittee's discretion, apply:

1. In the event that the Permittee chooses to invoke the provisions of this section, the Permittee shall notify the Department in writing within 30 calendar days of receipt of the Department's revision of a submittal or disapproval of a revised submittal. Such notice shall set forth:

    a. The specific matters in dispute;

    b. The position the Permittee asserts should be adopted as consistent with the requirements of this permit;

    c. The basis for the Permittee's position; and,

    d. Any matters considered necessary for the Department's determination.

2. The Department and the Permittee shall have additional 30 calendar days from the Department's receipt of the notification provided for in Permit Condition VI.H.1. to meet or confer to resolve any disagreement.

3. In the event agreement is reached, the Permittee shall submit and implement the revised submittal in accordance with and within the time frame specified in such agreement.

4. If agreement is not reached within the 30-day period, the Department will notify the Permittee in writing of his/her decision on the dispute, and the Permittee shall comply with the terms and conditions of the Department's decision in the dispute. For the purposes of this provision in this permit, the responsibility for making this decision shall not be delegated below the Land Division Chief.

5. With the exception of those conditions under dispute, the Permittee shall proceed to take any action required by those portions of the submission and of this permit that the Department determines are not affected by the dispute.

Table VI.1

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

It should be noted that as used in Table VI.1, VI.2, VI.3, VI.4, VI.5, VI.6, and VIII.1, the SWMU/AOC number is RSA - ### except where specifically noted otherwise (e.g., MSFC - ###).

Master List of known SWMUs/AOCs at the facility:

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
001	Fox Army Community Hospital Incinerator	
002	In-ground Oil/Water Separator, Bldg 3338	
003	In-ground Oil/Water Separator, Bldg 3617	
004	In-ground Oil/Water Separator & Washrack	
005	Inactive Waste Accumulation Area	
006	Paint Shop & Sump at Motor Pool, Bldg 3634	
007	Hazardous Waste Storage Area, Bldg 3775	
008	Inactive Sewage Treatment Plant #4	
009	Inactive Sewage Treatment Plant #3	
010	Closed Sanitary Landfill	
011	Former Sewage Treatment Plant No. 1	
012	Active Open Burn Pans, Unit 2 (OB)	
013	Unlined Inactive Open Burn Pad	
014	Unlined Inactive Burn Trenches Unit #2	
015	Hazardous Waste Storage Igloo, No. 1 (8621)	
016	Hazardous Waste Storage Igloo, No. 2 (8622)	
017	Hazardous Waste Storage Igloo, No. 3 (8623)	
018	Hazardous Waste Storage Igloo, No. 4 (8624)	
019	Hazardous Waste Storage Igloo, No. 5 (8625)	
020	Hazardous Waste Storage Igloo, No. 6 (8630)	
021	Hazardous Waste Storage Igloo, No. 7 (8631)	
022	Hazardous Waste Storage Igloo, No. 8 (8632)	
023	Hazardous Waste Storage Igloo, No. 9 (8633)	
024	Hazardous Waste Storage Igloo No. 10	
025	Hazardous Waste Vacant Storage Igloo No. 11	
026	Hazardous Waste Vacant Storage Igloo No. 12	
027	Hazardous Waste Vacant Storage Igloo No. 13	
028	In-ground Oil/Water Separator, 5693 Area	
029	Redstone Arsenal Sanitary Sewer System	
030	Former Central Oil/Water Separator	
031	Former Central Oil/Water Separator Storage Tanks	
032	Inactive Scrap Metal Storage Area	
033	Plating Room Floor Drains, Bldg 5432	
034	Waste Aviation Fuel Temporary Storage Area	
035	In-ground Oil/Water Separator, Bldg 4812	

Table VI.1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
036	In-ground Oil/Water Separator, Bldg 4832	
037	Underground Used Oil Storage Tank at Bldg 7857	
038	Underground Used Oil Storage Tank Bldg 3240	
039	Underground Used Oil Storage Tank Bldg 3338	
040	Underground Used Oil Storage Tank Bldg 3617	
041	Underground Used Oil Storage Tank Bldg 3636	
042	Underground Used Oil Storage Tank Bldg 4812E	
043	Underground Used Oil Storage Tank Bldg 5435A	
044	Underground Used Oil Storage Tank Bldg 5435B	
045	Smoke Munitions Plant 3	
046	Inactive Chemical Munition Test Site, Area CC	
047	Chemical Training Facility, Area EE	
048	Inactive Sanitary Landfill, Area G	
049	Capped Arsenic Waste Lagoons – West, Area F	
050	Inactive Munitions Demil/Disposal Area H	
051	Inactive Munitions Demil/Disposal Area I	
052	Inactive Munitions Demil/Disposal Area N	
053	Inactive Sanitary & Industrial Landfill, Area Q3	
054	Inactive Sanitary & Industrial Landfill, Area T	
055	Inactive Sanitary & Industrial Landfill, Area S	
056	Closed Arsenic Waste Ponds (South) Area U	
057	Former Lewisite Drum Storage Yard, Area V	
058	Inactive Rubble Fill/Waste Pile, Area W	
059	Inactive Construction Rubble Fill, Area R	
060	Inactive Sanitary & Industrial Landfill, Area Q4	
061	Inactive Munitions Demil/Disposal, Area P	
062	Inactive Munitions Demil	
063	Inactive Chemical Munitions Disposal, Area M	
064	Inactive Munitions Demil/Disposal Area BB	
065	Former Chemical Drum Storage Area, Area X	
066	Inactive Ash Disposal Site, Area X-1	
067	Former Chemical Drum Storage Area, Area AA	
068	Inactive Chemical Disposal Area, Area Z	
069	Former Chemical Drum Storage Area, Area Y	
070	Inactive Toxic Chemical Storage Area, Area Y1	
071	High Explosive Drop Test Site, Area A	
072	Mortar Shell Test Site, Area B	
073	High Explosive Impact Test Site, Area C	
074	High Explosive Impact Test Site, Area D	
075	Inactive Solid Waste Incinerator	
076	RDX/HMX Filtration Unit 1, Thiokol North	
077	RDX/HMX Filtration Unit 2, Thiokol South	
078	RDX/HMX Filtration Unit 1 Sump, Thiokol North	
079	RDX/HMX Filtration Unit 2 Sump, Thiokol South	

Table VI. 1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
080	RDX/HMX Suspension Transfer Pad/Sump	
081	RDX/HMX Filtration Units, Charcoal Column Dolly	
082	Former Sparging Unit, Bldg 7595	
083	Paint Spray Booth Sump, Bldg 7344	
084	Inactive Temporary Waste Storage Pad, Bldg 7344	
085	Inactive Temporary Waste Storage Pad 1, Bldg 7359	
086	Inactive Temporary Waste Storage Pad 2, Bldg 7359	
087	Inactive Temporary Waste Storage Pad 1&2, Bldg 7368	
088	Inactive Temporary Waste Storage Pad, Bldg 7625	
089	Inactive Temporary Waste Storage Pad, Bldg 7726	
090	Inactive Temporary Waste Storage Pad, Bldg 7340	
091	Inactive Temporary Waste Storage Pad, Bldg 7595	
092	Temporary Waste Storage Pad, Bldg 7552	
093	Reclaimed Empty Drum Storage Pad, Bldg 7368	
094	Chlorinated Solvent Distillation Unit 1, Bldg 7625	
095	Chlorinated Solvent Distillation Unit 2, Bldg 7368	
096	Chlorinated Solvent Distillation Unit 3, Bldg 7740	
097	Chlorinated Solvent Distillation Unit 4, Bldg 7726	
098	Chlorinated Solvent Distillation Unit 5, Bldg 7346	
099	Abandoned Plating Shop Tank/Sumps, Bldg 7614	
100	Aboveground Waste Oil Tank, Bldg 7630	
101[a]	DDT Contaminated Area DD	
102	DDT Plant Site Q-6	
103	DDT Settling Lagoon	
104	Inactive ISP Wastewater Discharge Ditch	
105	DDT Drainage Ditches	
106	DDD Earthen Dams	
107	Closed DDT Soil/Debris Landfill	
108	Test Range 4 Missile Impact Site	
109	Former Chemical Munitions Staging Area	
110	Former Drum Storage/Construction Debris, Area Y	
111	Construction Debris, Area W	
112	Suspected Former Demil/Disposal, Area W	
113	Inactive Disposal Trenches/Burn Pits, Area W	
114	Inactive Madkin Mt Rock Quarry	
115	Inactive East Side Blowdown Lagoon, Test Area 5	
116	South Side Blowdown Lagoon, Test Area 5	
117	Former Liquid Caustic Mfg Plant, Area R	

Table VI.1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
118	Inactive ISP Industrial Discharge Lagoon	
119[b]	GAF Manufacturing Facility	
120	Matthew's Cave and Ravine	
121	Paint Shop/Paint Washout Booth, Bldg 4762	
122	Dismantled Lewisite Mfg. Plant, Area U	
123	Inactive Cement Plant Sump	
124	Dismantled Calgon DDT Contaminated Water Treatment Plant	
125	Satellite Waste Accumulation Area, Bldg 5477	
126	Inactive Open Burn Trench, Area U	
127	Photo Lab Process Wastewater Sump Bldg 5451	
128	Inactive Mustard Gas Demil Area, Area W	
129	Thiokol Burning Pit/Rocket Washout Area	
130	Inactive Radiographic Septic Tank, Bldg 7345	
131	Active Open Detonation Area (OD)	
132	Dismantled Popping Furnace	
133	Inactive Rocket Washrack/Sump, Unit 2	
134	Inactive Disposal Trench/Burn Pit, Area U	
135 A-G, I-N	1.1 Propellant Waste Captive Sumps	
135 H	1.1 Propellant Waste Captive Sump, Bldg 7593	
136 A-J	1.1 Propellant Waste Drum Storage Pads	
137 A-L, N-P	1.3 Propellant Waste Sumps	
138 A-L, N-Q	1.3 Propellant Waste Drum Storage Pads	
138 M	ROP Tetryl Processing Line	
139	Closed Arsenic Waste Pond (North) Area U	
140	Inactive Disposal Area near T/S Tower	
141	4.2-inch Mortar Disposal Site, Bldg 4656	
142	TCE Spill by Thiokol Degreasing Process	
143	Petroleum Contaminated Soil Site, South of Bldg 3240	
144	Degreaser at Bldg 7554	
145	GW Northeast part of RSA (~9900 acres)	
146	GW Southeast part of RSA, underlies former Thiokol Plant (~6600 acres)	
147	GW Central part of RSA (~1300 acres)	
148	GW Central Area – East of MSFC (~3600 acres)	
149	GW West Central Area – West MSFC (~3900 acres)	
150	GW Western part of RSA (~3900 acres)	
151	GW Southern part of RSA, underlies OB/OD Area (~570 acres)	
152	GW Southern part of RSA, underlies GCWD (~570 acres)	

Table VI. 1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
153	GW Western edge of RSA (~6300 acres)	
154	GW South-Central part of RSA (~3300 acres)	
155	GW Southwestern area of RSA (1600 acres)	
156	GW Southern part of RSA (~1400 acres)	
157	GW Southeastern part of RSA, underlies GCWD Storage Area (~100 acres)	
158	Flammable Material Storage Bldg, TSA Bldg 3233	
159	Chemical Containment Storage, TSA Bldg 3327	
160	Mixer Bldg, TSA Bldg 7339	
161	Care Prep Bldg, TSA Bldg 7346	
162	Small Motor Loading "T", TSA Bldg 7347A	
163	Propellant Mixer, TSA Bldg 7353	
164	Mixer Bldg, TSA Bldg 7356	
165	Casting Bldg, TSA Bldg 7360	
166	Liner Preparation, TSA Bldg 7369	
167	Mixer Bldg, TSA Bldg 7382	
168	Motor Casting and Processing Bldg, TSA Bldg 7554	
169	Motor Assembly and Packout, TSA Bldg 7555	
170	Deaeration Cleanup, TSA Bldg 7593	
171	Propellant Mixing, TSA Bldg 7594	
172	Motor Pool, TSA Bldg 7630	
173	Chemistry Lab, Pad 1, TSA Bldg 7632	
174	Chemistry Lab, Pad 2, TSA Bldg 7632	
175	Physical Property Lab, Pad 1, TSA Bldg 7636	
176	Physical Property Lad, Pad 2, TSA Bldg 7636	
177	Small Motor Finishing, TSA Bldg 7654	
178	Control Lab and First Aid, Pad 1, TSA Bldg 7667	
179	Control Lab and First Aid, Pad 2, TSA Bldg 7667	
180	Nitramine Drying Pilot, TSA Bldg 7688	
181	Nitramine Grinding Pilot, TSA Bldg 7690	
182	1.1 Grinder Bldg "P2", TSA Bldg 7695	
183	Former Lewisite Manufacturing Lines 1 & 2	
185	IOU – TN River (A)	
187	Northern Thiokol Propellant Mixing Facility	
188	Northern Burial Area/Burning Ground #3	
189	Motor/Oxidizer Preparation Facilities, ROP Line 2 Area	
190	Disposal/Drainage Area West of ROP Line 2	
191	ROP Line 1 Service Facilities	
192	Tetryl and Igniter Processing, ROP Line 1 Area	
193	Igniter Preparation Facility	
194	Physical Test Laboratory and Storage Facilities	

Table VI. 1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
195	Propellant Mixing Facility #1, Bldg 7363	
196	Test Stand and Cleaning Bldg, Bldg 7373	
197	Rocket Motor Static Test Stand	
198	Equipment/Tool Cleaning Facility, Bldg 7359	
199	Propellant Mixing Facility #2, Bldg 7382	
200	ROP Line 5 Area Operations Facilities	
201	Research Laboratory, Bldg 7632	
202	Graded Area Northeast of ROP Storage Igloos	
203	Igloo Area Loading Dock, Bldg 7351	
204	Oxidizer Facility, Bldg 7691	
205	Photo Lab and Motor Service Facility, Former Bldg 7628	
206	Propellant Mixing Facility #2 and Casting Facility, Bldg 7339/40	
207	Gorgas Laboratory, Bldg 7770	
208	South Plant Testing Facilities	
209	Propellant Crushing/Grinding and Fuse Production	
210	Nitroglycerine Wash House	
211	South Plant Storage Magazines	
212	Propellant Dry Houses	
213	ROP Line 4 Area Operations Facilities	
214	ROP Line 6 Area Operations Facilities	
215	RSA-146 Historic Service Facilities	
216	Laboratory Injection Test Facility, Bldg 5475	
217	Inert Storage Warehouse Facilities	
218	Defense Reutilization Material Office (DRMO) Open Storage Area	
219	Chemical Storage Area in Salvage Yard	
220	Construction Material Storage Yard	
221	Fuse Storage and Munitions Disposal Area	
222	Roads and Grounds Maintenance Shop, Bldg 5494	
223	Central Railroad Classification Yard	
224	Container Storage Area	
225	Fuse Modification Line 7	
226	Open Storage 54-2	
227	Inactive Washrack (adjacent to Bldg 5492)	
228	Sewage Treatment Plant 2	
229	Former PX Service Station (Bldg 3197)	
230	Abandoned Rubble Pile	
231	SMF #1 Mixing& Prep Facilities	
232	SMF #1 Service Station	
233	SMF #2 Mixing & Prep Facilities	
234	Waste Disposal Pit	

Table VI. 1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
235	Bulk Fuel Storage Facility	
236	Grenade Packing & Assembly	
237	Propellant Cutting and Drying	
238	Plant 2, Mustard Lines 5 and 6	
239	ROP Line #1 Boiler House	
240	Substation No.7, Formerly Bldg 5290 (demolished)	
241	Hazardous Waste Storage Igloo, Bldg 7313	
242	Hazardous Waste Storage Igloo, Bldg 7314	
243	Propellant Storage, Bldg 7342	
244	Propellant Mixing Bldg, Bldg 7356	
245	Steam Heating Plant, Bldg 7579	
246	Sewer Ejector & Motor Pool, Bldg 7630	
247	Steel Fabrication/Maintenance Facility, Bldg 7644	
248	Battery Maintenance Shop, Bldg 3633	
249	Inactive Old Bone Yard Disposal Site 2	
250	Former Storage Warehouse, Bldg 778/5678	
251	Former Phosgene Plant	
252	Incendiary Bomb Facility Plant 2 Area	
253	Utility/Flammable Materials Storage (B6109)	
254	Range 1 Bombing Targets	
255	Coal Storage Area N. of RSA-065	
256	Scarred Area #2-NE of RSA-032 w/in Historic RR Spur Line	
257	Rock Pond	
258	Guard Shack Waiting Shelter/Paint Spray, Bldg 7862	
259	TA #2 Leach Field	
260	Test Stand C, TA#2 Bldg 7843	
261	Lance Missile Conditioning Facility, Bldg 7847	
262	CWS Warehouse Area (Bldgs 8021, 8022, 8023, 8024, 8025, 8026, and 8027)	
263	CWS Motor Pool (Bldg 8017)/Change House (Bldg 8020)	
264	RR Spring	
265	Gasoline Drum Storage Area	
266	Open Storage Area N. of Bldg 8607	
267	Drainage Ditch #4	
268	Sewage Treatment Plant, Bldg 8018	
269	Former UST, Bldg 7852	
270	Hazardous Waste TSA & Recycling Facility Bldg 5423	

Table VI. 1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
271	Former Boiler House, Bldg 7729	
272	Former UST for Boiler Unit, Bldg 7650	
273	Propellant Conditioning & Motor Cycling, Bldg 7364	
274	Physics Laboratory & High Explosives Storage Magazine, Bldg 7540	
275	Film Processing Laboratory, Former Bldg S-7173	
276	Former Boiler House, Bldg 7362	
277	Bldg 5487, Wastewater Maintenance Shop Acid Bath Wash Down Area	
278	Highway 565 Area	
279	Smoke Grenade Area	
280	Skunk Hollow Small Arms Range	
281	Disposal Trenches at RSA-046 Range	
282	Former Mortar Test Site (Not in Range)	
283	Former Primary Substation No. 2 Bldg 3796	
284	Fire Training Area	
285	Former WP Grenade Test Area	
286	Boiler/Steam Plant, Bldg 3624	
287	Component Storage Warehouse, Bldg 3634	
288	Drinking WTP#1, Sludge Thickener & Drying Beds, Bldgs 8043 & 8044	
289	Drinking WTP#2, Sludge Thickener (Bldg 9102) & Sludge Drying Beds	
290	Drinking WTP#3, Sludge Thickener & Drying Beds, Bldgs 5431 & 5433	
291	UST at Former Bldg T-3162 (Steam Plant)	
292	UST at Bldg 3311 (Boiler & Compressor House)	
293	Former USTs at Bldg 3639 (Screening & Proportioning Smoke Components Bldg)	
294	Field Training Exercise Area E	
295	Hazardous Waste TSA, Bldg S-3335	
296	Disposal Area North of RSA-011	
297	Ammunition Packing/Shipping, Bldg 7551	
298	Hazardous Waste TSA, Bldg 8408	
299	Hazardous Waste TSA, Bldg 7216	
300	Hazardous Waste TSA, Bldg 7172	
301	Hazardous Waste TSA, Bldg 7173	
302	Hazardous Waste TSA, Bldg 3802	
303	Hazardous Waste TSA, Bldg 7700	
304	OWS, Washrack & Sump, adjacent to Bldg 5498	
305	Dispatcher's Office with Washrack, Bldg 3664	
306	Steam Heating Plant, Bldg 7291	

Table VI. 1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
307	Hazardous Waste TSAs B and C, Bldg 7347	
308	Exterior Sump at Bldg 7120	
309	Covered Trench & Sump at Bldg 7155	
310	Former OWS & Suspected OWS at Bldg 7289	
311	Exterior Sump & Interior Concrete Pits at Bldg 7352	
312	Former Range Area for Gate 7 Expansion	
313	Western Side of Former High Explosive Drop Area A	
A	Inactive Propellant Storage Wells South	
B	Abandoned Army Propellant Mfg Bldg 7598	
C	Abandoned Army Propellant Mixing Bldg 7596	
D	Paint Storage Shed, Bldg 3547	
E	No. 2 Fuel Oil Spill, Tank 5693 at the Fuel Farm	
F	Fenced Open Storage/Laydown Yard	
MSFC-002	Inactive Abandoned Drum Disposal Site	
MSFC-003	Inactive Old Bone Yard Disposal Site #1	
MSFC-027	Inactive (M-1) Waste Accumulation Area	
MSFC-033*	SWAA Bldg 4815	
MSFC-034	Skunk Hollow Small Arms Range	
MSFC-035	Inactive Sump/Tiled Drain Field – East TA	
MSFC-043*	Waste Oil Trap for Bldg 4816	
MSFC-053	Former Propellant Storage Area and Test Stand Site	
MSFC-055	Dismantled Stauffer Chemical Mfg Plant	
MSFC-060	Drainage System for Historic Redstone Test Site	
MSFC-065	1800-Ft Surface Drainage Ditch/Area	
MSFC-068*	Bldg 4815 Surface Drainage Area	
MSFC-074	Inactive Disposal Site, East Test Area	
MSFC-077	Former Burning Pits	
MSFC-082	Former Mustard Gas Demil Site and Mustard Shell Disposal Trenches	
MSFC-D	Containment Area for Tanks 4234 A, B & C	

Note: * Denotes SWMUs/AOCs that are under the control of the MSFC; however, they are located on RSA (Army) Property.

[a] – Denotes SWMUs/AOCs that are covered under the Olin-Triana Consent Decree

[b] – For Generator purposes the SWMU/AOC has its own ID #

Table VI.2

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

List of SWMUs and AOCs requiring a RCRA Facility Investigation (RFI):

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
003	In-ground Oil/Water Separator, Bldg 3617	
005	Inactive Waste Accumulation Area	
008	Inactive Sewage Treatment Plant #4	
009	Inactive Sewage Treatment Plant #3	
010	Closed Sanitary Landfill	
013	Unlined Inactive Open Burn Pad	
014	Unlined Inactive Burn Trenches Unit #2	
028	In-ground Oil/Water Separator, 5693 Area	
030	Former Central Oil/Water Separator	
031	Former Central Oil/Water Separator Storage Tanks	
032	Inactive Scrap Metal Storage Area	
035	In-ground Oil/Water Separator, Bldg 4812	
037	Underground Used Oil Storage Tank at Bldg 7857	
045	Smoke Munitions Plant 3	
046	Inactive Chemical Munition Test Site, Area CC	
048	Inactive Sanitary Landfill, Area G	
050	Inactive Munitions Demil/Disposal Area H	
051	Inactive Munitions Demil/Disposal Area I	
052	Inactive Munitions Demil/Disposal Area N	
053	Inactive Sanitary & Industrial Landfill, Area Q3	
054	Inactive Sanitary & Industrial Landfill, Area T	
055	Inactive Sanitary & Industrial Landfill, Area S	
058	Inactive Rubble Fill/Waste Pile, Area W	
059	Inactive Construction Rubble Fill, Area R	
060	Inactive Sanitary & Industrial Landfill, Area Q4	
061	Inactive Munitions Demil/Disposal, Area P	
062	Inactive Munitions Demil	
063	Inactive Chemical Munitions Disposal, Area M	
064	Inactive Munitions Demil/Disposal Area BB	
065	Former Chemical Drum Storage Area, Area X	
066	Inactive Ash Disposal Site, Area X-1	
067	Former Chemical Drum Storage Area, Area AA	
068	Inactive Chemical Disposal Area, Area Z	
069	Former Chemical Drum Storage Area, Area Y	
070	Inactive Toxic Chemical Storage Area, Area Y1	

Table VI.2 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
071	High Explosive Drop Test Site, Area A	
072	Mortar Shell Test Site, Area B	
073	High Explosive Impact Test Site, Area C	
074	High Explosive Impact Test Site, Area D	
082	Former Sparging Unit, Bldg 7595	
083	Paint Spray Booth Sump, Bldg 7344	
085	Inactive Temporary Waste Storage Pad 1, Bldg 7359	
087	Inactive Temporary Waste Storage Pad 1&2, Bldg 7368	
088	Inactive Temporary Waste Storage Pad, Bldg 7625	
089	Inactive Temporary Waste Storage Pad, Bldg 7726	
092	Inactive Temporary Waste Storage Pad, Bldg 7552	
093	Reclaimed Empty Drum Storage Pad, Bldg 7368	
095	Chlorinated Solvent Distillation Unit 2, Bldg 7368	
096	Chlorinated Solvent Distillation Unit 3, Bldg 7740	
097	Chlorinated Solvent Distillation Unit 4, Bldg 7726	
104	Inactive ISP Wastewater Discharge Ditch	
109	Former Chemical Munitions Staging Area	
110	Former Drum Storage/Construction Debris, Area Y	
112	Suspected Former Demil/Disposal, Area W	
113	Inactive Disposal Trenches/Burn Pits, Area W	
114	Inactive Madkin Mt. Rock Quarry	
115	Inactive East Side Blowdown Lagoon, Test Area 5	
116	South Side Blowdown Lagoon, Test Area 5	
117	Former Liquid Caustic Mfg. Plant, Area R	
118	Inactive ISP Industrial Discharge Lagoon	
126	Inactive Open Burn Trench, Area U	
128	Inactive Mustard Gas Demil Area, Area W	
129	Thiokol Burning Pit/Rocket Washout Area	
132	Dismantled Popping Furnace	
133	Inactive Rocket Washrack/Sump	
134	Inactive Disposal Trench/Burn Pit, Area U	
135H	1.1 Propellant Wastes Captive Sump, Bldg 7593	
138M	ROP Tetryl Processing Line	
140	Inactive Disposal Area near T/S Tower	
141	4.2-inch Mortar Disposal Site, Bldg 4656	
142	TCE Spill by Thiokol Degreasing Process	
143	Petroleum Contaminated Soil Site, S. of Bldg 3240	
144	Degreaser at Bldg 7554	
145	GW Northeast part of RSA (~9900 acres)	
146	GW Southeast part of RSA, underlies former Thiokol Plant (~6600 acres)	

Table VI.2 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
147	GW Central part of RSA (~1300 acres)	
148	GW Central Area – East of MSFC (~3600 acres)	
149	GW West Central Area – West MSFC (~3900 acres)	
150	GW Western part of RSA (~3900 acres)	
151	GW Southern part of RSA, underlies OB/OD Area (~570 acres)	
152	GW Southern part of RSA, underlies GCWD (~570 acres)	
153	GW Western edge of RSA (~6300 acres)	
154	GW South-Central part of RSA (~3300 acres)	
155	GW Southwestern area of RSA (1600 acres)	
156	GW Southern part of RSA (~1400 acres)	
157	GW Southeastern part of RSA, underlies GCWD Storage Area (~100 acres)	
170	Deaeration Cleanup, TSA Bldg 7593	
172	Motor Pool, TSA Bldg 7630	
174	Chemistry Lab, Pad 2, TSA Bldg 7632	
182	1.1 Grinder Bldg "P2", TSA Bldg 7695	
187	Northern Thiokol Propellant Mixing Facility	
188	Northern Burial Area/Burning Ground #3	
189	Motor/Oxidizer Preparation Facilities (ROP Line 2 Area)	
190	Disposal and Drainage Area West of ROP Line 2 Area	
191	ROP Line 1 Service Facilities	
192	Tetryl and Igniter Processing (ROP Line 1 Area)	
193	Igniter Preparation Facility	
194	Physical Test Laboratory and Storage Facilities	
195	Propellant Mixing Facility #1, Bldg 7363	
197	Rocket Motor Static Test Stand	
198	Equipment/Tool Cleaning Facility, Bldg 7359	
199	Propellant Mixing Facility #2, Bldg 7382	
200	ROP Line 5 Area Operations Facilities	
201	Research Laboratory, Bldg 7632	
202	Graded Area Northeast of ROP Storage Igloos	
203	Igloo Area Loading Dock, Bldg 7351	
204	Oxidizer Facility, Bldg 7691	
205	Photo Lab and Motor Service Facility, Former Bldg 7628	

Table VI.2 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
206	Propellant Mixing Facility #2 and Casting Facility, Bldg 7339/40	
207	Gorgas Laboratory, Bldg 7770	
208	South Plant Testing Facilities	
209	Propellant Crushing/Grinding and Fuse Production	
210	Nitroglycerine Wash House	
211	South Plant Storage Magazines	
212	Propellant Dry Houses	
213	ROP Line 4 Area Operations Facilities	
215	RSA-146 Historic Service Facilities	
216	Laboratory Injection Test Facility, Bldg 5475	
217	Inert Storage Warehouse Facilities	
218	Defense Reutilization Material Office (DRMO) Open Storage Area	
219	Chemical Storage Area in Salvage Yard	
220	Construction Material Storage Yard	
221	Fuse Storage and Munitions Disposal Area	
222	Roads and Grounds Maintenance Shop, Bldg 5494	
224	Container Storage Area	
225	Fuse Modification Line 7	
226	Open Storage 54-2	
227	Inactive Washrack (adjacent to Bldg 5492)	
228	Sewage Treatment Plant 2	
229	Former PX Service Station (Bldg 3197)	
230	Abandoned Rubble Pile	
231	SMF #1 Mixing& Prep Facilities	
233	SMF #2 Mixing & Prep Facilities	
234	Waste Disposal Pit	
237	Propellant Cutting and Drying	
238	Plant 2, Mustard Lines 5 and 6	
239	ROP Line #1 Boiler House	
240	Substation No.7, Formerly Bldg 5290 (demolished)	
241	Hazardous Waste Storage Igloo, Bldg 7313	
242	Hazardous Waste Storage Igloo, Bldg 7314	
243	Propellant Storage, Bldg 7342	
245	Steam Heating Plant, Bldg 7579	
246	Sewer Ejector & Motor Pool, Bldg 7630	
247	Steel Fabrication/Maintenance Facility, Bldg 7644	
248	Battery Maintenance Shop, Bldg 3633	
249	Inactive Old Bone Yard Disposal Site 2	

Table VI.2 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
250	Former Storage Warehouse, Bldg 778/5678	
252	Incendiary Bomb Facility Plant 2 Area	
253	Utility/Flammable Materials Storage (B6109)	
254	Range 1 Bombing Targets	
255	Coal Storage Area N. of RSA-065	
257	Rock Pond	
258	Guard Shack Waiting Shelter/Paint Spray, Bldg 7862	
259	TA #2 Leach Field	
260	Test Stand C, TA#2 Bldg 7843	
261	Lance Missile Conditioning Facility, Bldg 7847	
262	CWS Warehouse Area (Bldgs 8021, 8022, 8023, 8024, 8025, 8026 and 8027)	
263	CWS Motor Pool (Bldg 8017)/Change House (Bldg 8020)	
264	RR Spring	
265	Gasoline Drum Storage Area	
266	Open Storage Area N. of Bldg 8607	
268	Sewage Treatment Plant, Bldg 8018	
269	Former UST, Bldg 7852	
271	Former Boiler House, Bldg 7729	
272	Former UST for Boiler Unit, Bldg 7650	
273	Propellant Conditioning & Motor Cycling, Bldg 7364	
274	Physics Laboratory & High Explosives Storage Magazine, Bldg 7540	
275	Film Processing Laboratory, Former Bldg S-7173	
276	Former Boiler House, Bldg 7362	
277	Bldg 5487, Wastewater Maintenance Shop Acid Bath Wash Down Area	
278	Highway 565 Area	
279	Smoke Grenade Area	
280	Skunk Hollow Small Arms Range	
281	Disposal Trenches at RSA-046 Range	
282	Former Mortar Test Site (Not in Range)	
283	Former Primary Substation No. 2 Bldg 3796	
284	Fire Training Area	
285	Former WP Grenade Test Area	
286	Boiler/Steam Plant, Bldg 3624	
287	Component Storage Warehouse, Bldg 3634	
288	Drinking WTP#1, Sludge Thickener & Drying Beds, Bldgs 8043 & 8044	
289	Drinking WTP#2, Sludge Thickener (Bldg 9102) & Sludge Drying Beds	

Table VI.2 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
290	Drinking WTP#3, Sludge Thickener & Drying Beds, Bldgs 5431 & 5433	
291	UST at Former Bldg T-3162 (Steam Plant)	
293	Former USTs at Bldg 3639 (Screening & Proportioning Smoke Components Bldg)	
294	Field Training Exercise Area E	
296	Disposal Area North of RSA-011	
297	Ammunition Packing/Shipping, Bldg 7551	
304	OWS, Washrack & Sump, adjacent to Bldg 5498	
305	Dispatcher's Office with Washrack, Bldg 3664	
306	Steam Heating Plant, Bldg 7291	
308	Exterior Sump at Bldg 7120	
309	Covered Trench & Sump at Bldg 7155	
310	Former OWS & Suspected OWS at Bldg 7289	
311	Exterior Sump & Interior Concrete Pits at Bldg 7352	
312	Former Range Area for Gate 7 Expansion	
313	Western Side of Former High Explosive Drop Area A	
A	Inactive Propellant Storage Wells South	
C	Abandoned Army Propellant Mixing Bldg 7596	
E	No. 2 Fuel Oil Spill, Tank 5693 at the Fuel Farm	
F	Fenced Open Storage/Laydown Yard	
MSFC-003	Inactive Old Bone Yard Disposal Site #1	
MSFC-027	Inactive (M-1) Waste Accumulation Area	
MSFC-033*	SWAA Bldg 4815	
MSFC-034	Sump in the North Central Part of Bldg 4481	
MSFC-035	Inactive Sump/Tiled Drain Field – East TA	
MSFC-043*	Former Waste Oil Trap and Separator (Bldg 4817)	
MSFC-053	Former Propellant Storage Area and Test Stand Site	
MSFC-068*	Surface Drainage for Bldg 4815	
MSFC-077	Former Burning Pits	
MSFC-082	Former Mustard Gas Demil Site and Mustard Shell Disposal Trenches	

Note: * Denotes SWMUs/AOCs that are under the control of the MSFC; however, they are located on RSA (Army) Property.

Table VI.3

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

List of SWMUs and AOCs requiring no further action at this time:

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
001	Fox Army Community Hospital Incinerator	
002	In-ground Oil/Water Separator, Bldg 3338	
004	In-ground Oil/Water Separator & Washrack	
006	Paint Shop & Sump at Motor Pool, Bldg 3634	
007	Hazardous Waste Storage Area, Bldg 3775	
024	Hazardous Waste Storage Igloo No. 10	
025	Hazardous Waste Vacant Storage Igloo No. 11	
026	Hazardous Waste Vacant Storage Igloo No. 12	
027	Hazardous Waste Vacant Storage Igloo No. 13	
029	Redstone Arsenal Sanitary Sewer System	
033	Plating Room Floor Drains, Bldg 5432	
034	Waste Aviation Fuel Temporary Storage Area	
036	In-ground Oil/Water Separator, Bldg 4832	
038	Underground Used Oil Storage Tank Bldg 3240	
039	Underground Used Oil Storage Tank Bldg 3338	
040	Underground Used Oil Storage Tank Bldg 3617	
041	Underground Used Oil Storage Tank Bldg 3636	
042	Underground Used Oil Storage Tank Bldg 4812E	
043	Underground Used Oil Storage Tank Bldg 5435A	
044	Underground Used Oil Storage Tank Bldg 5435B	
047	Chemical Training Facility, Area EE	
075	Inactive Solid Waste Incinerator	
076	RDX/HMX Filtration Unit 1, Thiokol North	
077	RDX/HMX Filtration Unit 2, Thiokol South	
078	RDX/HMX Filtration Unit 1 Sump, Thiokol North	
079	RDX/HMX Filtration Unit 2 Sump, Thiokol South	
080	RDX/HMX Suspension Transfer Pad/Sump	
081	RDX/HMX Filtration Units, Charcoal Column Dolly	
084	Inactive Temporary Waste Storage Pad, Bldg 7344	
086	Inactive Temporary Waste Storage Pad 2, Bldg 7359	
090	Inactive Temporary Waste Storage Pad, Bldg 7340	
091	Inactive Temporary Waste Storage Pad, Bldg 7595	
099	Abandoned Plating Shop Tank/Sumps, Bldg 7614	

Table VI.3 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
100	Aboveground Waste Oil Tank, Bldg 7630	
102	DDT Plant Site Q-6	
103	DDT Settling Lagoon	
106	DDD Earthen Dams	
107	Closed DDT Soil/Debris Landfill	
108	Test Range 4 Missile Impact Site	
111	Construction Debris, Area W	
119[b]	GAF Manufacturing Facility	
120	Matthew's Cave and Ravine	
121	Paint Shop/Paint Washout Booth, Bldg 4762	
123	Inactive Cement Plant Sump	
124	Dismantled Calgon DDT Contaminated Water Treatment Plant	
125	Satellite Waste Accumulation Area, Bldg 5477	
127	Photo Lab Process Wastewater Sump Bldg 5451	
130	Inactive Radiographic Septic Tank, Bldg 7345	
135 A-G, I-N	1.1 Propellant Waste Captive Sumps	
136 A-J	1.1 Propellant Waste Drum Storage Pads	
137 A-L, N-P	1.3 Propellant Waste Sumps	
138 A-L, N-Q	1.3 Propellant Waste Drum Storage Pads	
158	Flammable Material Storage Bldg, TSA Bldg 3233	
159	Chemical Containment Storage, TSA Bldg 3327	
160	Mixer Bldg, TSA Bldg 7339	
161	Care Prep Bldg, TSA Bldg 7346	
162	Small Motor Loading "T", TSA Bldg 7347A	
163	Propellant Mixer, TSA Bldg 7353	
164	Mixer Bldg, TSA Bldg 7356	
165	Casting Bldg, TSA Bldg 7360	
166	Liner Preparation, TSA Bldg 7369	
167	Mixer Bldg, TSA Bldg 7382	
168	Motor Casting and Processing Bldg, TSA Bldg 7554	
169	Motor Assembly and Packout, TSA Bldg 7555	
171	Propellant Mixing, TSA Bldg 7594	
173	Chemistry Lab, Pad 1, TSA Bldg 7632	
175	Physical Property Lab, Pad 1, TSA Bldg 7636	
176	Physical Property Lab, Pad 2, TSA Bldg 7636	
178	Control Lab and First Aid, Pad 1, TSA Bldg 7667	
180	Nitramine Drying Pilot, TSA Bldg 7688	
181	Nitramine Grinding Pilot, TSA Bldg 7690	
223	Central Railroad Classification Yard	
232	SMF #1 Service Station	
235	Bulk Fuel Storage Facility	
251	Former Phosgene Plant	

Table VI.3 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
256	Scarred Area #2-NE of RSA-032 w/in Historic RR Spur Line	
267	Drainage Ditch #4	
270	Hazardous Waste TSA & Recycling Facility Bldg 5423	
292	UST at Bldg 3311 (Boiler & Compressor House)	
295	Hazardous Waste TSA, Bldg S-3335	
298	Hazardous Waste TSA, Bldg 8408	
299	Hazardous Waste TSA, Bldg 7216	
300	Hazardous Waste TSA, Bldg 7172	
301	Hazardous Waste TSA, Bldg 7173	
302	Hazardous Waste TSA, Bldg 3802	
303	Hazardous Waste TSA, Bldg 7700	
307	Hazardous Waste TSAs B and C, Bldg 7347	
B	Abandoned Army Propellant Mfg., Bldg 7598	
MSFC-002	Abandoned Drum Disposal Area	
MSFC-055	Site of Former Stauffer Chemical Company	
MSFC-060	Drainage System for Historic Redstone Test Site	
MSFC-065	1800-ft Surface Drainage Ditch/Area	
MSFC-074	Inactive Disposal Site, East Test Area	
MSFC-D	Containment Area for Tanks 4234 A, B, & C	

Table VI.4

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

List of SWMUs and AOCs regulated by Parts I – III and VI of this permit.

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
012	Active Open Burn Pans, Unit 2 (OB)	
015	Hazardous Waste Storage Igloo, No.1 (8621)	
016	Hazardous Waste Storage Igloo, No.2 (8622)	
017	Hazardous Waste Storage Igloo, No.3 (8623)	
018	Hazardous Waste Storage Igloo, No. 4(8624)	
019	Hazardous Waste Storage Igloo, No. 5(8625)	
020	Hazardous Waste Storage Igloo, No. 6 (8630)	
021	Hazardous Waste Storage Igloo, No. 7(8631)	
022	Hazardous Waste Storage Igloo, No.8 (8632)	
023	Hazardous Waste Storage Igloo, No.9(8633)	
131	Active Open Detonation Area (OD)	

Table VI.5

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

The following SWMUs and AOCs require Interim Measures (IM) and/or Source Removal:

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
051	Inactive Munitions Demil & Disposal, Area I	IM Work Plan to include removal of munitions/explosives in trenches.
052	Inactive Munitions Demil & Disposal, Area N	IM Work Plan to include removal of disposal trenches/UXO.
061	Inactive Munitions Demil/Disposal Area P	IM Work Plan to include removal of chemical agent in trenches.
063	Inactive Chemical Munitions Disposal Area M	IM Work Plan to include removal of CWM in burial trenches.
064	Inactive Munitions Demil/Disposal Area BB	IM Work Plan to include removal of chemical agent/CWM in trenches.
066	Inactive Ash Disposal Site, Area X-1	IM Work Plan to include removal of solvent contaminated waste disposal/demil areas.
068	Inactive Chemical Disposal, Area Z	IM Work Plan to include removal of explosive and laboratory contaminants in the burial trenches.
110	Former Drum Storage/Construction Debris, Area Y	IM Work Plan to include removal of surface MEC and piles of Dragon Rocket Motors.
112	Suspected Former Demil/Disposal, Area W	IM Work Plan to include removal of demil/disposal areas and UXO.
113	Inactive Disposal Trenches/Burn Pits	IM Work Plan to include removal of disposal trenches.
114	Inactive Madkin Mt Rock Quarry	IM Work Plan to include removal of waste piles and UXO.

Table VI.5 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
188	Northern Burial Area/Burning Ground #3	IM Work Plan to include removal of debris piles, munitions, chemical & production wastes.
257	Rock Pond	IM Work Plan to include removal of UXO, slag/munitions debris piles.
264	RR Spring	IM Work Plan to include removal of munitions debris.
046/281	Disposal Trenches at RSA-046 Range	IM Work Plan to include removal of disposal trenches.
MSFC-003	Old Bone Yard Site	IM Work Plan to include removal of disposed chemical munitions, toxic materials, chemical wastes and burn pits.
MSFC-035	Inactive Sump/Tiled Drain Field – East TA	IM Work Plan to include removal of chemical wastes.

Table VI.6

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

The following SWMUs and AOCs require a Corrective Measure Implementation (CMI) Plan.

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA*
011	Former Sewage Treatment Plant No. 1, OU-10	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
049	Capped Arsenic Waste Ponds – West, OU-5	Multi-layer cap, cap maintenance, LUCs and groundwater monitoring	Groundwater
056/122/139	Dismantled Lewisite Manufacturing Plant Sites, Closed Arsenic Waste Ponds and Former Arsenic Trichloride Manufacturing Disposal Area, OU-6	Soil excavation, treatment, backfill, off-site disposal, LUCs and short-term sediment and groundwater monitoring	Soil and Groundwater
057	Inactive Arsenic Waste Lagoons – East, OU-6	Soil excavation, backfill, off-post treatment/disposal, LUCs and short-term groundwater monitoring	Groundwater
094	Chlorinated Solvent Distillation Unit 1, OU-10	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
177	Small Motor Finishing, TSA Bldg 7654	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
179	Control Lab and First Aid, Pad 2, TSA Bldg 7667	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
183	Former Lewisite Manufacturing Plants 1 and 2, OU-5	Soil excavation, treatment, backfill, off-site disposal, LUCs and short-term sediment and groundwater monitoring	Soil and Groundwater
196/098	Test Stand and Cleaning Building/Chlorinated Solvent Unit Bldg 7346, OU-10	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
214	ROP Line 6 Area Operations Facilities	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
233B (this parcel only)	SMF#2 Mixing and Preparation Facilities	The remainder of RSA-233 requires investigation and the groundwater to be investigated and/or remediated as part of RSA-145.	Soil and Groundwater

Table VI.6 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA*
236	Grenade Packing & Assembly	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater
244	Propellant Mixing Bldg, Bldg 7356	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
D	Paint Storage Shed, Bldg 3547	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater
MSFC-002/087	Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon, OU-18	Groundwater to be investigated and/or remediated as part of RSA-149.	Groundwater
IWGW	Installation-Wide Groundwater	LUCs	Groundwater

*The SWMUs that require CMI Plans for Groundwater only shall be submitted to the Department upon completion of investigation activities of the respective SWMUs (e.g., CMI for RSA-236 to be included in CMI Plan for RSA-145, etc.).

PART VII

GROUNDWATER MONITORING AND CORRECTIVE ACTION

VII.A. REQUIRED PROGRAM(S)

1. Groundwater monitoring shall consist of the General Groundwater Monitoring Program of Permit Condition VII.B., the Compliance Monitoring Program contained in Permit Condition VII.D and the Corrective Action Monitoring Program contained in Permit Condition VII.E.

2. The Permittee shall commence groundwater monitoring as required by this permit no later than 120 calendar days after the effective date of this permit.

VII.B. GENERAL GROUNDWATER MONITORING PROGRAM

1. Well Location, Installation and Construction

The Permittee shall install and/or designate groundwater monitoring wells in order to maintain a groundwater monitoring system to comply with the requirements of ADEM Admin. Code Rules 335-14-5-.06(8), 335-14-5-.06(9), 335-14-5-.06(10), and 335-14-5-.06(11) as applicable and as specified below:

a. The Permittee shall maintain all groundwater monitoring wells at the facility as identified in Table VII.1 of this permit, at the locations specified on Figure II.G-5 of the permit renewal application, and any other groundwater monitoring wells specified by Permit Condition VII.B.1.d and VII.B.1.e.

i. All groundwater monitoring wells shall be maintained in accordance with the plans and specifications presented in Section II.G of the permit renewal application and in accordance with ADEM Admin. Code Rule 335-14-5-.06.

ii. A groundwater monitoring well shall not be removed from any monitoring program specified in this permit without an approved permit modification pursuant to Permit Condition I.J.

iii. If a groundwater monitoring well is damaged, the Permittee shall immediately notify the Department in writing, which includes a description of the well repair activities to be conducted. The well repair procedures must be approved by the Department prior to implementation. Within 30 calendar days after the well is repaired, the Permittee shall submit a written notification to the Department that the well repair activities were conducted in accordance with the approved procedures.

iv. If a groundwater monitoring well is deleted from the monitoring program(s) required by this permit in accordance with Permit Conditions VII.B.1.a.ii. and I.J., it shall be abandoned within 90 calendar days after

deletion using procedures to be approved by the Department. Within 30 calendar days after the well is abandoned, the Permittee shall submit a written notification to the Department that the well abandonment activities were conducted in accordance with the approved procedures.

b. Groundwater monitoring wells RS107, RS187, RS210, RS240, RS241, RS337, and RS476 shall define the point of compliance for the OB and OD Units.

c. The Permittee shall maintain the background monitoring well(s) listed in Table VII.1 to assess the groundwater quality for the entire facility.

d. The Permittee shall install and/or designate groundwater monitoring wells as necessary to assess changes in the rate and extent of any plume of contamination or as otherwise deemed necessary to maintain compliance with ADEM Admin. Code Rules 335-14-5-.06(6), 335-14-5-.06(8), 335-14-5-.06(9), 335-14-5-.06(10), and 335-14-5-.06(11), as applicable. A plan in the form of a permit modification, in accordance with Permit Condition I.J, request specifying the design, location and installation of any additional monitoring wells should be submitted to the Department at least 90 calendar days prior to installation which, at a minimum, shall include:

i. Well construction techniques including casing depths and proposed total depth of well(s);

ii. Well development method(s);

iii. A complete description of well construction materials;

iv. A schedule of implementation for construction; and,

v. Provisions for determining the lithologic characteristics, hydraulic conductivity, grain size distribution, and porosity for the applicable aquifer unit(s) at the location of the new well(s).

e. The Permittee shall install and/or designate backgrounds wells to assess groundwater quality for the following units: OB and OD Units, and RSA-049. The background wells shall be installed within 180 days of the effective date of this permit. Prior to the installation of these wells, and within 30 calendar days after the effective date of this permit, the Permittee shall submit the information required in Permit Condition VII.B.1.d. for each well to be installed. After the installation of these wells is completed, and within 120 calendar days after the effective date of this permit, the Permittee shall submit a report to the Department that includes the surveyed location and elevation, surveyed elevation reference point, total depth, screened interval, well log, and other pertinent information for each well installed. All location and elevation data shall be surveyed by a professional surveyor licensed in the State of Alabama. Elevation data shall be recorded and reported as mean sea level (MSL) and referenced to an appropriate North American Vertical Datum (NAVD) benchmark. Location data shall include latitude and longitude. In accordance with ADEM Admin Code R.

335-14-8-.04(3), the report shall be accompanied by a request for a minor permit modification in accordance with Permit Condition I.J.

2. General Groundwater Monitoring Requirements

a. The Permittee shall determine the groundwater surface elevation from all monitoring wells listed in TableVII.1 of this permit at least annually and each time a sampling event is conducted. The results of these determinations should be submitted in accordance with Permit Condition VII.B.6. Elevation data should be recorded and reported as mean sea level (MSL) and referenced to an appropriate North American Vertical Datum (NAVD) benchmark.

i. The Permittee shall sample GW Wells listed in Table VII.1 at the OB and OD areas for the constituents listed in Table VII.2 on an annual basis.

b. The Permittee shall determine the groundwater flow rate and direction in the underlying aquifer(s) at least annually and submit the results in accordance with Permit Condition VII.B.6.

c. The Permittee shall determine background concentrations of hazardous constituents and other chemical parameters required to be monitored by this permit in accordance with Section II.G of the permit renewal application and ADEM Admin. Code Rule 335-14-5-.06(8)(g).

3. Groundwater Protection Standard

a. The groundwater protection standard, as required under ADEM Admin. Code Rule 335-14-5-.06(3), shall consist of Table VII.3 of this permit which lists the hazardous constituents and their respective concentration limits.

b. The groundwater protection standard applies to all hazardous waste or hazardous constituent releases as deemed appropriate by the Department to protect human health and the environment.

4. Compliance Period

a. The compliance period, during which the groundwater protection standard specified in Permit Condition VII.B.3. applies, shall begin at the time of the first sampling event of the compliance monitoring program (Permit Condition VII.D.), or the corrective action monitoring program (Permit Condition VII.E.), whichever is earlier.

b. The compliance period shall continue (after beginning pursuant to Permit Condition VII.B.4.a.) until the groundwater protection standard as defined by Permit Condition VII.B.3.a. has not been exceeded for a period of three consecutive years.

c. If the Permittee is engaged in a corrective action program pursuant to Permit Condition VII.E., then the compliance period shall continue as required by ADEM Admin. Code Rule 335-14-5-.06(7)(c) until the groundwater protection standard has not been exceeded for a period of three consecutive years after corrective action has been terminated and this permit has been modified, in accordance with Permit Condition I.J., to implement a compliance monitoring program pursuant to Permit Condition VII.D. or a detection monitoring program pursuant to Permit Condition VII.C., as required by ADEM Admin. Code Rule 335-14-5-.06(11)(f).

5. Sampling and Analysis Procedures

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the groundwater monitoring wells described in Permit Condition VII.B.1. to provide a reliable indication of the quality of the groundwater as required under ADEM Admin. Code Rules 335-14-5-.06(8)(d), (e), and (g):

a. Samples shall be collected, preserved, and shipped (when shipped off-site for analysis) in accordance with the procedures specified in Section II.G of the permit application.

b. Samples shall be analyzed according to the procedures specified in Section II.G of the permit application, the most recent edition of SW-846 or other appropriate methods approved by the Department. Analytical method detection limits shall be less than or equal to the concentration limits specified in Table VII.3, unless otherwise approved in writing by the Department.

c. Samples shall be tracked and controlled using the chain-of-custody procedures specified in Section II.G of the permit application.

d. Statistical analyses used to evaluate the groundwater monitoring data shall be as described in Section II.G of the permit application and ADEM Admin. Code Rule 335-14-5-.06(8)(h).

e. All samples taken in accordance with this permit shall not be filtered prior to analysis.

6. Recordkeeping and Reporting

a. The Permittee shall keep and maintain all monitoring, testing, and analytical data obtained in accordance with Permit Conditions VII.B., VII.C, VII.D, and VII.E. as required by Permit Condition I.C.10.

b. The Permittee shall submit to the Department written reports to include all analytical sampling data, established background values, statistical evaluations, groundwater elevations, associated potentiometric maps, and the annual groundwater flow rate and direction determinations. The analytical method and the method detection limit (MDL) for each constituent must be integrated into all reports of analysis. The reports shall be submitted within 60 calendar days after the first sampling events and on an annual basis thereafter. Copies of these

reports shall be kept at the facility in accordance with Permit Conditions I.C.10.c. and I.C.10.e.

c. The Permittee shall submit progress reports to the Department describing implementation of groundwater monitoring and/or corrective action activities at the site as required by Part VII of this permit on a quarterly basis. The first progress report shall be submitted to the Department within 90 calendar days after the effective date of this permit. The progress reports shall continue until such time as the required monitoring and/or corrective action systems and activities required by this permit are fully constructed and operational. In the event that additional monitoring and/or corrective action requirements are imposed through a permit modification, in accordance with Permit Condition I.J., the quarterly reporting requirement shall resume, commencing upon the effective date of the permit modification and continuing until the required monitoring and/or corrective action systems and activities are again fully constructed and operational.

VIIC. DETECTION MONITORING PROGRAM (RESERVED)

VII.D. COMPLIANCE MONITORING PROGRAM

The requirements of this Condition are applicable to the OB and OD Units. Except as specified otherwise in this permit, the Compliance Monitoring Program shall be implemented in accordance with Section II.G of the permit application, and ADEM Admin. Code Rule 335-14-5-.06(10).

1. Monitoring Requirements

In addition to the general groundwater monitoring requirements specified in Permit Condition VII.B.2., the Permittee shall:

a. Sample all point of compliance wells and background wells and analyze for the constituents listed in Tables VII.2. and VII.3 of this permit annually in accordance with Permit Condition VII.B.5 throughout the compliance monitoring period. This schedule shall begin within 120 calendar days of the effective date of this permit.

b. Sample and analyze for temperature (degrees F or C), specific conductance (Mhos/cm), and pH (standard units) , at all background and point of compliance monitoring well locations each time the well is sampled in accordance with Permit Condition VII.B.5. The data obtained should be submitted as raw data in the reports required by Permit Condition VII.B.6.

c. Sample all point of compliance and designated background monitoring wells and analyze, in accordance with Permit Condition VII.B.5., for the constituents listed in ADEM Admin Code Rule 335-14-5-Appendix IX in addition to the constituents listed in Tables VII.2. and VII.3 of this permit at the beginning of

the compliance monitoring period and thereafter on an annual basis throughout the compliance period. [ADEM Admin. Code Rule 335-14-5-.06(10)(g).]

2. Reporting and Response Requirements

In addition to the recordkeeping and reporting requirements specified in Permit Condition VII.B.6., the Permittee shall perform statistical evaluation of monitoring well analytical data for each monitoring event pursuant to Permit Condition VII.B.5 and ADEM Admin. Code Rule 335-14-5-.06(10)(d).

a. If the Permittee determines, pursuant to Permit Conditions VII.B.5. and VII.D.1.c. and ADEM Admin. Code Rules 335-14-5-.06(10)(d) and 335-14-5-.06(10)(g), that any constituent(s) listed in ADEM Admin. Code Rule 335-14-5-Appendix IX but not listed in Table VII.3. of this permit is detected at any point of compliance or background well, he or she must comply with ADEM Admin. Code Rule 335-14-5-.06(10)(g).

b. If the Permittee determines pursuant to Permit Conditions VII.B.5. and VII.D.1.c. and ADEM Admin. Code Rule 335-14-5-.06(10)(d) that any concentration limits listed in Table VII.3 of this permit exceeded in any monitoring well at the point of compliance, he or she must comply with ADEM Admin. Code Rule 335-14-5-.06(10)(h).

VII.E. CORRECTIVE ACTION MONITORING PROGRAM

The requirements of this Condition are applicable to RSA-049 and RSA-057. Except as specified otherwise in this permit, the Corrective Action Monitoring Program shall be implemented in accordance with the approved CMI Plans for the SWMUs/AOCs and ADEM Admin. Code Rule 335-14-5-.06(11).

1. Monitoring Systems

In addition to the point of compliance and background well monitoring systems identified in Permit Conditions VII.B.1.b. and VII.B.1.c., the Permittee shall:

a. Maintain groundwater monitoring wells RS1514 (shallow and deep), RS1518 (all screened intervals), RS1520 (all screened intervals) RS1522 (shallow and deep), RS1534 (screened interval 218.6-225.9'), RS1148, RS1149, RS1153, RS1154, RS1159, RS1160, RS1294, and RS1164 as boundary wells for the entire facility as specified in Table VII.1. of this permit..

b. Maintain groundwater monitoring wells RS054, RS262, RS263, RS633, RS634, RS635, RS636, RS1074, RS1087, RS1090, RS1589, RS1590, RS1591, RS1592, RS1593, and RS1594 as effectiveness wells for RSA-049 as specified in Table VII.1 of this permit. At RSA-057, the Permittee shall maintain groundwater monitoring wells RS731, RS1391 and RS140 as effectiveness wells as specified in Table VII.1 of this permit.

c. **RESERVED**

d. **RESERVED**

2. Corrective Action Program

a. The Permittee shall conduct a Corrective Action Program, as described in the approved CMI Plans, to remove or treat in place all hazardous constituents that exceed their respective groundwater protection standards as described in Table VII.3. of this permit at the point of compliance, between the point of compliance and the down-gradient facility property boundary, and beyond the facility boundary in accordance with ADEM Admin. Code Rule 335-14-5-.06(11)(e)2.

b. Pursuant to ADEM Admin. Code Rules 335-14-5-.06(11)(c) and 335-14-5-.06(11)(e)3., the Permittee shall continue to implement the corrective action program as described in the approved CMI Plans within 120 calendar days after the effective date of this permit.

c. The Permittee shall handle/treat groundwater in accordance with the approved CMI Plans and with the applicable requirements of the Hazardous Waste Facility Permit AL7 210 020 742 as issued by the Department.

3. Monitoring Requirements

In addition to the general groundwater monitoring requirements specified in Permit Condition VII.B.2., the Permittee shall:

a. Sample all background, point of compliance and effectiveness monitoring wells shown in Table VII.1. of this permit and analyze for the constituents listed in Table VII.2. of this permit on an annual basis beginning within 120 calendar days of the effective date of this permit and continuing through the end of the compliance period.

i. At RSA-049, the Permittee shall sample GW Wells listed in Table VII.1 on a quarterly basis for the constituents listed in Table VII.3 to establish baseline values. After 2 years, the Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency based on sampling results presented in the Annual Effectiveness Reports.

ii. At RSA-057, the Permittee shall sample GW Wells listed in Table VII.1 for the constituents listed in Table VII.3 on an annual basis. After 3 years, the Permittee may request a permit modification, in accordance with Permit Condition I.J., to reduce the sampling frequency based on sampling results presented in the Annual Effectiveness Reports.

b. Sample all background, point of compliance, effectiveness, and boundary monitoring wells shown in Table VII.1. of this permit and analyze for the constituents listed in Table VII.3. of this permit on an annual basis beginning within 120 calendar days of the effective date of this permit and continuing through the end of the compliance period.

c. Sample all background, point of compliance, effectiveness, and boundary monitoring wells shown in Table VII.1. of this permit and analyze for temperature (degrees F or C), specific conductance (Mhos/cm), and pH (standard units) each time the well is sampled. The data obtained should be submitted as raw data in the reports required by Permit Condition VII.B.6.

d. When evaluating the monitoring results to determine the effectiveness of the corrective measures, in accordance with Permit Condition VII.E.4., the Permittee shall:

i. Determine if the corrective action system effectively addresses the entire plume of contamination;

ii. Determine if the concentration of the hazardous constituents are decreasing (pH increasing or decreasing toward neutrality, as applicable) in the effectiveness wells specified in Permit Condition VII.A.1.;

iii. Determine if hazardous waste or hazardous constituents are being released into the environment; and,

iv. Determine if hazardous constituents have been detected in the boundary wells specified in Permit Condition VII.A.1.

4. Reporting and Response Requirements

In addition to the recordkeeping and reporting requirements specified in Permit Condition VII.B.6.:

a. The Permittee shall report the effectiveness of the corrective action program annually as required under ADEM Admin. Code Rule 335-14-5-.06(11)(g). These reports shall be submitted to the Department within 60 calendar days of each annual anniversary of this permit after corrective action is initiated and continue until corrective action is completed. The Permittee must provide data from groundwater monitoring along with an analysis of that data and any conclusions regarding the effectiveness of the program in accordance with Permit Condition VII.E.3.d. If the analysis of the data warrants any change to the corrective action program, the Permittee must include these revisions in the annual report which will be followed up within 90 calendar days with an application for permit modification in accordance with Permit Condition I.J.

b. If corrective action is terminated under Permit Condition VII.B.4.c., the Permittee must sample all background, point of compliance, effectiveness and boundary sampling locations for the compounds listed in ADEM Admin. Code Rule 335-14-5-Appendix IX. Based upon the sampling results, the Permittee may petition the Department, in accordance with Permit Condition I.J, for a permit modification to implement either a detection monitoring program or a compliance monitoring program.

Table VII.1

MONITORING WELL DESIGNATIONS

WELL NUMBER	WELL TYPE[1]	WELL LATITUDE	WELL LONGITUDE	UNIT(S) MONITORED	WELL DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE[2]
RS107	POC	34°34' 15.98"N	86°39' 56.34"W	OB and OD RSA-012	43.0	569.29	571.58	30.0-40.0	Overburden
RS187	POC	34°34' 20.18"N	86°39' 59.72"W	OB and OD RSA-012	33.5	564.39	566.42	26.0-30.5	Overburden
RS210	POC	34°34' 13.05"N	86°40' 02.47"W	OB and OD RSA-012	54.0	567.52	570.27	40.0-50.0	Overburden
RS240	POC	34°34' 20.00"N	86°39' 59.81"W	OB and OD RSA-012	74.0	565.01	567.91	57.0-66.0	Bedrock
RS241	POC	34°34' 21.12"N	86°40' 02.10"W	OB and OD RSA-012	33.5	570.64	573.49	18.9-27.9	Overburden
RS337	POC	34°34' 12.74"N	86°40' 02.54"W	OB and OD RSA-012	161.0	567.30	569.91	151.0-160.0	Bedrock
RS476	POC	34°34' 15.73"N	86° 40' 07.06"W	OB and OD RSA-012	38.0	563.65	562.00	17.0-37.0	Overburden
RS054	EFF	34° 39' 14.28"N	86° 39' 26.15"W	RSA-049	56.8	613.56	616.66	41.8-51.8	Overburden
RS262	EFF	34° 39' 13.20"N	86° 39' 20.65"W	RSA-049	39.9	608.71	611.31	29.9-39.9	Overburden
RS263	EFF	34° 39' 13.23"N	86° 39' 24.34"W	RSA-049	42.4	608.86	610.76	32.4-41.8	Overburden
RS633	EFF	34° 39' 17.36"N	86° 39' 15.89"W	RSA-049	50.0	613.47	615.97	29.0-44.0	Overburden
RS634	EFF	34° 39' 21.04"N	86° 39' 20.58"W	RSA-049	33.5	612.93	615.43	17.8-32.8	Overburden
RS635	EFF	34° 39' 22.67"N	86° 39' 24.64"W	RSA-049	40.5	619.78	622.28	25.0-40.0	Overburden
RS636	EFF	34° 39' 17.36"N	86° 39' 27.79"	RSA-049	43.5	621.77	624.44	27.5-42.5	Overburden
RS1074	EFF	34° 39' 13.29"N	86° 39' 16.54"W	RSA-049	106.0	608.57	611.36	95.7-105.7	Bedrock
RS1087	EFF	34° 39' 21.23"N	86° 39' 20.35"W	RSA-049	76.5	612.86	616.4	66.2-76.2	Bedrock
RS1090	EFF	34° 39' 18.46"N	86° 39' 27.81"W	RSA-049	95.0	623.20	626.04	83.0-92.7	Bedrock
RS1589	EFF	34° 39' 16.25"N	86° 39' 15.91"W	RSA-049	49.0	611.03	614.61	34.0-49.0	Overburden

WELL NUMBER	WELL TYPE[1]	WELL LATITUDE	WELL LONGITUDE	UNIT(S) MONITORED	WELL DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE[2]
RS1590	EFF	34° 39' 14.30"N	86° 39' 19.93"W	RSA-049	79.0	610.16	612.48	69.0-79.0	Bedrock
RS1591	EFF	34° 39' 14.16"N	86° 39' 21.80"W	RSA-049	66.0	610.53	613.71	51.0-66.0	Bedrock
RS1592	EFF	34° 39' 14.17"N	86° 39' 21.91"W	RSA-049	48.0	610.53	613.71	33.0-48.0	Overburden
RS1593	EFF	34° 39' 14.81"N	86° 39' 31.67"W	RSA-049	117.0	620.67	623.91	107.0-117.0	Bedrock
RS1594	EFF	34° 39' 14.68"N	86° 39' 31.78"W	RSA-049	45.0	620.32	623.86	30.0-45.0	Overburden
RS731	EFF	34° 38' 37.21"N	86° 37' 48.80"W	RSA-057	28.0	581.12	583.56	12.5-27.5	Overburden
RS1391	EFF	34° 38' 33.67"N	86° 37' 46.33"W	RSA-057	22.0	578.36	580.77	11.5-21.5	Overburden
RS140	EFF	34° 38' 35.83"N	86° 37' 44.95"W	RSA-057	30.0	576.79	579.51	17.0-27.0	Interface
RS1514	BDY	34° 37' 16.10"N	86° 35' 30.17"W	Facility	150.0	569.55	572.07	121.0-126.0 144.0-149.0	Nested Bedrock
RS1518	BDY	34° 37'2.75"N	86° 35' 11.92"W	Facility	240.0	567.67	570.15	55.5-61.0 83.0-89.0 100.0-110.0 152.0-163.0 213.0-229.0	FLUTe Bedrock
RS1520	BDY	34° 36' 22.62"N	86° 35' 16.66"W	Facility	260.0	569.09	571.76	67.-75.0 99.0-113.0 130.0-143.0 164.0-175.0 210.0-214.0 230.5-244.5	FLUTe Bedrock
RS1522	BDY	34° 36' 39.14"N	86° 35' 14.43"W	Facility	182.0	567.56	570.06	102.0-112.0 170.0-180.0	Nested Bedrock
RS1534	BDY	34° 35' 50.22"N	86° 35' 24.43"W	Facility	260.0	574.68	577.36	218.6-225.9	FLUTe Bedrock
RS1148 EP[4]- 1	BDY	34°35'21.629"N	86° 41' 28.22"W	Facility	194.0	565.09	568.07	182.3-192.3	Bedrock
RS1149 EP[4]- 1	BDY	34° 35' 21.65"N	86° 41' 28.31"W	Facility	274.4	565.23	567.80	259.4-274.4	Bedrock
RS1153 EP[4]- 3	BDY	34° 34' 17.14"N	86° 40' 20.69"W	Facility	45.0	564.95	567.61	34.6-44.6	Interface
RS1154 EP[4]- 3	BDY	34°34'17.042"N	86°40'20.77"W	Facility	191.0	565.06	567.73	176.0-191.0	Bedrock
RS1159 EP[4]- 5	BDY	34° 35' 3.22"N	86° 36' 8.30"W	Facility	40.6	565.21	567.69	25.0-40.0	Interface

WELL NUMBER	WELL TYPE[1]	WELL LATITUDE	WELL LONGITUDE	UNIT(S) MONITORED	WELL DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE[2]
RS1160 EP[4]- 5	BDY	34° 35' 03.17"N	86° 36' 08.41"W	Facility	205.5	565.24	567.85	195.5-205.5	Bedrock
RS1294 EP[4]- 6	BDY	34° 35' 07.73"N	86° 35' 16.61"W	Facility	119.5	563.29	565.85	109.0-119.0	Bedrock
RS1164 EP[4]- 6	BDY	34° 35' 7.55"N	86° 35' 16.45"W	Facility	278.8	563.31	566.47	268.8-278.8	Bedrock
TBD[3]	BKG	TBD[3]	TBD[3]	OB and OD (GW RSA-151)	TBD[3]	TBD[3]	TBD[3]	TBD[3]	TBD[3]
TBD[3]	BKG	TBD[3]	TBD[3]	RSA-049 (GW RSA-149)	TBD[3]	TBD[3]	TBD[3]	TBD[3]	TBD[3]

[1] Well Type:
POC - Point of Compliance Well
EFF - Effectiveness Monitoring Well
BDY – Boundary Well; Facility Perimeter
BKG – Background Well

[2] Monitored Zone:
Interface – Well screened across the overburden and bedrock
CMT - Continuous Multichannel Tubing, multi-screened well in a single borehole
FLUTe – Flexible Liner Underground Technologies, multi-screened well in a single borehole
Nested – Two separate wells in a single borehole

[3] – TBD - To Be Determined
[4] – EP – Exit Pathway Well Clusters along southern boundary

TABLE VII.2

GROUNDWATER QUALITY MONITORING CONSTITUENTS*

HAZARDOUS CONSTITUENT	UNIT*
Arsenic	RSA-049 & RSA-057
Mercury	RSA-049 & RSA-057
Carbon Tetrachloride	RSA-049
Trichloroethene (TCE)	RSA-049
Energetics (1,3,5-TNB; 1,3-DNB; 2,4,6-TNT; 2,4 and 2,6-DNT; HMX; 2-NT, 3-NT and 4-NT; 4-Amino-2,6-DNT; 2 Amino-4,6-DNT Tetryl; NB; PETN; and RDX	OB and OD
TAL Metals	OB and OD
SVOCs	OB and OD
PAHs	OB and OD
Perchlorates	OB and OD
VOCs	OB and OD

* Identifies the unit(s) at which the given constituent must be monitored.

TABLE VII.3

GROUNDWATER PROTECTION STANDARD

HAZARDOUS CONSTITUENT	UNIT[1]	MAXIMUM CONCENTRATION LIMIT (mg/L)[2]
Energetics (1,3,5-TNB; 1,3-DNB; 2,4,6-TNT; 2,4 and 2,6-DNT; HMX; 2-NT, 3-NT and 4-NT; 4-Amino-2,6-DNT; 2 Amino-4,6-DNT Tetryl; NB; PETN; and RDX	OB and OD	Background
TAL Metals[4]	OB and OD	Background
SVOCs[5]	OB and OD	Background
PAHs[5]	OB and OD	Background
Perchlorate	OB and OD	See Note 3
VOCs[6]	OB and OD	Background
Appendix IX constituents (one event)	OB and OD	Background
Arsenic	RSA-049 and RSA-057	Background
Mercury	RSA-049 and RSA-057	Background
Carbon Tetrachloride	RSA-049	Background
Trichloroethene (TCE)	RSA-049	Background

Notes:

1. Identifies the unit(s) at which the given constituent must be monitored.

2. Drinking Water Standards and Health Advisories, USEPA MCL (latest edition). Background values are the calculated site-specific background concentration in accordance with ADEM Admin. Code R. 335-14-5-Appendix IV. MDL must not exceed established MCL (Maximum Concentration Limit) regulatory levels. Where Background values do not exist, the values listed in Table 2-2 of the Alabama Risk Based Corrective Action (ARBCA) Guidance (dated April 2008) shall be referenced.

3. Perchlorate is not listed as a hazardous constituent in Appendix IX; however, it is a constituent of concern for RSA and shall be included in the groundwater protection standards. A background level for perchlorate does not exist; therefore, the standard listed in ARBCA Table 2-2 shall be referenced.

4. TAL Metals shall include the following: Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium and Zinc.

5. SVOCs shall include the parameters listed in Table 2-2 of ARBCA Guidance document (dated April 2008); where background values do not exist, the values listed in Table 2-2 shall be referenced.

6. VOCs shall include the parameters listed in Table 2-2 of ARBCA Guidance document (dated April 2008); where background values do not exist, the values listed in Table 2-2 shall be referenced.

Table VII.4.

ADDITIONAL MONITORING PARAMETERS

PARAMETER	UNIT OF MEASURE	LOCATION
Temperature	Degrees, (°F or °C)	Field*
Conductivity	Mhos/cm	Field*
pH	Standard Units (S.U.)	Field*
Reduction oxidation potential	Millivolts (mV)	Field*
Dissolved Oxygen	Milligrams/liter (mg/l)	Field*
Turbidity	Nephelometric turbidity Units (NTU)	Field*

* To be submitted as raw data in the annual reports required by Permit Condition VII.B.6.b.

PART VIII

CORRECTIVE MEASURES IMPLEMENTATION

VIII.A. APPLICABILITY

The conditions of this Part apply to SWMUs and AOCs identified in Table VIII.1.

VIII.B. GENERAL CONDITIONS

1. The Permittee is required to perform corrective measures for the SWMUs and AOCs identified in Condition VIII.A. The approved remedy for these defined units, waterway areas, or land parcels includes any and all actions set forth in this permit and in the approved Interim Measures Plans, Corrective Measures Studies (CMSs), Corrective Measures Implementation (CMI) Plans, Records of Decision (RODs), Remedial Action Work Plans (RA WPs) and Land Use Control Remedial Design (LUC RD) Plans approved by the Department, as noted in Table VIII.1.

2. Remedial Cleanup Levels

   Upon approval, pursuant to the Condition VI.E, of the CMI Plan designating applicable cleanup level(s), the cleanup level(s) for the areas specific to the CMI Plan will be deemed to be a condition of this permit.

3. Groundwater Monitoring and Remediation

   Where required pursuant to Conditions VIII.B.1 and VIII.C of this permit, the Permittee shall comply with the general groundwater monitoring requirements of Part VII of this permit.

4. Land Use Controls

   Where required pursuant to Conditions VIII.B.1 and VIII.C of this permit, the Permittee shall establish appropriate land use controls to achieve protection of human health and the environment. The Permittee shall comply with Conditions VIII.B.5 and VIII.B.6 of this permit when implementing corrective measures requiring land use controls. In the event an off-site property owner will not allow an environmental covenant to be imposed, the Permittee shall notify the Department within 14 calendar days of receipt of such written notification of the refusal by the off-site property owner. If the property owner does not provide a written refusal of the request to allow an environmental covenant to be imposed, the Permittee shall notify the Department within 14 days of delivery of the request to the off-site property owner. In such cases, the Department may allow the Permittee to propose an alternate area-specific land use control in accordance with ADEM Admin. Code Rule 335-5-1-.02(i), subject to the Department's review and approval.

5. Survey Plat

For corrective measures where residual concentrations of contaminants will remain in-place at levels greater than those appropriate for unrestricted land use, or for corrective measures that rely on land use controls, the Permittee must:

a. No later than the submission of the certification of closure of each hazardous waste disposal unit, the Permittee shall submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Department, a survey plat indicating the location and dimensions of the SWMUs, AOCs, and capped or partially remediated areas with respect to permanently surveyed benchmarks, the locations of sampling points, and the concentrations of hazardous constituents detected. This plat must be prepared and certified by a professional land surveyor registered in the State of Alabama. The plat must be filed with the local zoning authority or the authority with jurisdiction over local land use and must contain a note, prominently displayed, which states the Permittee's obligation to limit the property to the specified restricted uses.

b. Maintain the survey plat as described in Condition VIII.B.5.a of this permit and in the CMI Report, until the Permittee has demonstrated, to the satisfaction of the Department that the levels of hazardous constituents in all contaminated media are within limits appropriate for unrestricted land uses.

6. Environmental Covenant

No later than the submission of the survey plat required in Condition VIII.B.5, the Permittee must:

a. Record in the probate judge's office of the county in which the property is located or a portion thereof an environmental covenant in accordance with ADEM Admin. Code R. 335-5 and ADEM Policy Memo #304 that will in perpetuity notify any potential purchaser of the property that:

i. The land is contaminated with hazardous constituents in concentrations that exceed unrestricted use standards;

ii. The use of the property is restricted by this permit for certain residential, municipal, or industrial purposes and may lead to an increased risk of exposure to hazardous constituents depending upon the activities initiated at the site. Such activities may yield an increased level of human health risk to the owner;

iii. The potential purchaser or entity that desires to work in the contaminated area should notify the Permittee before mobilizing to the area covered by the land use control.

b. Submit to the Department a certification, signed by the Permittee in accordance with Permit Condition I.C.11, that the environmental covenant specified in this part has been performed. This certification must include a copy of the covenant and of the document in which the notation has been placed.

c. Maintain the environmental covenant described in Permit Condition VIII.B.6 until the Permittee has demonstrated, to the satisfaction of the Department that the levels of hazardous constituents in all contaminated media are within limits appropriate for unrestricted land uses.

d. Submit applicable fees in accordance with ADEM Admin. Code R. 335-5-1-.06, Fee Schedule J.

7. Security

Security measures, where required by Conditions VIII.B.1 and VIII.C of this permit, will be conducted in accordance with ADEM Admin. Code R. 335-14-5-.02(5) and as prescribed in the approved CMI Plan, LUC RD or RA WP.

8. Inspection

Where corrective measures addressed in Conditions VIII.B.1 include provisions to cap in place or partially remediate properties or land areas, whether owned or not owned by the Permittee, the Permittee shall specify inspection protocols on a scheduled basis to ensure continued integrity of the remedy and to ensure that land use remains appropriately restricted per the environmental covenant established pursuant to Permit Condition VIII.B.6. Inspection provisions shall be as prescribed in the approved CMI Plan.

VIII.C. AREA SPECIFIC CONDITIONS

The Permittee shall implement the actions and conditions as described in the referenced CMI Plans identified in Table VIII.B.1 and this Permit; the current area specific conditions are as follows:

1. RSA-049, Capped Arsenic Waste Ponds – West, OU-5: The Permittee shall conduct groundwater monitoring in addition to inspecting and maintaining the existing multi-layer RCRA-type cap that was installed in 1997 and the following engineering and administrative controls. The Permittee shall conduct groundwater monitoring in accordance with Section VII of this permit.
   a. No intrusive activities, including excavations and well installations, shall be permitted at RSA-049 that may compromise the existing cap.

b. The site shall not be developed with residential, school, child care or playground facilities.

c. The cap shall be maintained by mowing and performing necessary repairs in a timely manner.

d. Cap inspections shall be performed as required in Appendix D of the operative edition of Redstone Arsenal Regulation 200-7 (Site Access Control Program), and whenever mowing is done.

e. No buildings that are to be occupied shall be constructed at RSA-049 without vapor barrier studies or engineered controls to prevent vapor intrusion. The Permittee shall submit building plans and engineering control remedial design plans to the Department for review and approval at least 90 days prior to scheduled commencement of construction activities.

f. No structures which have the potential to breach or negatively impact the cap shall be constructed on RSA-049.

g. The existing chain link fence and gates shall be maintained and warning signs shall be installed, inspected and maintained at RSA-049. The warning signs shall be installed at entrance locations and other locations to be seen from any approach legible from a distance of 25 feet.

h. The Army shall monitor and report on the presence and effectiveness of environmental use restrictions and controls annually.

i. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-049 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J, to remove the LUCs is submitted to the Department for review and approval.

2. RSA-057, Inactive Arsenic Waste Lagoons – East, OU-6: The Permittee shall conduct groundwater monitoring annually and inspect and maintain LUCs required as follows. The Permittee shall conduct groundwater monitoring in accordance with Section VII of this permit.

a. No residential use or development shall be permitted at RSA-057.

b. Maintain warning signs at key site entry points. The warning signs shall be installed at entrance and other locations to be seen from any approach legible from a distance of 25 feet.

c. Prevent exposure of construction worker to soils with arsenic concentrations of greater than 100 mg/kg.

d. No soils shall be excavated at the site without a use permit.

e. Special handling procedures shall be required for future site excavations for industrial development as outlined in all applicable documents (e.g., Soils Management Plan, Investigation-Derived Waste Management Plan, etc.)

f. The Permittee shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.

g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-057 are at levels to allow for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J, to remove the LUCs is submitted to the Department for review and approval.

h. Final ROD requires monitoring of groundwater monitoring wells RS731, RS1391 and RS140. Additional requirements shall be specified in the Final Groundwater Monitoring Plan for RSA-057 and shall be incorporated by submitting a permit modification, in accordance with Permit Condition I.J.

3. RSA-101 shall be addressed in accordance with the Olin Consent Decree and the *Joint Technical Proposal to Implement Remedial Activities Pursuant to Consent Decree* (Reference Civil Action No. CV80-PT-5300-NE Filed May 31, 1983).

4. Groundwater at the following SWMUs shall be addressed as part of separate SWMUs. The Permittee shall conduct groundwater monitoring in accordance with Section VII of this permit.
   a. RSA-011, Former Sewage Treatment Plant No. 1, OU-10: No further action required for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
   b. RSA-094, Chlorinated Solvent Distillation Unit 1, OU-10: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
   c. RSA-196, Test Stand and Cleaning Building, OU-10: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor. The groundwater shall be investigated and/or remediated as part of RSA-146.
   d. MSFC-2/87, Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon, OU-18: No further action required for surface media (i.e., surface soil, subsurface soil, surface water, sediment, spring water, and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-149.

5. Groundwater, Installation-Wide; As indicated in the IROD dated September 2007, LUCs are required as follows:
   a. No drinking water wells shall be installed on the Arsenal. Groundwater, including springs and seeps shall not be used for drinking water, or irrigation.
   b. Groundwater shall only be used for non-potable purposes, preventing human consumption and controlling other exposures.
   c. The Permittee shall pursue formal coordination with the adjacent local government agencies (e.g., Madison County, Morgan County, and the City of Huntsville) regarding any pending groundwater actions (e.g., installation of groundwater wells where potentially contaminated groundwater may be encountered, etc,) off the Arsenal. The Permittee shall report the status of the coordination with the local governmental agencies in the annual corrective action effectiveness report.
   d. The Permittee shall control the vapors from the groundwater by mitigating the plume off the Arsenal.
   e. The Permittee shall monitor and report on the environmental use restrictions and controls annually.

f. To determine the effectiveness of the Installation Wide Groundwater IROD, and in accordance with Permit Condition VII.B.1.c, the Permittee shall submit a Site Wide Groundwater Monitoring Plan to the Department for review and approval. The Site Wide Groundwater Monitoring Plan shall be submitted to the Department within 180 days from the effective date of this permit.

VIII.D. CORRECTIVE MEASURES IMPLEMENTATION (CMI) AND ANNUAL MONITORING REPORTS

1. CMI Progress and Annual Reports

If the time required to complete implementation of a specific set of corrective measures, as described in the Department-approved CMI Plan, is greater than 180 calendar days, the Permittee shall provide ADEM with progress reports according to the schedule approved by ADEM in the CMI Plan. If no schedule has been approved as part of the associated plan, progress reports shall be submitted at least quarterly. The progress reports shall, at a minimum, contain the following information:

a. A description of the portion of CMI Plan, completed;

b. Summaries of and deviations from the approved CMI Plan, during the reporting period;

c. Summaries of current and potential problems, including recommended solutions and alternatives as well as corrective actions undertaken;

d. Any monitoring data (soil, air, dust, water) collected for any reason during the construction period for the purposes of monitoring potential for human and ecological exposure; and,

e. Projected work for the next period and impacts to the approved schedule.

2. Final CMI Reports

Upon completion of construction of corrective measures systems, implementation of land use controls, interim removal actions, or other short-term activities required by this permit, or the approved CMI Plan, the Permittee shall submit to the Department a Final Report containing, at a minimum, the following:

a. A description of activities completed;

b. For cap and cover remedies, as-built construction drawings presenting the final in-place three-dimensional location of contaminated material. A plan view of the remediated areas shall be presented in addition to a cross section of the in-place capped areas;

c. Hazardous waste manifests indicating the handling of any excavated material that has been shipped off-site to a Department-approved, certified landfill;

d. For remedies involving land use controls, a copy of the survey plat and environmental covenant required by Condition VIII.B of this permit;

e. Monitoring data (soil, air, dust, water) collected for any reason during the construction period for the purposes of monitoring potential for human and ecological exposure; and

f. Certification, prepared in accordance with ADEM Admin. Code Rule 335-14-8-02 (2)(d) by the Permittee and a registered Professional Engineer (State of Alabama), that the corrective measures implementation phase (*i.e.*, construction) required by this permit is complete and that the approved system and/or facilities are ready for operation in accordance with the intended design (*i.e.*, CMI Plan).

3. Corrective Measures (CM) Effectiveness Reports

a. For corrective measures that have been fully implemented and where the corrective measures system(s) must operate for a period of time to achieve cleanup goals or levels, the Permittee shall submit an overall CM Effectiveness Report (addressing all Corrective Measures systems at the facility which are subject to this permit condition) annually, unless otherwise approved by the Department, beginning 180 calendar days following the Department's approval of the Final CMI Report for the initial Corrective Measures system subject to this permit condition. The overall CM Effectiveness Report shall include, at a minimum, the following information for each SWMU and/or AOC included in the report:

i. A detailed narrative presenting an evaluation of the effectiveness of the selected remedy;

ii. Summaries of compliance with and progress toward achieving cleanup goals;

iii. Any significant revisions, adjustments, or proposed modifications to the selected remedy;

iv. Tabulated environmental sampling and monitoring data including, but not limited to, groundwater quality, elevation data, and a graphical representation of all constituents detected during each sampling event from recovery wells, monitoring wells, drinking water wells, and other locations;

v. Chain of custody, field reports, and laboratory data sheets to include the date of collection, the date the sample was

extracted, and the date of sample analysis for samples collected during the reporting period;

vi. Any monitoring data (soil, air, dust, water) collected for any reason during the post-construction period for the purposes of monitoring potential for human and ecological exposure;

vii. Isoconcentration maps depicting the distribution of parameters for each sampling event;

viii. Time versus concentration plots for each monitoring parameter for each recovery well and a representative number of effectiveness wells;

ix. Tabulated volumetric data on groundwater pumped and pumping rates (monthly and cumulative) for each recovery well;

x. Records of any groundwater recovery system operation time, including shutdown periods, not including any minor (less than 24 hours) shutdowns for repairs, maintenance, etc.;

xi. Potentiometric surface maps;

xii. Description of land use during the reporting period at the designated area requiring corrective measures; and,

xiii. Findings of the Permittee's investigation into the continued effectiveness of land use controls per Condition VIII.B.

b. If, at any time, the Permittee determines that any remedy selection specified in Condition VIII.B or VIII.C of this permit no longer satisfies the applicable requirements of ADEM Admin. Code R. 335-14-5-.06(12) or this permit for releases of hazardous waste or hazardous constituents originating from SWMUs or AOCs, the Permittee must, within 90 calendar days, submit an application for a permit modification, pursuant to Permit Condition I.J, to make any appropriate changes to the CMI Plan.

c. The application for changes in the CMI Plan, including changes in inspection and monitoring provisions of the CMI Plan, shall be submitted as an application for a permit modification pursuant to the requirements of ADEM Admin. Code R. 335-14-8-.04.

4. Final Report of Corrective Measures

Within 90 calendar days following attainment of cleanup levels or goals as outlined in this Permit and the approved CMI Plans, the Permittee shall submit to the Department a Final Report of Corrective Measures (FRCM). The FRCM shall contain a certification by the Permittee and a registered Professional

Engineer (State of Alabama), that all remedial measures required by this permit and the approved CMI Plan has been completed. The FRCM shall outline any procedures and schedules for dismantling of corrective measures systems, groundwater monitoring or recovery systems, removal of land use controls, and any other remedial systems or controls required by this permit or the approved CMI Plan.

Table VIII.1

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

List of SWMUs and AOCs requiring Corrective Measures:

Applicable SWMU/AOC	*CMS/CMI/ROD/LUC RD	Approval Date
RSA-011, Former Sewage Treatment Plant No. 1, OU-10	ROD for Surface Media at RSA-011, dated August 2007	09/05/2007
RSA-049, Capped Arsenic Waste Ponds – West, OU-5	Final LUC RD for RSA-049, dated June 1, 2009	07/02/2009
RSA-057, Inactive Arsenic Waste Lagoons, East, OU-6	Final ROD for Surface Media at RSA-057, dated August 2007	09/10/2007
	Final Remedial Action Work Plan for RSA-057, dated March 4, 2008	03/31/2008
RSA-094, Chlorinated Solvent Distillation Unit 1, OU-10	ROD for Surface Media at RSA-094, dated August 2009	09/03/2009
RSA-101, DDT Contaminated Area DD	Consent Decree and *Joint Technical Proposal to Implement Remedial Activities Pursuant to Consent Decree* (Reference Civil Action No. CV80-PT-5300-NE)	Filed 05/31/1983
RSA-196/098, Test Stand and Cleaning Building/Chlorinated Solvent Unit Bldg 7346, OU-10	ROD for Surface Media at RSA-196/098, dated August 2009	09/11/2009
Installation-Wide Groundwater Interim Record of Decision (IROD)	Interim ROD, Interim Remedial Action for Installation-Wide Groundwater, dated September 2007	09/21/2007
	Installation-Wide Groundwater LUC RD, dated June 1, 2009	08/18/2009
MSFC-002/087, Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon, OU-18	ROD for Surface Media at MSFC-002/087, dated May 2008	06/20/2008

*Note: RODs, LUC RD and/or RA WP documents serve as the CMI Plan for some SWMUs/AOCs pursuant to this Permit and are subject to the same Permit requirements.

APPENDIX A

WASTE MINIMIZATION OBJECTIVES

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WASTE MINIMIZATION OBJECTIVES

The Waste Minimization Program should include the following elements:

I. TOP MANAGEMENT SUPPORT

A. Dated and signed policy describing management support for waste minimization and for implementation of a waste minimization plan.

B. Description of employee awareness and training programs designed to involve employees in waste minimization planning and implementation to the maximum extent feasible.

C. Description of how a waste minimization plan has been incorporated into management practices so as to ensure ongoing efforts with respect to product design, capital planning, production operations, and maintenance.

II. CHARACTERIZATION OF WASTE GENERATION

Identification of types, amounts, and hazardous constituents of waste streams, with the source and date of generation.

III. PERIODIC WASTE MINIMIZATION ASSESSMENTS

A. Identification of all points in a process where materials can be prevented from becoming a waste, or can be recycled.

B. Identification of potential waste reduction and recycling techniques applicable to each waste, with a cost estimate for capital investment and implementation.

C. Description of technically and economically practical waste reduction/recycling options to be implemented, and a planned schedule for implementation.

D. Specific performance goals, preferably quantitative, for the source reduction of waste by stream. Whenever possible, goals should be stated as weight of waste generated per standard unit of production, as defined by the generator.

IV. COST ALLOCATION SYSTEM

A. Identification of waste management costs for each waste, factoring in liability, transportation, recordkeeping, personnel, pollution control, treatment, disposal, compliance and oversight costs to the extent feasible.

B. Description of how departments are held accountable for the wastes they generate.

C. Comparison of waste management costs with costs of potential reduction and recycling techniques applicable to each waste.

V. TECHNOLOGY TRANSFER

Description of efforts to seek and exchange technical information on waste minimization from other parts of the company, other firms, trade associations, technical assistance programs, and professional consultants.

VI. PROGRAM EVALUATION

A. Description of types and amounts of hazardous waste reduced or recycled.

B. Analysis and quantification of progress made relative to each performance goal established and each reduction technique to be implemented.

C. Amendments to waste minimization plan and explanation.

D. Explanation and documentation of reduction efforts completed or in progress before development of the waste minimization plan.

E. Explanation and documentation regarding impediments to hazardous waste reduction specific to the individual facility.

References:

"Draft Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program", 54 FR 25056, June 12, 1989.

"Waste Minimization Opportunity Assessment Manual", EPA/625/7-88/003, July 1988.