west virginia department of environmental protection

Division of Water and Waste Management
601 57th Street, SE
Charleston, WV 25304-2345
Telephone Number (304) 926-0499
Fax Number (304) 926-0463

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
dep.wv.gov

October 14, 2015

John Waugaman, CHMM
Environmental Compliance
ATK- Alliant Techsystems Operations LLC
and Naval Sea Systems Command
210 State Route 956
Rocket Center, WV 26726-3548

SUBJECT: Permit Reissuance
Rocket Center, WV
EPA ID Number: WVO Number: 170 023 691

Dear Mr.Waugman:

Enclosed, please find a permit reissuance for your facility in Rocket Center, West Virginia. The package includes final permit reissuance, fact sheet, and addendum to the fact sheet.

If you have any questions, please feel free to contact me, at the address or phone numbers provided on this letter.

Sincerely,

T. H. Fathallah

Talal. H. Fathallah
Permitting

Cc: Sudhir Patel, Permitting. Jamie Fenske, EE Supervisor. Joe Sizemore, EE.

PERMIT

REVIEW AND APPROVAL SIGN-OFF SHEET

Permit Modification for, Alliant Techsystems Operations (ATO), EPA ID Number: WVO 170 023 691 has been reviewed and is approved for issuance.

Tulal H. Fathallah
Permit Reviewer/Writer
Hazardous Waste Permitting Unit

10/14/15
Date

T. H. Fathallah
Signature

Sudhir Patel
Sudhir D.Patel
Program Manager
Hazardous Waste Permitting Unit

10/14/15
Date

Sudhir D. Patel
Signature

Y. Patel
Yogesh Patel
Assistant Director
Division of Water and Waste Management

10/14/15
Date

Y. Patel
Signature

west virginia department of environmental protection

Hazardous Waste Management Renewal Permit

Permittee: **Alliant Techsystems Operations LLC**
Address: **210 State Route 956**
Rocket Center, WV 26726

Permit ID No.: **WVO 170 023 691**
EPA ID No.: **WVO 170 023 691**

Pursuant to the West Virginia Hazardous Waste Management Act, (Chapter 22, Article 18 of the West Virginia Code, hereinafter called "the Act"), and the Hazardous Waste Management Rule (HWMR) (Title 33, Series 20), promulgated thereunder, a permit is issued to Alliant Techsystems Operations hereinafter called the Permittee, to operate hazardous waste management units which consist of: one (2) hazardous waste storage area referenced facility located in Rocket Center, West Virginia.

The Permittee must comply with all terms and conditions of this permit and the applicable regulations. This permit consists of the conditions contained herein (including those in any and all attachments) and all the applicable provisions of HWMR and regulations contained in 40 CFR, Parts 260, 261, 262, 264, 266, 268, and 270, which have been incorporated, by reference, into the HWMR, and applicable provisions of the Act.

This permit is based on the information submitted in the permit application (hereinafter referred to as the "Application"), and subsequent submissions. Any inaccuracies found in this information or violations of terms or conditions of this permit may be grounds for the termination, revocation and reissuance, or modification of this permit and enforcement action. The Permittee must inform the West Virginia Department of Environmental

this information or violations of terms or conditions of this permit may be grounds for the termination, revocation and reissuance, or modification of this permit and enforcement action. The Permittee must inform the West Virginia Department of Environmental Protection (WVDEP) by means of written notification to the Director, of Division of Water and Waste Management (DWWM), of any deviation from or changes in the submitted information, which would affect the Permittee's ability to comply with the applicable statues, rules, regulations, or permit conditions.

This permit is effective as of November 14, 2015, and shall remain in effect until November 13, 2025, unless suspended, revoked, revoked and reissued, or terminated (40 CFR 270.41, 270.43) or continued in accordance with 40 CFR 270.51.

Scott G. Mandirola

Director

Division of Water and Waste Management

10/14/15

Date Signed

FACT SHEET
for
Alliant Techsystems Operations LLC
EPA ID NUMBER: WVO 170 023 691

HAZARDOUS WASTE MANAGEMENT PERMIT

This fact sheet accompanies the draft permit for **Alliant Techsystems Operations LLC**, hereinafter "Permittee",(AT0),EPA ID Number WVO **170 023 691**, and was prepared in accordance with Section 11.6 of the Hazardous Waste Management Rule (HWMR).The Department of Environmental Protection (DEP), Division of Water and Waste Management (DWWM), intends to issue a Hazardous Waste Management Permit to the permittee.

I. AUTHORITY

(a) Federal Law:

The United States Environmental Protection Agency (EPA), under Section 3006(b) of the Resource Conservation and Recovery Act of 1976 (RCRA), has authorized the State of West Virginia to administer and enforce a hazardous waste program.

(b) State Law:

Article 18, Chapter 22 of the West Virginia Code, Hazardous Waste Management Act, hereinafter referred to as the "ACT", designates the Division of Environmental Protection (DEP) as the State lead regulatory agency for hazardous waste management. Section 7(6), Article 1, Chapter 22 of the State Code charges the DWWM with administering and enforcing, under the supervision of the director, the provisions of the Act.

Section 8 of the Act requires a person to have a permit in order to construct, modify, operate or close any facility, or site, used to store, treat, or dispose of hazardous waste. Presently the Permittee is storing hazardous waste under a state permit which was continued in accordance with 40 CFR Part 270.51.

II. PURPOSE OF PERMITTING PROCESS

The permitting process provides an opportunity for the public, DWWM and other agencies and stake holders to evaluate the permittee's ability and commitments to

comply with the Act and rules promulgated there under.

Section 11.9 of HWMR requires the DWWM to prepare draft permit which sets forth in one concise legal document all the applicable requirements that the permittees must comply with during the duration of the permit.

IV. PROCEDURES FOR REACHING A FINAL DECISION

(a) Pursuant to Section 11.11 of the HWMR, the public and other agencies are given forty five (45) days notice to review and comment on the application, fact sheet and the draft permit. A copy of these documents are available for public review at the WVDEP, DWWM, Public Information Office, 601 57th Street SE, Charleston, WV 25304.

The comment period begins August 19, 2015 and will end on October 2, 2015.
If during forty-five (45) day comment period, the Director of DWWM finds sufficient public interest or if she received written notice of opposition to the draft permit, and a request for a public hearing, a public hearing will be held.

Any person aggrieved or adversely affected by the action of the Director concerning the permit has the right to appeal as provided under Section 20 of the HWMA.

The contact person for this permit is Talal. H. Fathallah, WVDEP-DWWM-Hazardous Waste Permit Unit, 601 57th Street S.E., Charleston, WV 25304, (304) 926-0499, ext. 1290.

V. FACILITY DESCRIPTION

General Description

US Navy Naval Sea Systems Command, Allegany Ballistics Laboratory (ABL) is the owner of all portions of the facility except Plant 2. ATO LLC , the operator of all the facility, generates hazardous wastes and stores them on site in a container storage unit for more than 90 days before the wastes are transported off site for disposal. This permit application also covers an existing container storage building planned for hazardous waste storage. ATO also treats hazardous wastes through open burning (OB) at a designated area. Pursuant to 40 CFR Part 264, storage and treatment of hazardous wastes require a Resource Conservation and Recovery Act (RCRA) hazardous waste permit. Details of specific hazardous waste activities are provided in Section D of this application.

ATO's primary activities are development and production of solid propellant rocket motors, gas generators, warheads, and laser initiation systems for the U.S Department of Defense (DOD). Other activities Include development and production of metal parts, metal components and filament wound composite structures and testing of automobile component products.

VI. PERMIT ORGANIZATION

The permit is divided into Modules as outlined below:

Module I, Standard Conditions
Module II, General Facility Conditions
Module III, Container Storage Area
Module IV, Corrective Action
Module V, Burning Grounds (Subpart X)

The following attachments constitute part of this permit:

Attachment 1, Waste Analysis Plan
Attachment 2, Inspection Schedule
Attachment 3, Training Outline
Attachment 4, Contingency Plan
Attachment 5, Closure Plan

VII. BASIS FOR PERMIT CONDITIONS

(a) Module I

Module I of the permit sets forth standard conditions that are applicable to all hazardous waste management facilities (TSDs). This permit is regulated by 40 CFR Part 270, Subpart C and is supported by regulatory references cited in the permit. The permit condition F-16 of Module I requires the permittees to report non-compliance within 15 days.

(b) Module II

In Module II of the permit, most of the conditions directly cite a regulatory or statutory requirement. There are a few conditions in this module where DWWM considers regulations vague or inadequate to cover a particular situation and relies on permitting policy. Examples are:

1. The frequency of verifying the analysis of each waste stream and the use of contractors for waste analysis in condition II-B of the permit.

2. In order to further support the closure performance standard of 40 CFR Part 264.111, DWWM has specified under permit condition II-H.5.b, an advanced notification requirement prior to the permittees sampling under the closure plan.

(c) Module III

In this Module, the Storage in Containers, permit conditions have been supported with applicable regulatory references.

(d) Module IV

This Module reserves a place in the permit for inclusion of Corrective Action activities if necessary.

(e) Module V, Opening Burning Ground.

ADDENDUM TO FACT SHEET

ATO had some comments for the Corrective Action module IV and DEP had addressed and satisfied all the comments submitted and listed below:

WVDEP Response to ATK Comments Module IV RCRA CA

Comment #1

IV-A Paragraph 6-Delete paragraph

WVDEP Response

Agreed language should be deleted it is likely left over from previous drafts.

Comment #2

IV-D-1 Word change," adding" to "obviating".

WVDEP Response

Accepted

Comment #2

IV-L-1 Delete SWMU 34 – Oil/Water Separators
Buildings 252 and 341
SWMU 48 – Munitions Test Area

WVDEP Response

SWMU 34 closed per WVDEP memo of May 30, 2014 from C. Guynn

Comment #3

IV-L-1 Delete SWMU – 46 – X-Range

WVDEP Response

SWMUs 46, 48 closed per WVDEP memo May 6. 2013 per C. Guynn

Comment #4

IV-L-2 Delete SWMU 13 Former Alodine Waste Storage Area
Building 2014
SWMU 15 Current Alodine Waste Storage Area II – Building 2014
SWMU 24 Satellite Accumulation Areas
CC-Building 2002 Satellite Accumulation Area
DD-Building 2014 Satellite Accumulation Area No.1
EE-Building 2014 Satellite Accumulation Area No.2
FF-Building 8204 Satellite Accumulation Area (soil sample)
GG-Building 8501 Satellite Accumulation Area No.1
HH- Building 8501 Satellite Accumulation Area No.2 (soil sample
25D Building 2014 Still No.1
25E Building 2014 Still No.2
SWMU 28 Silver Recovery Units (Building 2010)

SWMU 29L and 29M - Dust Collection Systems, Building 2003 and 2014
SWMU 30 Spray Booth Filters, Building 2011, and Building 2014
SWMU 34 Oil/Water Separators
Building 2026
Building 2034
Building 8501
SWMU 38 Parts Cleaner-Building 2014

WVDEP Response

SWMUs closed per WVDEP memo May 20, 2013 per C. Guynn

Comment #6

Delete paragraphs VI-E, VI-F, VI-G, VI-H from Module IV

WVDEP Response

Agreed Pages were added by mistake, not part of Module IV

Comment # 7

Delete subsections IV-C-1, IV-C-2, IV-C-3, IV-C-4, IV-C-5 and replace with;
"IV-C-1. The Permittee submitted the RFI in March of 2014 and the WVDEP approved the submitted RFI on May 15, 2014."

WVDEP Response

Accepted, the RFI has been completed

Comment #8

Insert the following paragraph as last paragraph in section IV-A
"Groundwater monitoring requirements for the Burning Ground is deferred until such time the permitted Burn Pads are closed or the CERCLA Remedial Action at Plant 1/Site 1 is completed, whichever comes first. Upon closure or the Burn Pads or completion of the CERCLA Remedial Action, RCRA groundwater monitoring requirements will be applicable."

WVDEP Response

Accepted

Comment #9

There are also several references in section A to the RFI which should probably be deleted

WVDEP Response

Agreed, Delete Paragraph 5 in section IV-A. Delete phrase "the scope of work for an RFI" in paragraph 8

Comment #10

If Attachment 7 of the permit does not include Section E in its entirety (it does not in current permit) it should at least include para E-6 (pg E-9).

WVDEP Response

Add Language in paragraph E6 to end of Section IV

"The Long-Term Monitoring Plan Site 1 – Burning Grounds (CH2M HILL, 1998) defines the requirements established for groundwater and treatment plant effluent monitoring required under the CERCLA program. Substantive requirements for monitoring in conjunction with the Part B permit will be incorporated into the ongoing monitoring under the CERCLA program. This coordination of RCRA and CERCLA program requirements is in accordance with the ABL Federal Facility Agreement (January 1998) and USEPA guidance (USEPA, September 24, 1996)."

WV Department of Environmental Protection
Division of Air Quality
Hazardous and Solid Waste Air Program
601 57th Street
Charleston, WV 25304

Telephone: **(304) 926-0499**
Facsimile: **(304) 926-0479**

PUBLIC NOTICE OF THE INTENT TO ISSUE A PERMIT

Public Notice No. HW-X-2 Paper: Mineral Daily News Tribune
Public Notice Date: August 19, 2015

The West Virginia Department of Environmental Protection (DEP), Division of Air Quality (DAQ) and Division of Water and Waste (DWWM), intends to issue a hazardous waste management permit to Orbital ATK- Alliant Techsystems Operations LLC for the operation of open burning grounds for the treatment of energetic wastes and for preventing and controlling organic air emissions from containers. Also included are two container storage areas under RCRA. This permit will be issued under the authority of West Virginia Codes §§ 22-5-1 et seq. and §§ 22-18-1 et seq. and 45 CSR 25. The facility has been assigned EPA identification number WVO170023691 and is located at 210 State Route 956, Rocket Center, WV 26726-0210.

The state of West Virginia is authorized to administer and enforce a hazardous waste management program in lieu of the federal program for portions of the Resource, Conservation, and Recovery Act of 1976 (RCRA), except for some of the requirements of the Hazardous and Solid Waste Amendments of 1984 (HWSA). HSWA imposes additional requirements on hazardous waste management facilities that will be administered and enforced by the U. S. Environmental Protection Agency (EPA) until the state of West Virginia receives authorization for those requirements.

The permit, which contains conditions for the operation of the above mentioned units, is not final and is open to comment from the public. If there is significant interest expressed in the permit or if there is a request for a public hearing, the Director will hold a public hearing if it is concluded a hearing is appropriate. **Comments on the permit and request for public hearing must be in writing and submitted within forty-five (45) days of this notice to:**

William F. Durham, Director
West Virginia Division of Air Quality
601 57th Street
Charleston, WV 25304
Attention: Hazardous and Solid Waste Air Program

The DAQ will consider all comments prior to final action on the permits. A copy of the permit application, draft permits, and fact sheets will be available for review between the hours of 8:00 a.m. to 5:00 p.m. at the Division of Air Quality, 601 57th Street, Charleston, WV 25304 and at the Eastern Panhandle Regional Office, 22288 Northwestern Pike, Romney, WV 26757. Charleston contact person: Richard A. Boehm, P. E., Phone No. (304) 926-0499, x. 1687. Romney contact person: Joe Kreger, Phone No. (304) 822-7266 x.3627.

WEST VIRGINIA DEPARTMENT OF ENVIRONMETNAL PROTECTION
PUBLIC INFORMATION OFFICE
601 57th STREET SE
CHARLESTON, WEST VIRGINIA 25304
TELEPHONE: (304) 926-0499 Ext. 1336
FAX (304) 926-0473

PUBLIC NOTICE OF THE INTENT TO RE-ISSUE A PERMIT AND ISSUE A PERMIT UNDER THE WEST VIRGINIA HAZARDOUS WASET MANAGEMENT ACT

PUBLIC NOTICE NUMBER:
PUBLIC NOTICE DATE: August 19, 2015
PAPER: Mineral Daily News Tribune
PERMITTING OFFICE:
West Virginia Department of Environmental Protection
Division of Air Quality and
Division of Water and Waste Management
601 57th Street SE
Charleston, West Virginia 25304

PERMIT APPLICANT:
Orbital ATK- Alliant Techsystems Operations LLC and Naval Sea Systems Command
210 State Route 956
Rocket Center, WV 26726-3548

The West Virginia Department of Environmental Protection intends to issue two permits to Co-Permittees: Orbital ATK- Alliant Techsystems Operations LLC and Naval Sea Systems Command. These permits will be issued under the authority of West Virginia Code, Chapter 22, Article 18. The facility has been assigned the EPA identification number WVO 170 023 69. The hazardous waste management units included in these permits are two container storage areas and an open burning ground. The Division of Water and Waste Management intends to re-issue a hazardous waste management permit and the Division of Air Quality intends to re-issue air permit (HW-X-2) for hazardous waste management.

The State of West Virginia is authorized to administer and enforce a hazardous waste management program, in lieu of the federal program for portions of the Resource Conservation and Recovery Act of 1976 (RCRA), Amendments of 1984 (HWSA). HWSA imposes additional requirements on hazardous waste management facilities that will be enforced by the U.S. Environmental Protection Agency (EPA) until the State of West Virginia receives authorization for those requirements.

Article 18, Chapter 22 of the W.Va. Code requires Orbital ATK- Alliant Techsystems Operations LLC and Naval Sea Systems Command to have a permit in order to construct, operate, modify or close any facility or site used to treat, store or dispose hazardous waste. The Hazardous Waste Management Rule also requires that West Virginia Department of Environmental Protection provide the public with an opportunity to participate in the permitting process (public notice and opportunity to request a hearing).

A copy of the administrative record, permit application, draft permit, and fact sheet will be available for review at the Department of Environmental Protection's Public Information Office, 601 57th Street SE, Charleston, W.Va. 25304, (304) 926-0499 ext.1518.

A copy of the permit application, draft permit, and fact sheet will also be available for review at the WV DEP Eastern Panhandle Regional Office (EPRO), 22288 Northwestern Pike, Romney, WV 26757. Please contact Joe Kreger via (304) 822-7266 to review the documents in Romney.

During the designated 45-day public comment period, persons wanting to review any information should contact the Pulbic Information Specialist, Cathy Wheeler at (304) 926-0499 ext.1518 to schedule an appointment. Any person desiring site-specific or technical information should contact the Permit Writer, Talal Fathallah at (304) 926-0499 ext.1290. For technical information regarding the air permit, contact Richard Boehm at (304) 926-0499 ext. 1687.

Permit conditions are tentative and open to public comment. Persons wishing to comment on the draft permit must submit their comments in writing to:

West Virginia Department of Environmental Protection
Public Information Office
601 57th Street SE
Charleston, W.Va. 25304
Attention: Cathy Wheeler

Relevant written comments received during this 45-day comment period will be considered in the final permitting decision. Persons desiring a public hearing should send their written request, stating the nature of the issue(s), to the West Virginia Department of Environmental Protection at the address noted above and during the comment/review period. If a public hearing is warranted, the director will provide the public with a notice of at least 30 days prior to the scheduled hearing. Following the comment period, the director will make the permitting decision.

If the terms and conditions of the permit remain substantially unchanged from those announced by this notice, the director will issue the permit and respond to all persons who submitted written comments, plus any person who requested the response. If the terms and conditions are substantially changed, the director will offer the public an opportunity for review and comment on substantial changes before the final permitting decision.

MODULE I
STANDARD CONDITIONS

Module I of the permit sets forth the standard conditions that are applicable to all hazardous waste management facilities. The regulations applicable to permitting, Parts 260 through 264, 266, 268, 270 and 279, of Title 40, Code of Federal Regulations, have been incorporated by reference into Sections 2 through 7, 9 through 11, and 14, respectively, of Title 33 Code of State Regulations Series 20, Hazardous Waste Management Rule (HWMR).

(NOTE: The regulatory and/or statutory citations in parentheses are incorporated into the permit by reference.)

I-A EFFECT OF PERMIT (40 CFR 270.4, 270.30(G) AND 22-18-8(A) OF W.VA. CODE)

The Permittee is allowed to manage hazardous waste in accordance with the conditions of the West Virginia Hazardous Waste Management Permit (the state portion of the full RCRA Permit). Any management of hazardous waste not authorized by this permit is prohibited, unless otherwise expressly or specifically exempted by law.

Compliance with the permit during its term constitutes compliance, for purposes of enforcement, with the Hazardous Waste Management Act (Article 18, Chapter 22 of the West Virginia Code), (hereinafter, the ACT), except for those requirements not included in the permit which: 1) become effective by statute; or 2) are promulgated under 40 CFR, Part 268, restricting the placement of hazardous waste in, or on the land; or 3) are promulgated under 40 CFR, Part 264, regarding leak detection systems for new, replacement, and lateral expansions of surface impoundment, waste pile, and landfill units which will be implemented through the procedures of 40 CFR 270.42, Class 1 permit modifications; or 4) are promulgated under Subparts AA, BB, or CC of 40 CFR, Part 265, limiting air emissions.

Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it 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 order issued or any action brought by the U. S. Environmental Protection Agency (US EPA) under Sections 3008(a), 3008(h), 3013, or 7003 of RCRA; Sections 104, 106(a), or 107, of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. '9601 et. seq., commonly known as CERCLA); or any other law providing for protection of public health or the environment.

I-B PERMIT ACTIONS (40 CFR 270.30(F))

This permit may be modified, revoked and reissued, or terminated for cause, as specified in 40 CFR 270.41, 270.42, and 270.43. This permit may also be reviewed and modified by the West Virginia Department of Environmental Protection, Division of Water and Waste Management (DWWM), consistent with 40 CFR 270.41, to include any terms and conditions determined necessary to protect human health and the environment, and to achieve compliance with 270.32(b)(2). 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. The Permittee shall not perform any construction associated with a Class 3 permit modification request until such modification request is granted and the modification becomes effective.

I-C SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or if 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-D DEFINITIONS

For the purpose of this permit, terms used herein shall have the same meaning as those set forth in the Act, HWMR, and 40 CFR Parts 260 through 264, 266, 268, 270, and 279, which have been incorporated by reference, unless this permit specifically states otherwise. Where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term. The following definitions also apply to this permit.

D-1 "Director" means the Director of the Division of Water and Waste Management, West Virginia Department of Environmental Protection.

D-2 "Days" mean except as otherwise provided herein, calendar days;

D-3 "Hazardous Constituent" means any constituent identified in Appendix VIII of 40 CFR, Part 261, or any constituent identified in Appendix IX of 40 CFR, Part 264;

D-4 "Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.

D-5 "Secretary" means the Secretary of the West Virginia Department of Environmental Protection.

I-E FAILURE TO SUBMIT RELEVANT AND/OR ACCURATE INFORMATION

Whenever the Permittee becomes aware that it failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Director, DWWM, the Permittee shall notify the Director of such failure within seven (7) calendar days of becoming aware of such deficiency or inaccuracy. The Permittee shall submit the correct or additional information to the Director within thirty (30) days of becoming aware of the deficiency or inaccuracy (40 CFR 270.30(l)(11) and 270.32(b)). Failure to submit the information required in this permit or misrepresentation of any submitted information is grounds for termination of this permit (40 CFR 270.43).

I-F DUTIES AND REQUIREMENTS

F-1 Duty to Comply (40 CFR 270.30(a))

The Permittee must comply with all conditions of this permit, except that the Permittee need not comply with the conditions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit. (See 40 CFR 270.61). Any permit noncompliance, except under the terms of an emergency permit, constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

F-2 Duty to Re-apply (40 CFR 270.30(b))

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.

F-3 Permit Duration (40 CFR 270.50 and 270.51)

a. This permit shall be effective for a fixed term not to exceed 10 years. Each permit that includes a land disposal unit shall be reviewed by the Director five (5) years after the date of permit issuance and shall be modified as necessary as provided in 40 CFR 270.41.

b. This permit and all conditions herein will continue in effect beyond the permit's expiration date, if the Permittee has submitted a timely, complete application (see Subpart B of 40 CFR 270) and, through no fault of the Permittee, the Director has not issued a new permit.

F-4 Need to Halt or Reduce Activity Not a Defense (40 CFR 270.30(c))

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.

F-5 Duty to Mitigate (40 CFR 270.30(d))

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

F-6 Proper Operation and Maintenance (40 CFR 270.30(e))

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

F-7 Duty to Provide Information (40 CFR 270.30(h) and 264.74)

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

F-8 Inspection and Entry (40 CFR 270.30(i))

The Permittee shall allow the Director, DWWM, or an 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 Act, any substances or parameters at any location.

F-9 Monitoring and Recordkeeping (40 CFR 270.30(j), 264.73, and 264.74)

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, the certification required by 40 CFR 264.73(b)(9), and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report, certification, or application. This period may be extended, by request of the Director, at any time.

c. The Permittee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations, for the active life of the facility, and for disposal facilities for the post-closure care period as well.

F-10 Reporting Planned Changes (40 CFR 270.30(l)(1))

The Permittee shall give notice to the Director, DWWM, as soon as possible, of any planned physical alterations or additions to the permitted facility.

Such notification does not waive the Permittee's duty to comply with the following:

Pursuant to Section 8(a) of the Act, no person may construct or modify any facility or site for the treatment, storage, or disposal of hazardous waste without first obtaining a permit. Permitting of these alterations or additions to the facility shall be in accordance with the permit modification procedures of 40 CFR 270.41 or 270.42 that have been incorporated by reference into Section 11 of the HWMR.

F-11 Anticipated Noncompliance (40 CFR 270.30(l)(2))

The Permittee shall give advance notice to the Director, DWWM, of any planned changes in the permitted facility, or activity, which may result in noncompliance with permit requirements. Such notice does not constitute a waiver of the Permittee's duty to comply with permit requirements.

F-12 Transfer of Permits (40 CFR 270.30(l)(3), 270.40(a), and 264.12(c))

This permit may be transferred by the Permittee to a new owner or operator only after providing notice to the Director, DWWM, and only if the permit is modified, or revoked and reissued, pursuant to 40 CFR 270.40(b), 270.41(b)(2), or 270.42(a). Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator, in writing, of the requirements of 40 CFR Parts 264, 268, and 270 (including all applicable corrective action requirements), and shall provide a copy of the RCRA permit to the new owner or operator.

F-13 Compliance Schedule (40 CFR 270.30(l)(5))

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 Director, DWWM, no later than fourteen (14) days following each scheduled date.

F-14 Immediate Reporting (40 CFR 264.56(d)(1) and (2))

Immediate Reporting of Emergencies to Local Authorities and the On-Scene Coordinator or the National Response Center.

a. Pursuant to 40 CFR 264.56(d)(1) and (2), if the facility's emergency coordinator determines that the facility has had a release, fire, or explosion, which could threaten human health or the environment, outside the facility, he/she must report his/her findings as follows:

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

   ii. He/she must immediately notify either the government official designated as the On-scene Coordinator for that geographical area, (in the applicable regional contingency plan under 40 CFR Part 1510) or the National Response Center (1-800-424-8802).

b. The report must include:

   i. Name and telephone number of the reporter;
   ii. Name, address, and telephone number of the facility;
   iii. Date, time and type of incident (e.g., release, fire);
   iv. Name and quantity of material(s) involved, to the extent known;
   v. The extent of injuries, if any; and
   vi. The possible hazards to human health or the environment, outside the facility.

F-15 Twenty-four (24) hour Reporting (40 CFR 270.30(l)(6) and 270.33)

The Permittee shall report to the Director, DWWM, any noncompliance, which may endanger human health or the environment. Any such information shall be reported orally as soon as possible, but no later than twenty-four (24) hours from the time the Permittee becomes aware of the circumstances.

This report shall include the following:

a. Information concerning the release of any hazardous waste which may endanger public drinking water supplies; and

b. Information concerning the release or discharge of any hazardous waste, or of a fire or explosion at the facility, which could threaten the environment or human health outside the facility. The description of the occurrence and its cause shall include:

   i. Name, address, and telephone number of the owner or operator;
   ii. Name, address, and telephone number of the facility;
   iii. Date, time, and type of incident;
   iv. Name and quantity of material(s) involved;
   v. The extent of injuries, if any;
   vi. An assessment of actual or potential hazard(s) 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 incident.

A written submission shall also be provided to the Director, DWWM, within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period(s) of noncompliance (including exact dates and times); steps taken to minimize impact on the environment; 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. The Permittee need not comply with the five (5) day written notice requirement if the Director, DWWM, waives the requirement. Upon waiver of the five (5) day requirement, the Permittee shall submit a written report within fifteen (15) days of the time the Permittee becomes aware of the circumstances.

F-16 Other Noncompliance (40 CFR 270.30(l)(10))

The Permittee shall report all other instances of noncompliance not otherwise required to be reported on a quarterly basis. The reports shall contain the information listed in Condition I-F-15.

F-17 Submittal of Reports or Other Information (40 CFR 270.30(l)(7), (8), (9), and 270.31)

All reports or other information required to be submitted pursuant to this permit shall be sent to:

Director, Division of Water and Waste Management
601-57th Street
Charleston, WV 25304
ATTN: Hazardous Waste Permitting Unit
Talal H. Fathallah

I-G BIENNIAL REPORTS

Pursuant to 40 CFR 264.75, the Permittee must prepare and submit a single copy of a biennial report to the Director, DWWM, by March 1, of each even numbered year. The biennial report must be submitted on EPA form 8700-13B. The report must cover facility activities during the previous calendar year and must include:

G-1 The EPA identification number, name, and address of the facility;

G-2 The calendar year covered by the report;

G-3 For off-site facilities, the EPA identification number of each hazardous waste generator from which the facility received a hazardous waste during the year; for imported shipments, the report must give the name and address of the foreign generator;

G-4 A description and the quantity of each hazardous waste the facility received during the year. For off-site facilities, this information must be listed by EPA identification number of each generator;

G-5 The method of treatment, storage, or disposal for each hazardous waste;

G-6 The most recent closure cost estimate under 264.142, and, for disposal facilities, the most recent post-closure cost estimate under 264.144; and,

G-7 The certification signed by the owner or operator of the facility or his authorized representative.

I-H WASTE MINIMIZATION REPORT

H-1 Pursuant to 40 CFR 264.75(h), the Permittee must prepare and submit a single copy of a waste minimization report to the Director, DWWM, by March 1, of each even numbered year. The report shall include a description of the efforts undertaken during the year to reduce the

volume and toxicity of waste generated.

H-2 Annually, Permittee shall submit a copy of the certification maintained under 40 CFR 264.73(b)(9) to the Director of DWWM. The certification should detail the on going "waste minimization program" in place and should be submitted no later than the first week of April every year.

I-I SIGNATORY REQUIREMENT

I-1 All reports or other information submitted to or requested by the Director, DWWM, his designee, or authorized representative, shall be signed and certified in accordance with 40 CFR 270.11.

I-2 Changes to Authorization. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or because a new individual or position has responsibility for the facility's compliance with environmental laws and permits, a new authorization satisfying the requirements shall be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative (40 CFR 270.11(c)).

I-J CONFIDENTIAL INFORMATION

In accordance with Section 11.18 of the HWMR, any information submitted to the Director, Division of Water and Waste Management, pursuant to this permit, may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed in Section 11.19.b. and c. of the HWMR.

If no claim is made at the time of submission, the Division of Water and Waste Management shall make the information available to the public. If a claim is asserted, the information shall be treated in accordance with the procedures in Section 11.18 of the HWMR.

I-K DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The Permittee shall maintain, at the facility, until closure is completed and certified by an independent registered professional engineer, all items required by 40 CFR 264.73, including the following documents and all amendments, revisions, and modifications to these documents.

K-1 Waste Analysis Plan, as required by 40 CFR 264.13, and this permit;

K-2 Operating Record, as required by 40 CFR 264.73, and this permit;

The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

a. Pursuant to 40 CFR 264.73(b)(1), a description and the quantity of each hazardous waste received, and the method(s) and date(s) of its treatment, storage, or disposal, at the facility, in accordance with the instructions contained in Appendix I of 40 CFR 264;

b. Pursuant to 40 CFR 264.73(b)(2), the location of each hazardous waste within the facility along with the quantity at each location. For disposal facilities, the location and quantity of each hazardous waste managed in the disposal area must be recorded in the operating record. For all facilities, this information must include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest. {Comment: See 40 CFR 264.119 for related requirements.}

c. Records and results of waste analyses performed as specified in 40 CFR 264.13,

264.17, 264.314, 264.341, 264.1034, 264.1063, 264.1083, 268.4(a), and 268.7.

d. Summary reports and details of all incidents that require implementing the contingency plan as specified in 40 CFR 264.56(j);

e. Records and results of inspections as required by 40 CFR 264.15(d) (this data needs to be kept for only three (3) years).

f. Monitoring, testing, or analytical data, and corrective action where required by 40 CFR 264, subpart F and 264.19, 264.191, 264.193, 264.195, 264.222, 264.223, 264.226, 264.252-264.254, 264.276, 264.278, 264.280, 264.302- 264.304, 264.309, 264.347, 264.602, 264.1034(c)- 264.1034(f), 264.1035, 264.1063(d)- 264.1063(i), 264.1064, and 264.1082 through 264.1090.

g. All closure cost estimates under 40 CFR 264.142 and for disposal facilities, all post-closure cost estimates under 40 CFR 264.144.

h. Pursuant to 40 CFR 264.73(b)(9), a certification by the Permittee, no less often than annually, that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that is generated to the degree determined by the Permittee to be economically practicable; and the proposed method of treatment, storage, or disposal, is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment.

i. Records of the quantities, along with date of placement, for each shipment of hazardous waste placed in land disposal units under an extension to the effective date of any land disposal restriction granted pursuant to 40 CFR 268.5, a petition pursuant to 40 CFR 268.6, or a certification under 268.8, and the applicable notice required by a generator under 40 CFR 268.7(a).

j. For an off-site treatment facility, a copy of the notice, and the certification and demonstration, if applicable, required by the generator or the owner or operator under 40 CFR 268.7 or 268.8;

k. For an off-site land disposal facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator of a treatment facility under 40 CFR 268.7 and 268.8, whichever is applicable; and

l. For an off-site storage facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator under 40 CFR 268.7 or 268.8; and

m. For an on-site treatment facility, the information contained in the notice (except the manifest number), and the certification and demonstration (if applicable), required by the generator or the owner or operator under 40 CFR 268.7 or 268.8; and

n. For an on-site land disposal facility, the information contained in the notice required by the generator or owner or operator of a treatment facility under 40 CFR 268.8, whichever is applicable; and

o. For an on-site storage facility, the information contained in the notice (except the manifest number), and the certification and demonstration, if applicable, required by the generator or the owner or operator under 40 CFR 268.7 or 40 CFR 268.8.

K-3 Notifications from generators accompanying each incoming shipment of wastes subject to 40 CFR Part 268 Subpart D, that specify treatment standards, as required by 40 CFR 268.7 and

this permit;

K-4 Corrective action reports and records, if any, must be maintained for at least three (3) years after all corrective action activities have been completed.

I-L DISCLOSURE IN DEED

Pursuant to Section 21 of the Act and Section 12 of the HWMR, the Permittee shall make a notation on the deed or lease to the facility property, or on some other instrument that is normally examined during title search, that will, in perpetuity notify any potential purchaser that the land has been used to manage hazardous waste. Such disclosure shall describe the location upon said property, identifying the type and quantity of hazardous waste and the method of storage, treatment, or disposal with respect to such waste.

I-M LAND DISPOSAL REQUIREMENTS

M-1 GENERAL CONDITIONS

a. The Permittee shall comply with all applicable self- implementing requirements of 40 CFR Part 268, and all applicable land disposal requirements, which become effective by statute.

b. A mixture of any restricted waste with non-restricted waste(s) is a restricted waste under 40 CFR Part 268.

c. Except as otherwise provided by 40 CFR Part 268, the Permittee shall not in any way dilute a restricted waste or the residue from treatment of a restricted waste as a substitute for adequate treatment to achieve compliance with 40 CFR, Part 268, Subpart D, to circumvent the effective date of a prohibition imposed by 40 CFR 268.3.

d. Pursuant to 40 CFR 268.7, the Permittee shall prepare and maintain a current list of the hazardous waste codes handled by the facility that are identified in 40 CFR 268, Subparts B and C. The list shall include these waste codes, and any associated treatment standards, and shall be updated through the inclusion of new treatment standards, as promulgated or amended. This list shall be provided to the WVDEP, DWWM representatives, or their designees , upon request.

M-2 TESTING AND RELATED REQUIREMENTS

a. The Permittee must test, in accordance with 40 CFR 268.7(a), any waste generated at the facility, or use knowledge of the waste, to determine if the waste is restricted from land disposal.

b. For restricted wastes with treatment standards expressed as concentrations in the waste extract, as specified in 40 CFR 268.40, the Permittee shall test the wastes or waste treatment residues, or extracts of such residues developed using the test Method 1311 described in US EPA Publication SW 846 and referenced in Appendix II of 40 CFR, Part 261 (Toxicity Characteristic Leaching Procedure, or TCLP) to assure that the wastes or waste treatment residues or extracts meet the applicable treatment standards of 40 CFR, Part 268 Subpart D. Such testing shall be performed as required by 40 CFR 264.13 and permit condition II-B.

c. A restricted waste for which a treatment technology is specified under 40 CFR 268.40 and 268.42(a) may be land disposed after it is treated using that specified technology or an equivalent treatment method approved under the procedures set forth in 40 CFR 268.42(b).

d. For restricted wastes with treatment standards expressed as concentrations in the waste, as specified in 40 CFR 268.40, the Permittee shall test the wastes or waste treatment residues (not an extract of such residues) to assure that the wastes or waste treatment residues meet the applicable treatment standards of 40 CFR Part 268, Subpart D. Such testing shall be performed as required by 40 CFR 264.13 and permit condition II-B.

e. The Permittee shall comply with all the applicable notification, certification, and recordkeeping requirements described in 40 CFR 268.7.

M-3 STORAGE PROHIBITIONS

a. The Permittee shall comply with all applicable prohibitions on storage of restricted wastes specified in 40 CFR Part 268 Subpart E.

b. Except as otherwise provided in 40 CFR 268.50, the Permittee may store restricted wastes in tanks and containers solely for the purpose of the accumulation of such quantities of hazardous wastes as necessary to facilitate proper recovery, treatment, or disposal provided that:

i. Each container is clearly marked to identify its contents and the date each period of accumulation begins; and

ii. Each tank is clearly marked with a description of its contents, the quantity of each hazardous waste received, and the date each period of accumulation begins, or such information for each tank is recorded and maintained in the operating records at that facility.

iii. The Permittee may store restricted wastes for up to one (1) year unless the WVDEP, DWWM, or its authorized agent, can demonstrate that such storage was not solely for the purpose of accumulating such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal.

iv. The Permittee may store restricted wastes beyond one (1) year; however, the Permittee bears the burden of proving that such storage was solely for the purpose of accumulating such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal.

v. The Permittee shall not store any liquid hazardous waste containing polychlorinated biphenyls (PCBs) at concentrations greater than or equal to 50 ppm unless the waste is stored in a storage facility that meets the requirements of 40 CFR 761.65(b). This waste must be removed from storage and treated or disposed as required by 40 CFR Part 268 within one (1) year of the date when such wastes are first put into storage. Condition I.M-3(iv) above, that allows storage for over one (1) year with specified demonstration, does not apply to PCB wastes prohibited under 40 CFR 268.32.

MODULE II
GENERAL FACILITY CONDITIONS

II-A DESIGN AND OPERATION OF FACILITY

The Permittee shall design, construct, maintain, and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste and/or hazardous waste constituents to air, soil, or state waters (including surface and groundwater) which could threaten human health or the environment as required by 40 CFR 264.31.

II-B GENERAL WASTE ANALYSIS

B-1 The Permittee shall follow the procedures as required by 40 CFR 264.13 and as described in the Waste Analysis Plan, Attachment 1.

B-2 The Permittee, at a minimum, shall verify the analysis of each generated waste stream as required in 40 CFR 264.13(a)(3) and as part of its quality assurance program, in accordance with the current EPA approved methods of sampling and analysis as outlined in Test Methods for Evaluating Solid Waste, U.S. EPA Publication SW-846, or equivalent methods approved by the Secretary, WVDEP.

B-3 The Permittee shall maintain calibrated functional instruments, verify the integrity of sampling and analysis by documentations, and perform correct calculations. Throughout all sampling and analytical activities, the Permittee shall use EPA approved quality assurance/quality control (QA/QC), and chain-of-custody procedures.

B-4 If the Permittee uses a contractor to perform sampling and analysis, the Permittee shall ensure that:

a. The laboratories perform analyses according to the current EPA methods outlined in Test Methods for Evaluating Solid Waste, US EPA Publication SW-846 or equivalent methods approved by the Secretary, of DEP

b. The laboratories participate in a quality assurance/quality control (QA/QC) program equivalent to that which is followed by the State or EPA.

B-5 For purposes of demonstrating compliance with this permit and the Act, the Permittee shall not use laboratory data generated by a laboratory which is not certified under the West Virginia laboratory certification program as required by 22-1-15 of the W.Va. Code and Title 47, Series 32 Rule promulgated under this statutory provision.

II-C GENERAL INSPECTION REQUIREMENTS

C-1 The Permittee must inspect the facility for malfunctions and deterioration, operator errors, and discharges, which may be causing or may lead to:

a. Release of hazardous waste constituents to the environment; or;

b. Threat to human health.

The Permittee must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment (40 CFR 264.15(a)).

C-2 The Permittee must follow a written inspection schedule as outlined in Attachment 2.

C-3 The Permittee must remedy any deterioration or malfunction of equipment or structures discovered by an inspection as required by 40 CFR 264.15(c).

a. Where a hazard is imminent or has already occurred, the Permittee must take remedial action immediately.

b. The Permittee shall, remedy any deterioration or malfunction of equipment or structure on a schedule, which ensures that the problem does not lead to an environmental or health hazard.

C-4 The Permittee shall record these inspections and their results in an inspection log (40 CFR 264.15(d)) and the facility operating record as required by permit condition I-K-2.e.

II-D PERSONNEL TRAINING

The Permittee shall conduct personnel training as required by 40 CFR 264.16. This training program shall follow the outline in Attachment 3. The Permittee shall maintain training documents and records as required by 40 CFR 264.16(d) and (e).

II-E PREPAREDNESS AND PREVENTION

E-1 Required Equipment

At a minimum, the Permittee shall equip the facility with the equipment as set forth in the contingency plan, Attachment 4, as required by 40 CFR 264.32.

E-2 Testing and Maintenance of Equipment

The Permittee shall test and maintain the equipment specified in the previous Permit Condition and in Attachment 3 as necessary to assure its proper operation in time of emergency as required by 40 CFR 264.33. The record of tests and maintenance shall be part of the facility operating record and maintained for three (3) years. (40 CFR 264.73(b)(6)).

E-3 Access to Communications or Alarm System

The Permittee shall maintain access to the communications or alarm system as required by 40 CFR 264.32.

E-4 Required Aisle Space

At a minimum, the Permittee shall maintain aisle space as required by 40 CFR 264.35 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.

II-F ARRANGEMENTS WITH LOCAL AUTHORITIES (40 CFR 264.37)

F-1 The Permittee shall comply with the requirements of 40 CFR 264.37 by making a diligent effort to:

a. Familiarize emergency response agencies which are likely to respond in an emergency with the location and layout of the facility, chemical and physical properties of hazardous waste managed at the facility and associated hazards, places where facility personnel will normally be working, entrances to and roads inside the facility, and possible evacuation routes as depicted and explained in Attachment 4, and

b. Familiarize the local ambulance services, fire department, hospitals, and any other local emergency service, with the chemical and physical properties of hazardous waste managed at the facility and the types of

injuries or illnesses which could result from fires, explosions, or releases at the facility.

F-2 When a State or local agency declines to enter into the arrangements set forth in 40 CFR 264.37(b), the Permittee shall document the refusal in the operating record.

F-3 The Permittee shall, in accordance with 40 CFR 264.53(b), submit a copy of the approved contingency plan, including all amendments, revisions, or modifications to all local police departments, fire departments, hospitals, and local emergency response teams that may be called upon to provide emergency services. The Permittee shall notify such agencies and the local authorities, in writing, of any amendments of, revisions to, or modifications to the contingency plan.

II-G CONTINGENCY PLAN

G-1 Implementation of Plan

The Permittee shall immediately carry out the provisions of the approved contingency plan, as set forth in Attachment 4, and follow the emergency procedures described by 40 CFR 264.56 whenever there is an imminent or actual emergency situation (which includes release of hazardous waste or constituents, a fire, or explosion), which threatens or could threaten human health or the environment.

G-2 Copies of Plan

The Permittee shall comply with the requirements of 40 CFR 264.53 in regards to contingency plan distribution.

G-3 Amendments to Plan

The Permittee shall review and immediately amend, if necessary, the contingency plan, as required by 40 CFR 264.54.

G-4 Emergency Coordinator

Emergency Coordinators have been identified Attachment 4. The Permittee shall comply with the requirements set forth in 40 CFR 264.55 and 264.56 regarding the emergency coordinator.

II-H GENERAL CLOSURE REQUIREMENTS

H-1 Performance Standard

The Permittee shall perform partial and final closure as required by 40 CFR 264.111 and in accordance with the Closure Plan, Attachment 5 to this permit module.

H-2 Amendment to Closure Plan

The Permittee shall amend the Closure Plan in accordance with 40 CFR 264.112(c) whenever necessary.

H-3 Notification of Closure

The Permittee shall submit to the Director a written notification of the partial or final closure in accordance with 40 CFR 264.112(d).

H-4 Schedule and Time Allowed For Closure

a. Pursuant to 40 CFR 264.112(b)(6), the Permittee has provided a schedule of closure for each

hazardous waste management unit and for final closure of the facility in the approved closure plan, as set forth in Attachment 5. For Permittees that use a Trust Fund to establish financial assurance, the schedule must also include an estimate of the expected year of final closure.

b. Pursuant to 40 CFR 264.113, the Permittee, after receiving the final volume of hazardous waste at a hazardous waste management unit or facility, shall perform one or more of the following within ninety (90) days or an alternate period approved by the Director pursuant to 40 CFR 264.113(a).

i. Remove all hazardous waste from the unit or facility.

ii. Treat those waste(s), which are permitted in accordance with the permit.

iii. Dispose of, on-site, those waste(s) which are permitted in accordance with the permit.

c. The Permittee shall complete partial and final closure activities in accordance with the approved closure plan and within one hundred-eighty (180) days after receiving the final volume of hazardous wastes at the hazardous waste management unit, or an alternate period contingent on the Director's approval of the demonstration made pursuant to 40 CFR 264.113(b).

H-5 Disposal or Decontamination of Equipment

a. During partial and final closure, the Permittee must decontaminate and/or dispose of all contaminated equipment, structures, and soils, as required by 40 CFR 264.114 and the approved Closure Plan, as set forth in Attachment 5.

b. The Permittee shall provide the DWWM the opportunity to split samples by giving an advance notice, of one week, to the assigned DWWM inspector, of any sampling, which is to be done under the closure plan.

H-6 Certification of Closure

Within sixty (60) days of completion of each unit closure or final closure of the Facility, the Permittee must submit to the Director, certification both by the Permittee and by an independent registered professional engineer, that the partial or final closure has been performed in accordance with the specifications in the approved Closure Plan and the terms and conditions of this permit as required by 40 CFR 264.115.

II-I COST ESTIMATE FOR CLOSURE AND POST-CLOSURE

I-1 Cost Estimates

a. Pursuant to 40 CFR 264.142 and 264.144 the Permittee shall have a detailed written estimate, in current dollars, of the cost of closing the facility and providing post-closure care in accordance with the approved closure plan and post-closure plan, Attachment 5.

b. The estimate must equal the cost of final closure at the point in the facility's life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan.

c. The estimates must be based on the costs to the owner or operator of hiring a third party to close the facility, and to provide post-closure care. A third party is a party who is neither a parent nor a subsidiary of the owner or operator.

d. The closure cost estimate may not incorporate any salvage value that may be realized with the sale of the hazardous wastes, facility structures or equipment, and/or other assets associated with the facility at the time of partial or final closure.

e. The Permittee shall comply with the requirements of 40 CFR 264.144 including the requirements to

adjust and revise post-closure cost estimates when necessary.

I-2 Annual Adjustment (264.142(b) and 264.144(b))

During the active life of the facility, the Permittee must adjust the cost estimate for inflation within sixty (60) days prior to the anniversary date of the establishment of the financial instrument used to comply with the requirements of 40 CFR 264.143 and 264.145. If using the financial test or corporate guarantee, the cost estimate must be updated for inflation within thirty (30) days after the close of the firm's fiscal year and before submission of updated information to DEP.

I-3 Adjustment for Changed Conditions

The Permittee must revise the cost estimate whenever there is a change in the facility's closure plan as required by 40 CFR 264.142(c) and/or post-closure plan as required by 264.144(c).

I-4 Availability

The Permittee must keep at the facility the latest cost estimate as required by 40 CFR 264.142(d) and 264.144(d).

II-J INCAPACITY OF OWNER/OPERATORS, GUARANTORS, OR FINANCIAL INSTITUTIONS

The Permittee must notify the Secretary, Department of Environmental Protection, by certified mail, of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the Permittee as debtor, within ten (10) days after commencement of the proceeding, as required by 40 CFR 264.148.

II-K GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

The Permittee shall comply with the requirements of 40 CFR 264.17. Permittee shall follow the procedures for handling ignitable, reactive, and incompatible waste(s) set forth in Attachment 6.

II-L FINANCIAL ASSURANCE REQUIREMENTS

The Permittee shall maintain compliance with 40 CFR 264, Subpart H by providing financial assurance, as required by 40 CFR 264, Subpart H, in at least the amount of the cost estimates required by Permit Condition II-I.

II-M LIABILITY REQUIREMENTS

The Permittee shall comply with the requirements of 40 CFR 264.147 and the documentation requirements of 40 CFR 264.147, including the requirements to have and maintain liability coverage for sudden accidental occurrences in the amount of at least $1 million dollars per occurrence with an annual aggregate of at least $2 million, and maintain liability coverage for non-sudden accidental occurrences in the amount of at least $3 million per occurrence with an annual aggregate of at least $6 million, exclusive of legal defense costs.

II-N SECURITY

The Permittee shall comply with the security provisions of 40 CFR 264.14.

II-O REQUIRED NOTICES

The Permittee shall comply with the requirements of 40 CFR 264.12.

II-P MANIFEST SYSTEM

The Permittee shall comply with the manifest requirements of 40 CFR 264.71, 264.72, and 264.76.

II-Q CONSIDERATIONS UNDER STATE LAW

Q-1 Groundwater Protection Act

The Secretary, Department of Environmental Protection, under the provisions of the Groundwater Protection Act (Article 12, Chapter 22 of the West Virginia Code), has certified the groundwater regulatory program of the Division of Water and Waste Management (DWWM), Hazardous Waste Management, and thereby authorized DWWM to be a groundwater regulatory agency for the purposes of Article 12.

a. Annual Fee

The Permittee shall pay the annual groundwater protection fund fee in accordance with the regulations codified as Title 47, Code of State Regulations Series 55 that was promulgated under the Groundwater Protection Act. Pursuant to Section 9(a) of this Act, failure to remit groundwater protection fund fees may result in withdrawal or withholding of groundwater certification and, subject the Permittee to the penalties outlined in 22-12-10 of the West Virginia Code.

b. Groundwater Protection Plan

The regulations, Title 47 Code of State Regulations Series 58, promulgated under the Groundwater Protection Act, establish a series of practices, which must be followed by persons subject to regulations by DWWM under the Groundwater Protection Act. Pursuant to Section 4.12.3 of 47 CSR 58, the Groundwater Protection Plan (GPP) must be available on site at all times.

II-R AIR EMISSION STANDARDS FOR PROCESS VENTS (40 CFR 264.1030(C))

The Permittee is subject to the requirements of 40 CFR Part 264, Subpart AA. The Permittee shall comply with 264.1032 through 264.1036 and the emission standards approved and enforced by the Department of Environmental Protection, Division of Air Quality (DAQ).

II-S AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS (40 CFR 264.1050(C))

The Permittee is subject to the requirements of 40 CFR Part 264 Subpart BB. The Permittee shall comply with 264.1052 through 264.1065 and the emission standards approved and enforced by the Department of Environmental Protection, Division of Air Quality (DAQ).

II-T AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS, AND CONTAINERS

The Permittee is subject to the requirements of 40 CFR 264 Subpart CC. The Permittee shall comply with 264.1080 through 264.1090 and the emission standards approved and enforced by the Department of Environmental Protection, Division of Air Quality (DAQ).

II-U FLOODPLAIN STANDARD

In the event of imminent flooding, the Permittee shall comply with the floodplain standard of 40 CFR 264.18(b) by implementing the provisions of the Contingency Plan, Attachment 4, to secure or remove hazardous waste from these portions of the facility which are located in the floodplain to prevent washout of hazardous waste.

MODULE III
STORAGE IN CONTAINERS

III-A PERMITTED UNIT IDENTIFICATION

Building 366 and building 810 located on Plant1.

Building 366 is about 100ft long by 75ft wide covered with a roof.
Building 810 is 19 ft 4in by 15ft 4in with a 10ft ceiling.

III-B PERMITTED AND PROHIBITED WASTE IDENTIFICATION

B-1 The Permittee may store the following on-site generated hazardous wastes in containers at the storage units, identified in III-A above, subject to the terms of this Permit and as follows.

Waste Characteristic Name	EPA Hazardous Waste Number(s)
Flammable Wastes	D001, Check Part (A) application
Corrosive Waste	D002, Check Part (A) application
Reactive Waste	D003, Check Part (A) application
Characteristic Waste	Check Part (A) application
F-Listed Waste	Check Part (A) application
P-Listed Waste	Check Part (A) application "P" Codes
U-Listed Waste	Check Part (A) application "U" Codes

III-C CONDITION OF CONTAINERS

If a container, holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects, etc.) or if it begins to leak, the Permittee shall 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 this Permit. (40 CFR 264.171)

III-D COMPATIBILITY OF WASTE WITH CONTAINERS

The Permittee shall use a container made of or lined with materials that will not react with and are otherwise compatible with the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired. (40 CFR 264.172)

III-E MANAGEMENT OF CONTAINERS

E-1 A container holding hazardous waste must always be kept closed during storage, except when it is necessary to add or remove waste. (40 CFR 264.173(a))

E-2 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. (40 CFR 264.173(b))

E-3 The Permittee shall not place a container of hazardous waste into storage unless the container is labeled and the generator is identified.

E-4 The Permittee shall maintain aisle space between container rows to allow for an adequate

inspection. (40 CFR 264.35)

III-F CONTAINMENT SYSTEM

F-1 The Permittee shall maintain the containment systems as required by 40 CFR 264.175 and as described in Attachment 7.

F-2 The containment systems shall be maintained free of cracks and gaps, and sufficiently impervious to contain leaks and spills along with accumulated precipitation, until the collected material is detected and removed.

F-3 The Permittee shall remove the collected material (precipitation and/or leaked waste) from the sumps or collection area in as timely a manner as is necessary to prevent overflow of the collection system. If the collected material is a hazardous waste, pursuant to the hazardous waste determination made under 40 CFR 262.11, it must be managed as a hazardous waste in accordance with all applicable requirements of 40 CFR Parts 262 through 266.

III-G INSPECTION SCHEDULE AND PROCEDURES (40 CFR 264.174)

The Permittee shall inspect the container storage areas at least weekly to detect leaking containers and deterioration of containers and the containment system caused by corrosion and other factors.

III-H SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES (40 CFR 264.176)

H-1 The Permittee shall not locate containers holding ignitable or reactive waste within 50 feet of the facility's property line.

H-2 The Permittee shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste by following the Plant Safety and Health procedures and the procedures listed in Attachment 6.

III-I SPECIAL REQUIREMENT FOR INCOMPATIBLE WASTES (40 CFR 264.177)

I-1 The Permittee shall not place incompatible wastes or incompatible wastes and materials in the same container unless 40 CFR 264.17(b) is complied with.

I-2 The Permittee shall not place hazardous waste in an un-washed container that previously held an incompatible waste or material.

I-3 The Permittee must separate containers of incompatible wastes from each other and other incompatible wastes and materials. The separation may be achieved by providing a dike, berm, wall, or other device.

III-J CLOSURE (40 CFR 264.178)

J-1 At closure, the Permittee shall remove all hazardous waste and hazardous waste residue from the containment system in accordance with the Closure Plan discussed in Attachment 5.

J-2 Remaining containers, liners, bases and soils containing or contaminated with hazardous waste or hazardous waste residue, must be decontaminated or removed.

III-K AIR EMISSION STANDARDS (40 CFR 264.179)

K-1 The Federal regulations, 40 CFR 264.179 incorporated by reference into Section 7 of HWMR requires the owner/operator to comply with subpart AA, BB, and CC of 40 CFR 264 for air emissions from hazardous waste placed in containers.

K-2 A statutory provision of the West Virginia Hazardous Waste Management Act charges the Division of Environmental Protection, Division of Air Quality (DAQ) with administering those parts of the hazardous waste management regulatory program that pertain specifically to air emissions.

K-3 The absence of specific conditions of subparts AA, BB, and CC in this permit shall not be considered by the Permittee as a shield from complying with the specific rules of DAQ relating to air emissions from hazardous waste placed in containers.

MODULE IV
CORRECTIVE ACTION

This Module applies to the SWMUs and AOCs specifically identified for Plant 2 as listed in Section IV-L-2 of this module, and any newly identified SWMUs or AOCs. Existing SWMUs and AOCs on Plant 1, which is owned by the United States Department of the Navy and operated by ATK, will be addressed pursuant to the January 1998 Federal Facilities Agreement (FFA) established between the United States Environmental Protection Agency and the United States Department of the Navy under Section 120 of CERCLA.

CORRECTIVE ACTION: SPECIFIC FACILITY CONDITIONS

IV-A. CORRECTIVE ACTION FOR CONTINUING RELEASES; PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

It is the intent of this permit, in accordance with the 1999 and 2001 RCRA reforms and the February 2003 guidance, to adopt and promote Cleanup Reforms implemented by EPA under the RCRA Corrective Action program. Specifically, Corrective Action at the Facility will focus on achievement of environmental results and goals via fostering maximum use of program flexibility. The sections below outline the formal process requirements. At the discretion of and concurrence by the WVDEP and Permittee Project Coordinators, the flexibility available through the Corrective Action program can be used to apply alternative methods that meet the intent of formal processes (e.g., submittals), and at the same time maximize efficiency and minimize steps necessary to meet the program goals.

Section 3004(u) of RCRA, 42 U.S.C § 6924(u), and regulations codified at 40 C.F.R. § 264.101, provide that all permits issued after November 8, 1984 must require corrective action and schedules of compliance as necessary to protect human health and the environment for all release of hazardous waste or hazardous constituents from any solid waste management unit (SWMU), regardless of when the waste was placed in the unit.

Under Section 3004(u) of RCRA, 42 U.S.C § 6924(v), WVDEP may require that corrective action at a permitted facility be taken beyond the facility boundary where necessary to protect human health and the environment, unless the owner or operator of the facility concerned demonstrates to the satisfaction of WVDEP that the permitted facility is not the source of contamination detected beyond the permitted facility boundary, that action(s) other than corrective action meet applicable laws and regulations and is adequately protective of both human health and the environment, or despite the owner or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action.

Section 3005(c) of RCRA, 42 U.S.C § 6925(c) and 40 C.F.R. § 270.32(b) provide that each permit shall contain such terms and conditions as the Director determines necessary to protect human health and the environment.

This permit requires the Permittee to conduct a RCRA Facility Investigation (RFI) and, if necessary, implement Interim Measures (IM). The RFI will determine the nature and extent of releases from regulated units, solid waste management units, and any area of concern at the Facility and gather all necessary data for WVDEP to determine whether a Corrective Measures Study (CMS) is required. The RFI includes the collection of site-specific data to evaluate any human health and/or ecological impacts of release from the Facility. If, on the basis of the RFI and any other relevant information, the Director determines that a CMS is necessary, the Permittee will be required to conduct a CMS for those releases from SWMUs or Areas of Concern (AOCs) which threaten human health or the environment.

Releases addressed by this permit, hazardous wastes, hazardous constituents, and any substance that does or may pose an unacceptable risk to human health or the environment.

The Permittee may have completed some of the tasks required by this Permit and may have some of the information and data required by this Permit. The previous work may be used to meet the requirements of this Permit, upon submission to and approval by the Director in accordance with Module I.

The Permittee shall prepare Facility-specific work plans and reports. Alternatively, at the discretion of and concurrence by the WVDEP and Permittee Project Coordinators, alternative and innovative approaches may be implemented that meet the substantive intent of Facility-specific work plans and reports, while maximizing program flexibility and efficiency, Examples of such approaches include the use of pre-existing, regulatory approved project plans; face-to face meetings to discuss and concur on investigative approaches, results, and progress; documentation of comments, discussion, and concurrence via meeting minutes. The Scope of Work for Interim Measures, the Scope of Work for an RFI, the Scope of Work for Health and Safety Plan, the Scope of Work for a CMS, and relevant EPA guidance documents are available at the following web site: http://www.epa.gov/reg3wcmd/ca/ca_resources.htm, under Corrective Action Implementation Guidance, and are incorporated herein by reference. These documents are provided as reference and will be used as necessary and applicable.

The Permittee may, at any stage of the RFI, if applicable, submit to the Director, in writing, a proposal to perform corrective measures for the remediation of any release at or from a SWMU/AOC. Any such proposal shall include a schedule for performance of such corrective measures. For any release to soil, groundwater, sediment and surface water, the Permittee must demonstrate in such proposal, to the Director's satisfaction, that the subsurface conditions and contaminant plume relating to such release have been adequately characterized and that the proposed corrective measures will adequately remove, contain, or treat the releases as necessary to protect human health and the environment. The nature and extent of releases to other media shall likewise be adequately characterized. The Permittee may use the IM provisions below to complete such characterizations. The Director shall review such proposal and notify the Permittee of his approval or disapproval of such proposal. If the Director approves such a demonstration, the Permittee shall be allowed to dispense with certain stages of the investigation, as described in the Director's approval of the demonstration. No term or condition of this permit, except as otherwise provided for by this permit, shall be affected by such proposal until such time as this permit has been modified to include such proposal. The Director or Permittee may seek modification of this permit pursuant to 40 C.F.R. § 270.41 or §270.42 and § 124.5 to include such proposal.

IV-B. INTERIM measures ("IM")

IV-B-1. As part of the submittals for the RFI, including the "Description of Current Conditions", the RFI, and any progress reports, the Permittee shall evaluate available information to determine whether an interim measure is needed to protect human health and the environment prior to the implementation of a final RCRA remedy and submit to WVDEP for approval an IM Work plan, or coordinate an alternative, innovative approach, as discussed above as may be appropriate.

IV-B-2 In the event the Permittee identifies an immediate or substantial threat to human health and/or the environment resulting from releases and such release is not subject to the contingency plan, the Permittee shall notify WVDEP, orally within twenty-four (24) hours of discovery and in writing within five (5) calendar days of such discovery summarizing the immediacy and magnitude of the hazard to human health and/or the environment. Upon written request from WVDEP setting forth the basis for its determination that an interim measure is necessary to address an immediate or substantial hazard to human health and/or the environment, the Permittee shall submit to WVDEP for approval an IM Work plan or coordinate an alternative, innovative approach, as discussed above, in accordance with the IM Scope of Work and paragraphs IV-B-4, 5 and 6 below, that identifies one or more IMs that will address such hazards as necessary to protect human health and the environment. If WVDEP determines that immediate action is required, the WVDEP Coordinator may orally authorize the Permittee to act prior to WVDEP's receipt of the IM Work plan.

IV-B-3. If the Director determines, on the basis of information submitted by the Permittee or any other information, that corrective action is necessary to protect human health or the environment, the Permittee

may be required to develop and submit to WVDEP for approval an IM Work plan or other innovative approach.

IV-B-4. All IM Work plans shall ensure that tie interim measures are designed to mitigate immediate or substantial threats human health or the environment, and should be consistent with cleanup objectives of, and contribute to the performance of any long-term remedy, if known, which may be required at the facility.

IV-B-5. Each IM Work plan shall include those of the following sections that are appropriate and approved by WVDEP: IM Objectives, Public Involvement Plan, Data Collection Quality Assurance, Data Management, Design Plans and Specifications, Operation and Maintenance, Project Schedule, IM Construction Quality Assurance, and Reporting Requirements.

IV-B-6. Concurrent with submission of an IM Work plan, the Permittee shall submit to WVDEP an IM Health and Safety Plan or reference an existing approved Health and Safety Plan with modifications, as appropriate.

IV-B-7. Nothing in this Permit shall limit WVDEP's authority to undertake or require any person to undertake response action or corrective action under any law, including but not limited to, Sections 104 or 106 of CERCLA, 42 U.S.C. §§ 9604 or 9606, and Section 7003, or RCRA, 42 U.S.C. § 6973. Nothing in this Permit shall relieve the Permittee of any obligation it may have under any law, including but not limited to, Section 103 of CERCLA, to report releases of hazardous waste, hazardous constituents or hazardous substances to, at, or from the Facility.

IV-C. RCRA FACILITY INVESTIGATION ("RFI")

IV-C-1. Within 90 calendar days of the effective date of this permit or within 90 calendar days after receipt of a determination by the Director that an investigation of a newly discovered SWMU/AOC is necessary, the Permittee shall submit to the Director an RFI Work plan that incorporates the relevant sections of the RFI Scope of Work and includes a description of current conditions, Alternatively, at the discretion of and concurrence by the WVDEP and Permittee Project Coordinators, alternative and innovative approaches may be implemented that meet the substantive intent of Facility-specific work plans, while minimizing program flexibility and efficiency.

IV-C-2. The RFI Work plan shall be designed to determine the presence, magnitude, extent, direction, and rate of movement of any hazardous wastes or hazardous constituents within and beyond the Facility boundary. The RFI Work plan shall document the procedures the Permittee shall use to conduct those activities necessary to: (A) characterize the source(s) of contamination; (B) characterize the potential pathway of contaminant migration; (C) define the degree and extent of contamination; (D) identify actual or potential human and/or ecological receptors; and (E) support the development of alternatives from which a CM(s) will be selected by WVDEP. The Permittee may implement the work contained in The RFI Work plan in a phased approach. A specific schedule for timely implementation of all activities shall be included in the RFI Work plan.

IV-C-3. The RFI Work plan shall include: (A) a Project Management Plan; (B) a Data Collection Quality Assurance Plan; (C) a Data Management Plan; and (D) a Community Relations Plan that provides for the submission of a draft and final RFI report. Alternatively, at the discretion of and concurrence by the WVDEP and Permittee Project Coordinators, alternative and innovative approaches may be implemented that meet the substantive intent of Facility-specific work plans, while maximizing program flexibility and efficiency.

IV-C-4. Concurrent with submission of the RFI Work plan, the Permittee shall submit to WVDEP an IM Health and Safety Plan or reference an existing approved Health and Safety Plan with modifications, as appropriate.

IV-C-5. Upon receipt of WVDEP approval of the RFI Work plan, the Permittee shall implement the RFI

Work plan in accordance with the terms and schedule contained therein. Upon completion of implementation of the RFI Workplan, the Permittee shall submit to WVDEP for approval a draft RFI Report.
Alternatively, if the RFI Work plan is to be implemented in a phased approach, and with concurrence by the WVDEP and Permittee Project Coordinators, an alternative and innovative approach may be implemented to meet the substantive intent of the report, while maximizing program flexibility and efficiency. For example, a face-to-face meeting may be held to discuss the findings of a particular phase of the RFI, concur on the activities of the subsequent phase(s), and document the information in meeting minutes that are signed by both parties. After receiving comments from WVDEP on the draft RFI Report, the Permittee shall submit to WVDEP for approval a final RFI Report, in accordance with the requirements and schedule contained in the WVDEP-approved RFI Workplan.

IV-D. CORRECTIVE MEASURES STUDY ("CMS")

IV-D-1. Within ninety (90) calendar days of WVDEP's determination that a Corrective Measures Study is necessary, the Permittee shall submit to WVDEP for approval a draft CMS Report for the facility. Alternatively, the WVDEP and Permittee Project Coordinators may concur upon, following review of the RFI data, a corrective action that meets the project goals, thereby obviating the need for a CMS.

IV-D-2. Within forty-five (45) calendar days of receipt of WVDEPS's comments on the Draft CMS Report, the Permittee shall submit to WVDEP the Final CMS Report, revised to respond to all comments received from and/or remedy all deficiencies identified by WVDEP on the Draft CMS Report.

IV- E. QUALITY ASSURANCE

IV-E-1. Throughout all sample collection and analysis activities, the Permittee shall use WVDEP-approved quality assurance, quality control, and chain-of-custody procedures, as specified in the WVDEP-approved Workplans, or otherwise formally agreed upon. In addition, the Permittee shall:

a. Ensure that laboratories used by the Permittee for analyses perform such analyses according to the EPA methods included in "Test Methods for Evaluating Solid Waste" (SW-846, November 1986) or other methods deemed satisfactory to WVDEP. If methods other than EPA methods are to be used, the Permittee shall submit all analytical protocols to be used for analyses to WVDEP for approval at least thirty (30) calendar days prior to the commencement of analyses and shall obtain WVDEP approval prior to the use of such analytical protocols.

b. Ensure that laboratories used by the Permittee for analyses participate in a quality assurance/quality control program equivalent to that which is followed by EPA. As part of such program, and upon request by WVDEP, such laboratories shall perform analyses of the appropriate number of samples provided by WVDEP to demonstrate the quality of the analytical data.

c. Inform the WVDEP Project Coordinator at least fourteen (14) calendar days in advance regarding which laboratory will be used by the Permittee to conduct laboratory analyses and ensure that WVDEP personnel and WVDEP authorized representatives have reasonable access to the laboratories and personnel used for analyses.

IV-F. SAMPLING AND DATA DOCUMENT AVAILABILITY

IV-F-1. The Permittee shall submit to WVDEP the results of all sampling and/or tests or other data generated by, or on behalf of, the Permittee in accordance with the requirement of the Permit.

IV-F-2. If requested in writing by the WVDEP, the Permittee shall notify WVDEP, in writing, at least fourteen (14) calendar days in advance of any field activities, including but not limited to, well drilling, installation of equipment, or sampling. At the request of WVDEP, the Permittee shall provide or allow WVDEP or its

authorized representative to take split or duplicate samples of all samples collected by the Permittee pursuant to this Permit. At the request of the Permittee, WVDEP shall provide the Permittee with a portion of each sample taken equal in volume or weight to the portion retained by WVDEP. Nothing in this Permit shall limit or otherwise affect WVDEP's authority to collect samples pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

IV-F-3. The Permittee may assert a business confidentiality claim covering all or part of any information submitted to WVDEP pursuant to this Permit in a manner described in 40.C.F.R. § 2.203(b). Any assertion of confidentiality shall be adequately substantiated by the Permittee when the assertion is made in accordance with 40 C.F.R. § 2.204(e)(4). Information subject to a confidentiality claim shall be disclosed only to the extent allowed by, and in accordance with, the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such confidentiality claim accompanies the information when it is submitted to WVDEP, it may be made available to the public by WVDEP without further notice to the Permittee. The Permittee shall not assert any confidentiality claim with regard to any physical, sampling, monitoring, or analytical data, which relate in any way to this permit.

IV-F-4. If the Permittee wishes to assert a privilege with regard to any document which WVDEP seeks to inspect or copy pursuant this permit, the Permittee shall identify the document, the privilege claimed, and the basis therefore in writing. For the purposes of this Permit, "privileged documents" are those documents except from discovery from the United States in litigation under the Federal Rules of Civil Procedure. The Permittee shall not assert a privilege with regard to analytical, sampling and monitoring data, which relate in any way to this permit.

IV-G. ACCESS

IV-G-1. To the extent that activities required by this Permit, or any approved scope(s) of work or work plan(s) prepared pursuant hereto, must be done on property not owned or controlled by the Permittee, the Permittee shall use its best efforts, as defined below, to obtain site access agreements from the present owner(s) and or lessees, as appropriate, of such property within four (4) weeks after receipt of notice of WVDEP approval of any scope of work or work plan which require work on property which is not owned or controlled by the Permittee. "Best efforts" as used in this paragraph shall include at a minimum, but shall not be limited to, sending a certified letter to the present owners and/or lessees, as appropriate, of such property requesting access agreements to allow the Permittee and WVDEP and their authorized representatives to enter such property at all reasonable times.

IV-G-2. In the event that access agreements are not obtained within this time period, the Permittee shall immediately notify WVDEP in writing indicating all efforts made to obtain such agreements.

IV-H. ANNUAL REPORTING

The Permittee shall submit annual progress reports to the Director beginning twelve (12) month after the effective date of this Permit and continuing until the Permit is terminated or expires. Alternatively, annual progress reporting may be accomplished during meeting specifically held for or in conjunction with other meetings attended by WVDEP and Permittee Project Coordinators. The annual reporting shall include, at a minimum: activities completed within the reporting period, changes in relevant personnel during the reporting period, summaries of any contacts made during the reporting period with local government, state government, public interest groups or individuals related to the implementation of this permit, including, but not limited to, any contacts made regarding access to off-site property, and identification and schedule of remaining activities. WVDEP shall include any other specifications in its approval of a workplan.

IV-I. CORRECTIVE ACTION COMPLETE

At any time during the corrective action activities, the Permittee can submit documentation in support of corrective action complete in accordance with EPA's *Final Guidance on Completion of Corrective Action Activities at RCRA Facilities* (February 13, 2003).

IV-J. PERMIT TERMINATION

This Permit shall terminate when the Permittee demonstrates in writing and certifies to the satisfaction of WVDEP that all activities required under this Permit have been performed and WVDEP has approved the certification.

IV-K. FACILITY MAP

The Permittee shall maintain a current Facility Map. The current Facility Map will be considered part of this permit and shall accompany this Permit on-site. The WVDEP will keep the current Facility Map on file with the active Permit. The Permittee shall provide an updated Facility Map within thirty (30) calendar days after any modification(s) to the facility.

IV-L SOLID WASTE MANAGEMENT UNITS AND AREA OF CONCERN

IV-L-1 As noted in the first paragraph of this Module, the following SWMUs and AOCs will be addressed pursuant to the FFA:

SOLID WASTE MANAGEMENT UNITS (SWMUs)

SWMU 27A – Drainage Ditch System, Plant 1

IV-L-2 The following SWMUs shall be addressed pursuant to this Module:

SOLID WASTE MANAGEMENT AREAS (SWMUs)

SWMU 17 Plant 2 Waste Water Treatme nt System (integrity assessment)
SWMU 25 Solvent Recovery Stills
SWMU 25F Building 8203 Still
SWMU 27B Drainage Ditch System Plant 2
SWMU 33 Dumpsters (Buildings 2014 and 8204)
SWMU 37 Sumps

37R Building 2003 (integrity testing)
37S02 Building 2000
37T02 building 2001
37U02 Building 2008

MODULE V
BURNING GROUND
Subpart X Unit

The Burning Ground shall be operated in accordance with Permit Number. HW- X-2 issued by the Division of Air Quality.

ORGANIZATION

Module I, Standard Conditions
Module II, General Facility conditions
Module III, Container Storage Area
Module IV, Corrective Action
Module V, Opening Burning Ground

The Part (A) and (B) are part of the permit. The following

attachments are easy references.

Attachment 1, Waste Analysis Plan
Attachment 2, Inspection Schedule
Attachment 3, Personnel Training
Attachment 4, Contingency Plan
Attachment 5, Closure and Post closure plan
Attachment 6, Container Management Plan
Attachment 7, Groundwater Monitoring

Section A
Part A Application

Part A Application
[40 CFR 270.10(d), 270.11(a) and (d), 270.13]

OMB# 2050-0024; Expires 01/31/2017

SEND COMPLETED FORM TO: The Appropriate State or Regional Office.	United States Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION FORM**	

1. Reason for Submittal (MARK ALL BOX(ES) THAT APPLY)

Reason for Submittal:

- ☐ To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location)
- ☐ To provide a Subsequent Notification (to update site identification information for this location)
- ☐ As a component of a First RCRA Hazardous Waste Part A Permit Application
- ☒ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # 1)
- ☐ As a component of the Hazardous Waste Report (If marked, see sub-bullet below)
  - ☐ Site was a TSD facility and/or generator of >1,000 kg of hazardous waste, >1 kg of acute hazardous waste, or >100 kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LQG regulations)

2. Site EPA ID Number

EPA ID Number: W V O 1 7 0 0 2 3 6 9 1

3. Site Name

Name: Alliant Techsystems Operations LLC

4. Site Location Information

Street Address: 210 State Route 956

City, Town, or Village: Rocket Center | **County:** Mineral

State: WV | **Country:** US | **Zip Code:** 26726

5. Site Land Type

☐ Private ☐ County ☐ District ☑ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

6. NAICS Code(s) for the Site (at least 5-digit codes)

A.	3 3 6 4 1 5	C.	3 3 2 9 9 5
B.	3 3 6 4 1 3	D.	

7. Site Mailing Address

Street or P.O. Box: 210 State Route 956

City, Town, or Village: Rocket Center

State: WS | **Country:** Mineral | **Zip Code:** 26726

8. Site Contact Person

First Name: John | **MI:** L | **Last:** Waugaman

Title: Sr. Environmental Engineer

Street or P.O. Box: 210 State Route 956

City, Town or Village: Rocket Center

State: WV | **Country:** US | **Zip Code:** 26726

Email: john.waugaman@orbitalatk.com

Phone: 301 697-8621 | **Ext.:** - | **Fax:** 304 726-5562

9. Legal Owner and Operator of the Site

A. Name of Site's Legal Owner: US Navy Naval Sea Systems Command | **Date Became Owner:** 12/13/42

Owner Type: ☐ Private ☐ County ☐ District ☑ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

Street or P.O. Box: 2531 Jefferson Davis Highway

City, Town, or Village: Arlington | **Phone:** (703) 602-436[illegible]

State: VA | **Country:** US | **Zip Code:** 22242

B. Name of Site's Operator: Alliant Techsystems Operations LLC | **Date Became Operator:** 2/10/15

Operator Type: ☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

10. Type of Regulated Waste Activity (at your site)
Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

A. Hazardous Waste Activities; Complete all parts 1-10.

Y ☑ N ☐ **1. Generator of Hazardous Waste**
If "Yes," mark only one of the following – a, b, or c.

- ☑ a. LQG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs/mo.) or more of hazardous waste; **or** Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs/mo) of acute hazardous waste; **or** Generates, in any calendar month, **or** accumulates at any time, more than 100 kg/mo (220 lbs/mo) of acute hazardous spill cleanup material.
- ☐ b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs/mo) of non-acute hazardous waste.
- ☐ c. CESQG: Less than 100 kg/mo (220 lbs/mo) of non-acute hazardous waste.

If "Yes" above, indicate other generator activities in 2-10.

Y ☐ N ☑ **2. Short-Term Generator** (generate from a short-term or one-time event and not from on-going processes). If "Yes," provide an explanation in the Comments section.

☐ N ☑ **3. United States Importer of Hazardous Waste**

Y ☑ N ☐ **4. Mixed Waste (hazardous and radioactive) Generator**

Y ☐ N ☑ **5. Transporter of Hazardous Waste**
If "Yes," mark all that apply.

- ☐ a. Transporter
- ☐ b. Transfer Facility (at your site)

Y ☑ N ☐ **6. Treater, Storer, or Disposer of Hazardous Waste** Note: A hazardous waste Part B permit is required for these activities.

Y ☐ N ☑ **7. Recycler of Hazardous Waste**

Y ☐ N ☑ **8. Exempt Boiler and/or Industrial Furnace**
If "Yes," mark all that apply.

- ☐ a. Small Quantity On-site Burner Exemption
- ☐ b. Smelting, Melting, and Refining Furnace Exemption

Y ☐ N ☑ **9. Underground Injection Control**

Y ☐ N ☑ **10. Receives Hazardous Waste from Off-site**

B. Universal Waste Activities; Complete all parts 1-2.

Y ☐ N ☑ **1. Large Quantity Handler of Universal Waste (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If "Yes," mark all that apply.**

- a. Batteries ☐
- b. Pesticides ☐
- c. Mercury containing equipment ☐
- d. Lamps ☐
- e. Other (specify) _____ ☐
- f. Other (specify) _____ ☐
- g. Other (specify) _____ ☐

Y ☐ N ☑ **2. Destination Facility for Universal Waste**
Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities; Complete all parts 1-4.

Y ☐ N ☑ **1. Used Oil Transporter**
If "Yes," mark all that apply.

- ☐ a. Transporter
- ☐ b. Transfer Facility (at your site)

Y ☐ N ☑ **2. Used Oil Processor and/or Re-refiner**
If "Yes," mark all that apply.

- ☐ a. Processor
- ☐ b. Re-refiner

Y ☐ N ☑ **3. Off-Specification Used Oil Burner**

Y ☐ N ☑ **4. Used Oil Fuel Marketer**
If "Yes," mark all that apply.

- ☐ a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
- ☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

D. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K

- ❖ You can ONLY Opt into Subpart K if:
  - you are at least one of the following: a college or university; a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
  - you have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y☐ N☑ 1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories **See the item-by-item instructions for definitions of types of eligible academic entities. Mark all that apply:**

☐ **a. College or University**

☐ **b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university**

☐ **c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university**

Y☐ N☑ 2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

11. Description of Hazardous Waste

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

D001	D002	D003	D004	D005	D006	D007
D008	D009	D010	D011	D012	D013	D014
D015	D016	D017	D018	D019	D020	D021
D022	D023	D024	D025	D026	D027	D028
D029	D030	D031	D032	D033	D034	D035
D036	D037	D038	D039	D040	D041	D042
D043	F001	F002	F003	F004	F005	K044
P005	P008	P018	P021	P022	P023	P024
P028	P049	P047	P067	P068	P074	P078

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-Regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

12. Notification of Hazardous Secondary Material (HSM) Activity

Y ☐ N ☐ Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes," you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

P087, P007, P002, P025, P000, U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U013, U014,

U015, U016, U017, U018, U019, U020, U021, U022, U023, U024, U025, U026, U027, U028, U029, U030, U031, U032, U033,

U034, U035, U036, U037, U037, U038, U039, U040, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U051

U052, U053, U054, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U065, U066, U067, U068, U069, U070,

U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089,

U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U100, U101, U102, U103, U104, U105, U106, U107, U108,

U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127,

U128, U129, U130, U131, U132, U133, U134, U135, U136, U137, 138, U139, U140, U141, U142, U143, U144, U145, U146,

U147, U148, U149, U150, U151, U152, U153, U154, U155, U156, U157, U158, U159, U160, U161, U162, U163, U164, U165,

U166, U167, U168, U169, U170, U171, U172, U173, U174, U175, U176, U177, U178, U179, U180, U181, U182, U183, U184,

U185, U186, U187, U188, U189, U190, U191, U192, U193, U194, U195, U196, U197, U198, U199, U200, U201, U202, U203,

U204, U205, U206, U207, U208, U209, U210, U211, U212, U213, U214, U215, U216, U217, U217, U218, U219, U220, U221,

U222, U223, U224, U225, U226, UU227, U228, U229, U230, U231, U232, U233, U234, U235, U236, U237, U238, U239, U240

U241, U242, U243, U244, U245, U246, U247, U248, U249, U250, U251, U252, U253, U254, U255, U256, U257, U258, U259,

U260, U261, U262, U263, U264, U265, U266, U267, U268, U268, U270, U271, U272, U273, U274, U275, U276, U277, U278,

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)

12. Notification of Hazardous Secondary Material (HSM) Activity

Y ☐ N ☑ Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes," you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

U279, U280, U290, U292, U293, U294, U295, U296, U297, U298, U299, U300, U301, U302, U303, U304, U305, U306, U307, U308, U309, U310, U311, U312, U313, U314, U315, U316, U317, U318, U319, U320, U321, U322, U323, U324, U325, U326, U327, U328, U329, U330, U331, U332, U333, U334, U335, U336, U337, U338, U339, U340, U341, U342, U343, U344, U345, U346, U347, U348, U349, U350, U351, U352, U353, U354, U355, U356, U357, U358, U359, U360, U361, U362, U362, U363, U364, U365, U366, U367, U368, U369, U370, U371, U372, U372, U373, U374, U375, U376, U377, U378, U379, U380, U381, U382, U383, U384, U385, U386, U387, U388, U389, U390, U391, U392, U393, U394, U395, U396, U397, U398, U399, U400, U401, U402, U403, U404, U405, U406, U407, U408, U409, U410, U411

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Patrick Nolan	Vice President and Site Manager

EPA ID Number | W | V | O | 1 | 7 | 0 | 0 | 2 | 3 | 6 | 9 | 1 |

OMB#: 2050-0024; Expires 01/31/2017

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact	**First Name:** John	**MI:** L	**Last Name:** Waugaman
	Contact Title: Environmental Engineer		
	Phone: 301 697-8621	**Ext.:** 5218	**Email:** john.waugaman@orbitalatk.com
2. Facility Permit Contact Mailing Address	**Street or P.O. Box:** 210 State Route 956		
	City, Town, or Village: Rocket Center		
	State: WV		
	Country: US	**Zip Code:** 26726	
3. Operator Mailing Address and Telephone Number	**Street or P.O. Box:** 210 State Route 956		
	City, Town, or Village: Rocket Center		
	State: WV	**Phone:** 301 697-8621	
	Country: US	**Zip Code:** 26726	
4. Facility Existence Date	**Facility Existence Date (mm/dd/yyyy):** 12/13/1943		

5. Other Environmental Permits

A. Facility Type (Enter code)	B. Permit Number	C. Description
E	R 30-057000 14	Title V
E	R 25-HW-X-1	Burning Grounds air permit
N	WV0020371	NPDES
E	9929007	Public Water Service

6. Nature of Business: Manufacture solid propellant rocket motors, warheads, fuzes, medium caliber ammunition, graphite composite structures, tank ammunition, precision metal parts.

7. Process Codes and Design Capacities – Enter information in the Section on Form Page 3

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 8.

B. PROCESS DESIGN CAPACITY – For each code entered in Item 7.A; enter the capacity of the process.

1. **AMOUNT – Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.**
2. **UNIT OF MEASURE – For each amount entered in Item 7.B(1), enter the code in Item 7.B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.**

C. PROCESS TOTAL NUMBER OF UNITS – Enter the total number of units for each corresponding process code.

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
Disposal		
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure Listed Below
Storage		
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
Treatment		
T01	Tank Treatment	Gallons Per Day; Liters Per Day
T02	Surface Impoundment	Gallons Per Day; Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Metric Tons Per Hour; or Million BTU Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; or Million BTU Per Hour

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity (for T81 – T94)
Treatment (Continued)		
T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; Liters Per Hour; Kilograms Per Hour; or Million BTU Per Hour
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
T87	Smelting, Melting, or Refining Furnace	
T88	Titanium Dioxide Chloride Oxidation Reactor	
T89	Methane Reforming Furnace	
T90	Pulping Liquor Recovery Furnace	
T91	Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid	
T92	Halogen Acid Furnaces	
T93	Other Industrial Furnaces Listed in 40 CFR 260.10	
T94	Containment Building Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTU Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million BTU Per Hour
Miscellaneous (Subpart X)		
X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; or Million BTU Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit of Measure Listed Below

Unit of Measure	Unit of Measure Code
Gallons	G
Gallons Per Hour	E
Gallons Per Day	U
Liters	L
Liters Per Hour	H
Liters Per Day	V
Short Tons Per Hour	D
Short Tons Per Day	N
Metric Tons Per Hour	W
Metric Tons Per Day	S
Pounds Per Hour	J
Kilograms Per Hour	X
Million BTU Per Hour	X
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
BTU Per Hour	I

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY		C. Process Total Number of Units
					(1) Amount (Specify)	(2) Unit of Measure	
X	1	S	0	2	533.788	G	001
	1	S	0	1	19,400	G	002
	2	X	O	1	6.1	N	001
	3						
	4						
	5						
	6						
	7						
	8						
	9						
1	0						
1	1						
1	2						
1	3						

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the line sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04, and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04, and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY		C. Process Total Number of Units
					(1) Amount (Specify)	(2) Unit of Measure	
X	2	T	0	4	100.00	U	001

9. Description of Hazardous Wastes - Enter Information in the Sections on Form Page 5

A. EPA HAZARDOUS WASTE NUMBER – Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY – For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE – For each quantity entered in Item 9.B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all listed hazardous wastes.

For non-listed waste: For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. **Enter the first two as described above.**
2. **Enter "000" in the extreme right box of Item 9.D(1).**
3. **Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.**

2. PROCESS DESCRIPTION: If code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. **Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.**
2. **In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.D.2 on that line enter "included with above" and make no other entries on that line.**
3. **Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.**

EXAMPLE FOR COMPLETING Item 9 (shown in line numbers X-1, X-2, X-3, and X-4 below) – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))
X	1	K	0	5	4	900	P	T	0	3	D	8	0				
X	2	D	0	0	2	400	P	T	0	3	D	8	0				
X	3	D	0	0	1	100	P	T	0	3	D	8	0				
X	4	D	0	0	2												Included With Above

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))
	1	D	0	0	3	86	T	X	0	1							
	2	D	0	0	1												included w/above
	3	D	0	0	8												included w/above
	4	F	0	0	2												included w/above
	5	D	0	0	2	1	T	S	0	1							
	6	D	0	0	4	10	P	S	0	1							
	7	D	0	0	5	50	P	S	0	1							
	8	D	0	0	6	100	P	S	0	1							
	9	D	0	0	7	100	P	S	0	1							
1	0	D	0	0	8	1	T	S	0	1							
1	1	D	0	0	9	100	P	S	0	1							
1	2	D	0	1	0	100	P	S	0	1							
1	3	D	0	1	1	100	P	S	0	1							
1	4	D	0	1	2	10	P	S	0	1							
1	5	D	0	1	3	10	P	S	0	1							
1	6	D	0	1	4	10	P	S	0	1							
1	7	D	0	1	5	10	P	S	0	1							
1	8	D	0	1	6	10	P	S	0	1							
1	9	D	0	1	7	10	P	S	0	1							
2	0	D	0	1	8	10	P	S	0	1							
2	1	D	0	1	9	10	P	S	0	1							
2	2	D	0	2	0	10	P	S	0	1							
2	3	D	0	2	1	10	P	S	0	1							
2	4	D	0	2	2	10	P	S	0	1							
2	5	D	0	2	3	10	P	S	0	1							
2	6	D	0	2	4	10	P	S	0	1							
2	7	D	0	2	5	10	P	S	0	1							
2	8	D	0	2	6	10	P	S	0	1							
2	9	D	0	2	7	10	P	S	0	1							
3	0	D	0	2	8	10	P	S	0	1							
3	1	D	0	2	9	10	P	S	0	1							
3	2	D	0	3	0	10	P	S	0	1							
3	3	D	0	3	1	10	P	S	0	1							
3	4	D	0	3	2	10	P	S	0	1							
3	5	D	0	3	3	10	P	S	0	1							
3	6	D	0	3	4	10	P	S	0	1							

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)										D. PROCESSES (2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	7	D	0	3	5	1	T	S	0	1								
3	8	D	0	3	6	10	P	S	0	1								
3	9	D	0	3	7	10	P	S	0	1								
4	0	D	0	3	8	10	P	S	0	1								
4	1	D	0	3	9	10	P	S	0	1								
4	2	D	0	4	0	10	P	S	0	1								
4	3	D	0	4	1	10	P	S	0	1								
4	4	D	0	4	2	10	P	S	0	1								
4	5	D	0	4	3	10	P	S	0	1								
4	6	F	0	0	1	35	T	S	0	1								
4	7	F	0	0	2	35	T	S	0	1								
4	8	F	0	0	3	100	T	S	0	1								
4	9	F	0	0	4	35	T	S	0	1								
5	0	F	0	0	5	35	T	S	O	1								
5	1	K	0	4	4	1	T	S	0	1								
5	2	P	0	0	5	100	P	S	0	1								
5	3	P	0	0	6	100	P	S	0	1								
5	4	P	0	0	7	100	P	S	0	1								
5	5	P	0	0	8	100	P	S	0	1								
5	6	P	0	0	9	100	P	S	0	1								
5	7	P	0	1	0	100	P	S	0	1								
5	8	P	0	1	1	100	P	S	0	1								
5	9	P	0	1	2	100	P	S	0	1								
6	0	P	0	1	3	100	P	S	0	1								
6	1	P	0	1	4	100	P	S	0	1								
6	2	P	0	2	1	100	P	S	0	1								
6	3	P	0	2	2	100	P	S	0	1								
6	4	P	0	2	3	100	P	S	0	1								
6	5	P	0	2	4	100	P	S	0	1								
6	6	P	0	2	8	100	P	S	0	1								
6	7	P	0	4	9	100	P	S	0	1								
6	8	P	0	4	7	100	P	S	0	1								
6	9	P	0	6	7	100	P	S	0	1								
7	0	P	0	6	8	100	P	S	0	1								
7	1	P	0	7	4	100	P	S	0	1								
7	2	P	0	7	8	100	P	S	0	1								

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
7	3	P	0	8	7	100	P	S	0	1							
7	4	U	0	0	1	100	P	S	0	1							
7	5	U	0	0	2	100	P	S	0	1							
7	6	U	0	0	3	100	P	S	0	1							
7	7	U	0	0	4	100	P	S	0	1							
7	8	U	0	0	5	100	P	S	0	1							
7	9	U	0	0	6	100	P	S	0	1							
8	0	U	0	0	7	100	P	S	0	1							
8	1	U	0	0	8	100	P	S	0	1							
8	2	U	0	0	9	100	P	S	0	1							
8	3	U	0	1	0	100	P	S	0	1							
8	4	U	0	1	1	100	P	S	0	1							
8	5	U	0	1	2	100	P	S	0	1							
8	6	U	0	1	3	100	P	S	0	1							
8	7	U	0	1	4	100	P	S	0	1							
8	8	U	0	1	5	100	P	S	0	1							
8	9	U	0	1	6	100	P	S	0	1							
9	0	U	0	1	7	100	P	S	0	1							
9	1	U	0	1	8	100	P	S	0	1							
9	2	U	0	2	8	100	P	S	0	1							
9	3	U	0	3	1	100	P	S	0	1							
9	4	U	0	3	1	100	P	S	0	1							
9	5	U	0	3	2	100	P	S	0	1							
9	6	U	0	3	7	100	P	S	0	1							
9	7	U	0	4	1	100	P	S	0	1							
9	8	U	0	4	3	100	P	S	0	1							
9	9	U	0	4	4	100	P	S	0	1							
0	1	U	0	4	5	100	P	S	0	1							
0	2	U	0	4	8	100	P	S	0	1							
0	3	U	0	5	2	100	P	S	0	1							
0	4	U	0	5	5	100	P	S	0	1							
0	5	U	0	5	6	100	P	S	0	1							
0	6	U	0	5	7	100	P	S	0	1							
0	7	U	0	6	9	100	P	S	0	1							
0	8	U	0	7	0	100	P	S	0	1							
0	9	U	0	7	1	100	P	S	0	1							

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									D. PROCESSES (2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
0	1	U	0	7	2	100	P										
0	2	U	0	7	5	100	P										
0	3	U	0	7	6	100	P										
0	4	U	0	7	7	100	P										
0	5	U	0	7	8	100	P										
0	6	U	0	8	0	100	P										
0	6	U	0	8	8	100	P										
0	7	U	0	9	2	100	P										
0	8	U	0	9	8	100	P										
0	9	U	1	0	2	100	P										
1	0	U	1	0	5	100	P										
1	1	U	1	0	6	100	P										
1	2	U	1	0	8	100	P										
1	3	U	1	1	2	100	P										
1	4	U	1	1	5	100	P										
1	5	U	1	1	7	100	P										
1	6	U	1	1	8	100	P										
1	7	U	1	2	2	100	P										
1	8	U	1	2	3	100	P										
1	9	U	1	2	5	100	P										
2	0	U	1	2	6	100	P										
2	1	U	1	3	3	100	P										
2	2	U	1	3	4	100	P										
2	3	U	1	3	8	100	P										
2	4	U	1	4	0	100	P										
2	5	U	1	4	4	100	P										
2	6	U	1	4	7	100	P										
2	7	U	1	5	1	100	P										
2	8	U	1	5	4	100	P										
2	9	U	1	5	9	100	P										
3	0	U	1	6	0	100	P										
3	1	U	1	6	2	100	P										
3	2	U	1	6	5	100	P										
3	3	U	1	6	9	100	P										
3	4	U	1	7	0	100	P										
3	5	U	1	7	1	100	P										

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									D. PROCESSES (2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
0	1	U	1	7	1	100	P										
0	2	U	1	8	2	100	P										
0	3	U	1	8	4	100	P										
0	4	U	1	8	8	100	P										
0	5	U	1	9	6	100	P										
0	6	U	2	0	1	100	P										
0	7	U	2	0	9	100	P										
0	8	U	2	1	0	100	P										
0	9	U	2	1	1	100	P										
1	0	U	2	1	3	100	P										
1	1	U	2	1	9	100	P										
1	2	U	2	2	0	100	P										
1	3	U	2	2	1	100	P										
1	4	U	2	2	3	100	P										
1	5	U	2	2	5	100	P										
1	6	U	2	2	6	100	P										
1	7	U	2	2	7	100	P										
1	8	U	2	2	8	100	P										
1	9	U	2	3	4	100	P										
2	0	U	2	3	8	100	P										
2	1	U	2	3	9	100	P										
2	2	U	3	2	8	100	P										
2	3	U	3	5	3	100	P										
2	4	U	3	5	9	100	P										
2	5	U	4	0	4	100	P										

10. Map

Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all spring, rivers, and other surface water bodies in this map area. See instructions for precise requirements.

11. Facility Drawing

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

12. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, and disposal areas; and sites of future storage, treatment, or disposal areas (see instructions for more detail).

13. Comments

Section 7 line 2 quantity is derived from the "Allegany Ballistics Laboratory Burning Grounds Air Modeling Report", April 2002, Appendix 2, Section 7.0 which limits the burning grounds to nine burns per day. (1355 lbs/day (9)

12. Notification of Hazardous Secondary Material (HSM) Activity

Y ☐ N ☑ Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes," you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

P087, P007, P002, P025, P000, U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U013, U014, U015, U016, U017, U018, U019, U020, U021, U022, U023, U024, U025, U026, U027, U028, U029, U030, U031, U032, U033, U034, U035, U036, U037, U037, U038, U039, U040, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U051 U052, U053, U054, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U065, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U100, U101, U102, U103, U104, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U134, U135, U136, U137, 138, U139, U140, U141, U142, U143, U144, U145, U146, U147, U148, U149, U150, U151, U152, U153, U154, U155, U156, U157, U158, U159, U160, U161, U162, U163, U164, U165, U166, U167, U168, U169, U170, U171, U172, U173, U174, U175, U176, U177, U178, U179, U180, U181, U182, U183, U184, U185, U186, U187, U188, U189, U190, U191, U192, U193, U194, U195, U196, U197, U198, U199, U200, U201, U202, U203, U204, U205, U206, U207, U208, U209, U210, U211, U212, U213, U214, U215, U216, U217, U217, U218, U219, U220, U221, U222, U223, U224, U225, U226, UU227, U228, U229, U230, U231, U232, U233, U234, U235, U236, U237, U238, U239, U240, U241, U242, U243, U244, U245, U246, U247, U248, U249, U250, U251, U252, U253, U254, U255, U256, U257, U258, U259, U260, U261, U262, U263, U264, U265, U266, U267, U268, U268, U270, U271, U272, U273, U274, U275, U276, U277, U278,

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
Cathy Nolan	Pat Nolan Vice President and Site Manage	7-24-15

12. Notification of Hazardous Secondary Material (HSM) Activity

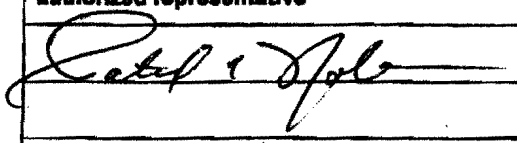
Y ☐ N ☑ Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes," you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

U279, U280, U290, U292, U293, U294, U295, U296, U297, U298, U299, U300, U301, U302, U303, U304, U305, U306, U307, U308, U309, U310, U311, U312, U313, U314, U315, U316, U317, U318, U319, U320, U321, U322, U323, U324, U325, U326, U327, U328, U329, U330, U331, U332, U333, U334, U335, U336, U337, U338, U339, U340, U341, U342, U343, U344, U345, U346, U347, U348, U349, U350, U351, U352, U353, U354, U355, U356, U357, U358, U359, U360, U361, U362, U362, U363, U364, U365, U366, U367, U368, U369, U370, U371, U372, U372, U373, U374, U375, U376, U377, U378, U379, U380, U381, U382, U383, U384, U385, U386, U387, U388, U389, U390, U391, U392, U393, U394, U395, U396, U397, U398, U399, U400, U401, U402, U403, U404, U405, U406, U407, U408, U409, U410, U411

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Patrick Nolan	Vice President and Site Manager
		7-24-15

Section C
Waste Characterization

SECTION C

Waste Characteristics [40 CFR 264.13 and 270.14(b)(2) and (3)]

This section describes the chemical and physical characteristics of the hazardous wastes that will be stored at two hazardous waste storage areas, Buildings 366 and 810, and P/E waste that will be treated by OB at the Burning Grounds. Included as Attachment C-1 is a Waste Analysis Plan that describes the waste to be stored at the two buildings—the P/E waste treated at the Burning Grounds and the treatment residues from the Burning Grounds. The plan also discusses quality assurance, treatment emissions, and land disposal restrictions.

C-1 Chemical and Physical Analyses [40 CFR 270.14(b)(2), 264.13(a)]

C-1a Containerized Waste [40 CFR 270.15, 264.172, 270.15(b)(1)]

Liquid and non-liquid hazardous wastes are stored in containers in Building 366 and Building 810. The storage facilities have secondary containment that meets the requirements of 40 CFR 264.175(b). All wastes are stored in containers that meet DOT requirements for containers and the wastes stored are compatible with the container construction materials. The wastes that are routinely stored in larger quantities and their RCRA waste codes are summarized in Table C-1. Section 2 of the Waste Analysis Plan contains information on the generation, hazardous characteristics, and classification of each waste stream. Other waste streams exhibiting the same hazard characteristics also may be stored.

In addition to the wastes listed in Table C-1, smaller quantities of lab pack wastes are stored in Building 810. Many of the lab pack wastes have the RCRA P and U codes and several have D codes. The Part A form lists all applicable RCRA waste codes. In all cases, no analysis is conducted; process knowledge is used for the chemical characterization of these wastes. In many cases, the lab pack wastes are in their original containers with the original labels. In other cases, the waste is generated from routine procedures where all chemicals are known. Information from safety data sheets (SDS) is also used.

Nonhazardous wastes also are stored in Building 366 and may be stored in Building 810. Summary information for these nonhazardous waste streams is provided in Table C-2. More detailed information on the generation and the basis for the nonhazardous designation of these waste streams is provided in Section 2 of the Waste Analysis Plan.

C-1b Wastes in Tank Systems [40 CFR 270.16, 264.190(a), 264.191(b)(2), 264.192(a)(2)]

ATK does not store hazardous waste in tanks at ABL. Therefore, this section is not applicable.

C-1c Wastes in Piles [40 CFR 270.17]

ATK does not have any hazardous waste surface impoundments at ABL. Therefore, this section is not applicable.

C-1d Landfilled Wastes [40 CFR 270.21, 264.13(c)(3), 264.314]

ATK does not have any hazardous waste landfills at ABL. Therefore, this section is not applicable.

C-1e Wastes Incinerated and Wastes Used in Performance Tests [40 CFR 270.19, 264.341, 270.62(b)]

ATK does not have any hazardous waste incinerators at ABL. Therefore, this section is not applicable.

C-1f Wastes to be Land Treated [40 CFR 270.20(b)(4), 264.271(a)(1) and (2), 264.272, 264.276, Part 261 Appendix VIII]

ATK does not have any hazardous waste land treatment units at ABL. Therefore, this section is not applicable.

C-1g Wastes in Miscellaneous Treatment Units [40 CFR 270.23(d)]

ATK treats reactive hazardous wastes by OB at the ABL Burning Grounds. The Burning Grounds are classified as a miscellaneous treatment unit.

Burning Grounds

Waste Treatment. The Burning Grounds, which is used to treat reactive hazardous waste, is classified as a miscellaneous treatment unit. This reactive waste includes propellants, explosives, and materials containing P/E waste. ATK generates a quantity of P/E wastes during the processing of materials to produce solid propellant rocket motors, gas generators, and explosive warheads. Materials burned at ABL fall into five general categories. First, several of the ingredient materials used in manufacturing are explosives. These materials, when not suitable for manufacturing use, may be declared waste. Second, any excess propellant or explosive, in either uncured or cured conditions, may be declared waste. A third waste category is uncured or cured P/E that is off-specification because of deviation from composition, physical, ballistic, or configuration product specifications. A fourth category is solvents and sawdust contaminated with propellants or explosives. The fifth category is rocket motors, filled with propellant then rejected for quality control issues. (This waste category is treated only in the rocket motor tie down unit.) Table C-3 presents a summary of the ingredient list for pure energetic materials and the associated waste streams to be treated by open burning.

The composition of these materials is based primarily on process knowledge. Section 1 of the Waste Analysis Plan contains a detailed description of the waste streams and their hazard designations. A discussion of the effectiveness of waste treatment is provided in Section C-4 below.

Wastes to be burned are placed on top of sand and clay refractory materials contained on pans. A schematic of this process is shown in Figure 2 of Section 1 of the Waste Analysis Plan. A small amount of starting powder and/or casting powder is used to enhance the initiation process.

Treatment Residues and Accumulated Water. Open burning of P/E wastes in the burn pans at the Burning Grounds generates ash (treatment residue). In general, the treatment residue is removed occasionally as needed to maintain efficient operations.

There is no accumulation of water in the burn pans during precipitation events due to the regular use of covers when the pans are not in service.

Historical data indicate that the open burning residues may not meet the land disposal restriction (LDR) treatment standards for solvents and lead. Waste evaluation information is provided in Section 1 of the Waste Analysis Plan.

C-1h Wastes in Boilers and Industrial Furnaces [40 CFR 270.22, 266.102(b), 270.66(c)]

Alliant Techsystems Operations LLC does not have any hazardous waste boilers or industrial furnaces at ABL. Therefore, this section is not applicable.

C-1i Wastes at Facilities with Process Vents [40 CFR 270.24]

Alliant Techsystems Operations LLC does not have any process vents at ABL. Therefore, this section is not applicable.

C-1j Equipment Leak Organic Air Emissions [40 CFR 270.25]

Alliant Techsystems Operations LLC does not have any equipment (compressors, pumps, pressure-relief devices, sample connection systems, or valves) in hazardous waste service. Therefore, this section is not applicable.

C-1k Wastes at Drip Pads [40 CFR 270.26]

Alliant Techsystems Operations LLC does not have hazardous waste drip pads at ABL. Therefore, this section is not applicable.

C-1l Process Unit Organic Air Emissions [40 CFR 270.27]

Alliant Techsystems Operations LLC stores hazardous wastes containing volatile organics in 55-gallon (maximum) containers. Analysis is not necessary for compliance with 40 CFR 270.27. Section D-11 has details.

C-2 Waste Analysis Plan [40 CFR 270.14(b)(3), 264.13(b) and (c), 268.7, 266.102(a)(2)(ii), 266.104(a)(2)]

The Waste Analysis Plan describes the methodologies for conducting the analysis required to properly treat and store hazardous waste. The following information is discussed below:

- Parameters and rationale

- Test methods
- Sampling methods
- Frequency of analysis
- Additional requirements for wastes generated offsite
- Additional requirements for ignitable, reactive, and incompatible waste

The Waste Analysis Plan is provided in Attachment C-1.

C-2a Parameters and Rationale [40 CFR 264.13(b)(1)]

Wastes Treated at Burning Grounds

See Section 1 of the Waste Analysis Plan.

Open Burning Treatment Residues and Accumulated Water

See Section 1 of the Waste Analysis Plan.

Buildings 366 and 810 Container Storage

See Section 2 of the Waste Analysis Plan.

C-2b Test Methods [264.13(b)(2)]

Wastes Treated at Burning Grounds

See Section 1 of the Waste Analysis Plan.

Open Burning Treatment Residues and Accumulated Water

See Section 1 of the Waste Analysis Plan.

Buildings 366 and 810 Container Storage

See Section 2 of the Waste Analysis Plan.

C-2c Sampling Methods [40 CFR 264.13(b)(3), Part 261 Appendix I, Part 266 Appendix IX]

Wastes Treated at Burning Grounds

See Section 1 of the Waste Analysis Plan.

Open Burning Treatment Residues and Accumulated Water

See Section 1 of the Waste Analysis Plan.

Buildings 366 and 810 Container Storage

See Section 2 of the Waste Analysis Plan.

C-2d Frequency of Analysis [40 CFR 264.13(b)(4)]

Wastes Treated at Burning Grounds

See Section 1 of the Waste Analysis Plan.

Open Burning Treatment Residues and Accumulated Water

See Section 1 of the Waste Analysis Plan.

Buildings 366 and 810 Container Storage

See Section 2 of the Waste Analysis Plan.

C-2e Additional Requirements for Wastes Generated OffSite [40 CFR 264.13(b)(5) and (c) and 264.73(b)]

Currently, Alliant Techsystems Operations LLC handles only wastes that are generated on site. Therefore, this section is not applicable.

C-2f Additional Requirements for Ignitable, Reactive, or Incompatible Wastes [40 CFR 264.13(b)(6) and 264.17]

Burning Grounds. There are no additional waste analysis requirements for ignitable, reactive, or incompatible wastes. All the wastes treated by open burning at the Burning Grounds are reactive. The reactivity characteristic is the primary RCRA characteristic of concern. Therefore, all the waste characterization procedures have been developed considering reactivity, ignitability, and potential incompatibilities of the wastes treated.

Buildings 366 and 810 Container Storage. There are no additional waste analysis requirements for ignitable, reactive, or incompatible wastes. The characteristics of the stored hazardous waste are discussed in the Waste Analysis Plan.

C-2g Additional Requirements Pertaining to Boiler and Industrial Furnace Facilities [40 CFR 266.102(e)(6)(ii)(C), 266.102(e)(b)(iii)]

Alliant Techsystems Operations LLC does not utilize boiler and industrial furnaces for waste management. Therefore, this section is not applicable.

C-2h Additional Requirements Pertaining to Containment Buildings [40 CFR 264.1100]

Alliant Techsystems Operations LLC does not utilize containment buildings for waste management. Therefore, this section is not applicable.

C-3 Waste Analysis Requirements Pertaining to Land Disposal Restrictions [40 CFR 262.10, 262.11, 264.13, 264.73, 266.102(a)(2)(ii), Part 268, 270.14(b)(3)]

C-3a Waste Analysis [40 CFR 261.21 through 261.24, 264.13(a)(1), 268.1, 268.7, 268.9, 268.32 through 268.37, 268.41 through 268.43]

The waste analysis procedures described in the Waste Analysis Plan also are used to provide analytical data necessary to determine whether a waste is a restricted waste and whether the waste is being managed properly under the land disposal requirements of 40 CFR 268.

Burning Grounds. See Section 1 of the Waste Analysis Plan.

Buildings 366 and 810 Container Storage. See Section 2 of the Waste Analysis Plan.

C-3a(1) Spent Solvent and Dioxin Wastes [40 CFR 264.13(a)(1), 268.2(f)(1), 268.7, 268.30, 268.31]

The Waste Analysis Plan and its Tables 1-1 and 2-1 contain a summary of the waste analysis performed at ABL. These tables have a notation as to whether the waste is restricted and whether it meets land disposal treatment standards.

C-3a(2) California List Wastes [40 CFR 264.13(a)(1), 268.7, 268.32, 268.42(a), RCRA Section 3004(d)]

See the Sections 1 and 2 of the Waste Analysis Plan.

C-3a(3) Listed Wastes [40 CFR 264.13(a)(1), 268.7, 268.33, 268.34, 268.35, 268.36, 268.41, 268.42, 268.43]

See the Sections 1 and 2 of the Waste Analysis Plan.

C-3a(4) Characteristic Wastes [40 CFR 261.3(d)(1), 264.13(a)(1), 268.7, 268.9, 268.37, Part 268 Appendix I, Part 268 Appendix IX]

See the Sections 1 and 2 of the Waste Analysis Plan.

C-3a(5) Radioactive Mixed Waste [40 CFR 268.7, 268.35(c), 268.35(d), 268.36, 268.42(d)]

ATK does not treat or dispose of radioactive mixed waste at ABL. Therefore, this section is not applicable.

C-3a(6) Leachates [40 CFR 260.10, 268.35(a)]

ATK does not treat or dispose of leachates at ABL. Therefore, this section is not applicable.

C-3a(7) Lab Packs [40 CFR 268.7(a)(7), 268.7(a)(8), 268.42(c), Part 268 Appendix IV, Part 268 Appendix V]

During preparation of lab packs, materials being packaged are evaluated for restricted wastes. Treatment standards for all contents are evaluated and the entire lab pack is treated to meet the most stringent standard for each waste constituent before being land disposed.

C-3a(8) Contaminated Debris [40 CFR 268.2(g), 268.7, 268.9, 268.36, 268.45, 270.13(n)]

The specific hazardous debris categories and contaminant categories are included in the Waste Analysis Plan, Table 2-1.

C-3a(9) Waste Mixtures and Wastes with Overlapping Requirements [40 CFR 264.13(a)(1), 268.7, 268.9, 268.41(b), 268.43(b), 268.45(a)]

Waste mixtures are identified with all applicable waste codes. Waste is shipped off site and treated to the most stringent treatment requirement for each hazardous waste constituent of concern prior to land disposal.

C-3a(10) Dilution and Aggregation of Wastes [40 CFR 268.3]

Alliant Techsystems Operations LLC does not perform dilution of wastes at ABL. Wastes with different wastes codes that are aggregated for disposal are treated as described in Section C-3a(9).

C-3b Notification, Certification, and Recordkeeping Requirements [40 CFR 264.73, 268.7, 268.9(d)]

C-3b(1) Retention of Generator Notices and Certifications [40 CFR 268.7(a)]

The discussion in this section applies to the hazardous wastes generated at ABL and stored at the hazardous waste storage areas; Building 366 and Building 810.

If the waste does not meet the treatment standard, a one-time written notice is sent to the facility receiving the waste, and a copy is placed in the file. The notice includes the U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers, manifest number of the first shipment, a statement that the waste is subject to LDRs, a list of the constituents of concern, applicable wastewater/non-wastewater codes, and waste analysis data. No further notification is made until such time as the waste or facility changes, in which case a new notification will be sent and a copy will be placed in the file.

If the waste attains the applicable treatment standards, a one-time written notice, with the information described above, is sent to the facility receiving the waste, and a copy is placed in the file. In addition, an authorized representative of Alliant Techsystems Operations LLC will make the following certification:

> *"I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR part 268 subpart D. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."*

If a waste is determined to be restricted based solely on knowledge of the waste, all supporting data are maintained on site in ATK's files. If a waste is determined to be restricted based on analytical testing, all waste analysis data are maintained on site in ATK's files.

C-3b(2) Notification and Certification Requirements for Treatment Facilities [40 CFR 268.7(b)]

The discussion in this section applies to the treatment residuals (i.e., Burning Grounds Pan Ash) generated by treatment of reactive waste at the Burning Grounds. Treatment residuals taken from the burning pans may be hazardous or non-hazardous depending on the composition of the wastes burned on the pans. Treatment residuals will be tested for compliance with 40 CFR 268.48 prior to disposal. Notification and certification requirements are indicated below.

Hazardous Residuals

Treatment residuals determined to be hazardous are containerized and transported off site for proper disposal. For these containerized wastes, notification and record keeping requirements are as described in Section C-3b(1) above.

Non-Hazardous Residuals

A one-time written notice is sent to the land disposal facility receiving the treatment residue, and a copy is placed in ATK's file. The notice includes the EPA Hazardous Waste Numbers, manifest number of the first shipment, a statement that the waste is subject to LDRs, a list of the constituents of concern, applicable wastewater/non-wastewater codes, and waste analysis data. No further notification is made until such time as the waste or facility changes, in which case a new notification will be sent and a copy placed in the Alliant Techsystems Operations LLC files.

In addition, an authorized representative of Alliant Techsystems Operations LLC will make the following one-time certification with the initial waste shipment:

> *"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."*

A copy of the above certification will be placed in the onsite files. If the waste, treatment residue, or receiving facility changes, a new certification will be sent to the receiving facility and a copy will be placed in the Alliant Techsystems Operations LLC files.

If the treatment residue will be further managed at a different facility, Alliant Techsystems Operations LLC will comply with the notice and certification requirements applicable to generators discussed in Section C-3b(1).

For waste that is only hazardous because it is reactive (D003), the treatment residuals will no longer be a hazardous waste after treatment by open burning. For such waste, a one-time notification will be placed in the Alliant Techsystems Operations LLC files and sent to the WVDEP. The notification and certification that is placed in the files will be updated if the process or operation that generates the waste changes and/or if the Subtitle D facility receiving the waste changes. WVDEP will be notified on an annual basis, but no later than December 31, if such changes occur. The notification will include the name and address of the RCRA Subtitle D facility receiving the waste shipment, a description of the waste initially generated, including the applicable EPA hazardous waste code(s), treatability group(s), and underlying hazardous constituents. The certification will be signed by an authorized representative of Alliant Techsystems Operations LLC and will contain the certification described above.

C-3b(3) Notification and Certification Requirements for Land Disposal Facilities [40 CFR 268.7(c)(1)]

ABL is not a land disposal facility. Therefore, this section is not applicable.

C-3b(4) Wastes Shipped to Subtitle C Facilities [40 CFR 268.7(a), 268.7(b)(6)]

Alliant Techsystems Operations LLC determines whether wastes require further treatment under LDR by following the Waste Analysis Plan in Attachment C-1. For wastes that require additional treatment under LDR, Alliant Techsystems Operations LLC will provide a one-time notification to the treatment facility. This notification will be updated if the waste stream changes.

C-3b(5) Wastes Shipped to Subtitle D Facilities [40 CFR 268.7(d), 268.9(d)]

Alliant Techsystems Operations LLC does not ship hazardous waste residues to Subtitle D facilities. Therefore, this section is not applicable.

C-3b(6) Recyclable Materials [40 CFR 268.7(b)(7)]

Alliant Techsystems Operations LLC does not dispose of hazardous wastes that are recyclable material. Therefore, this section is not applicable.

C-3b(7) Recordkeeping [40 CFR 264.73, 268.7(a)(5), 268.7(a)(6), 268.7(a)(7), 268.7(d)]

Alliant Techsystems Operations LLC uses process knowledge and/or chemical and physical analysis to determine whether wastes generated on site are restricted from land disposal and keeps documentation of those determinations. Alliant Techsystems Operations LLC also maintains documentation to indicate where restricted wastes were treated, stored, and/or disposed. All process knowledge data and waste analysis data used to determine compliance with LDRs are maintained on site in the facility's files. All generator and treatment facility notices and certifications are also kept in the Alliant Techsystems Operations LLC files.

All notices, certifications, waste analysis data, and other documentation will be maintained for at least 3 years.

C-3c Requirements Pertaining to the Storage of Restricted Wastes [40 CFR 268.50]

Alliant Techsystems Operations LLC stores restricted waste in containers solely for the purpose of accumulating sufficient waste to facilitate proper treatment.

C-3c(1) Restricted Wastes Stored in Containers [40 CFR 268.50(a)(2)(i)]

All restricted hazardous wastes at Building 366 and Building 810 are stored in containers. Such storage is solely for the purpose of accumulating sufficient quantities of waste to facilitate proper treatment, recovery, or disposal. Each container is clearly marked to identify its contents and the date each period of accumulation begins. Under normal conditions, all waste is shipped off site within 1 year.

C-3c(2) Restricted Wastes Stored in Tanks [40 CFR 268.50(a)(2)(ii)]

Alliant Techsystems Operations LLC does not store restricted wastes in tanks. Therefore, this section is not applicable.

C-3c(3) Storage of Liquid PCB Wastes [40 CFR 268.50(f)]

Alliant Techsystems Operations LLC does not store liquid polychlorinated biphenyl (PCB) wastes. Therefore, this section is not applicable.

C-3d Exemptions, Extensions, and Variances to Land Disposal Restrictions

Alliant Techsystems Operations LLC is not requesting an exemption, extension, or variance to LDRs. Therefore, this section is not applicable.

C-4 Treatment Effectiveness of Open Burning in Pans [40 CFR 270.23(d)]

The effectiveness of treatment by open burning with respect to air emissions has been evaluated at ABL. The emissions were tested at a specialized testing facility at Sandia National Laboratory (SNL) known as the Air Emissions Test Chamber. Representative samples of the various waste forms encountered at the ABL facility were burned to attempt to document pollutant emission characteristics for the broad spectrum of chemicals likely to be encountered during burning operations. This approach enabled pollutant emission testing under controlled conditions and in a manner that yielded pollutant emission factors that were used in the dispersion model to estimate pollutant concentrations at off site receptors. An emission factor is a measure of the mass of a particular pollutant released per unit mass of starting material. The emission factor is typically expressed as a ratio (e.g., grams of pollutant release per kilogram of material consumed). An experimental approach to measure emissions from specific ABL waste streams was judged to be the best approach in defining a set of target pollutants and their associated emission factors. The SNL study, as well as other studies highlighted in Section D-8c, were used to determine the emission factors and input data to the air dispersion modeling of emissions. The modeling results are provided in Appendix A of Volume II.

Burning scenarios in the SNL study included the combustion of both pure propellant and explosives and the combustion of propellant- and explosive-contaminated waste products such as sawdust, other cellulose material, and miscellaneous plastic material. Pure materials that were tested include aluminized composite propellant, non-aluminized composite propellant, double base propellant, and plastic bonded explosive. Contaminated waste products included two mixtures: a sawdust, acetone, and double base propellant mixture; and, a sawdust/acetone, explosive, and miscellaneous debris mixture.

Known quantities of each material were placed in the test chamber and remotely ignited. The combustion process was allowed to go to completion with no operator intervention. The emission products were held in the chamber and were sampled with a range of sampling instruments positioned inside and outside the chamber. Three large-diameter fans were also positioned inside the chamber to thoroughly mix the chamber contents. Samples of emission products collected were used to determine the total release mass of each of the emission

products because the chamber volume is mixed and known. Emission product measurements were made for the following:

- Gases – carbon dioxide (CO_2), carbon monoxide (CO), nitrogen oxide (NO), nitrogen dioxide (NO_2), hydrogen chloride (HCl), and ammonia
- Vapors – total non-methane hydrocarbons and toxic volatile organic compounds (VOCs)
- Aerosol – PM_{10}, size distribution, semivolatile organic compounds (SVOCs), and heavy metals

The results of the testing show that open burning is an effective treatment.

Tables

TABLE C-1
Summary of RCRA Regulated Containerized Wastes at ABL

Material	RCRA Code
Acetone	D001, F003, F005
Alodine Liquids	D007
Alodine Solids	D007
Bondliner	D001, D007, F003, F005
Cadmium Liquid Coolant	D006
Cadmium Solids	D006
Chemlok/Water	D001
Corrosives (Miscellaneous)	D002
Flammable Liquids (Miscellaneous)	D001, D007, D008, F002, F003, F005
Heptane	D001
Isocyanates	D001, F002
Isopropanol/Water	D001
Lab solvents	D001, D007, D008, F002, F003, F005
Lacquer premix with methylene chloride	F002
Lead solids (including paste)	D008
Methylene Chloride	F002
Mold Release Agents (MS143/MS145)	F002
Oakite Solution- acidic	D002
Oakite Solution- alkaline	D002
Oil/Solvent	D001
Paint Related Waste Material (Liquid)	D001, D007, D008, F003, F005
Paint Related Waste Material (Solid)	D006, D007, D010, F002, F003, F005
Solvent Contaminated Rags	D006, D007, D008, D010, F002, F005
Styrene monomer & inhibitors	D001
Trichloroethane (1,1,1)	F002
Trichloroethylene	F002
Used Grit	D007
Valenite VNT Valcool Coolant	D007, D008
Varsol	D001
Versetec Developer Solution	D001
P/E Contaminated Waste – Double Base (Rags, spatulas, material containers, etc. contaminated with Double Base Propellant)	D008, F005
P/E Contaminated Waste – Hybrid (Rags, spatulas, material containers, etc.)	F005
Water Shield	D001, D006, D007

TABLE C-2
Non-Regulated Wastes at ABL

Waste Stream	Hazard	Basis for Non-Hazardous Designation
Ammonium Perchlorate (AP) Water	None	Material contains >95% water with dissolved AP, not reactive or oxidizer
Asbestos	Inhalation	Material contains asbestos from abatement operations
Ascorbic Acid Solution	None	Contains small amounts of ascorbic acid with a pH of ~7
Chemlok/Water	None	Contains water and water based bonding agent with no listed constituents
Coolant	None	Contains machine coolant (95% water/5% coolant solution)
Cured Resins	None	Consists of non-hazardous polymeric resins in a cured state
Curing Agents	Sensitizer	Consists of non-RCRA listed curatives for resins; no HW characteristics
ECA 100	Irritant	Consists of non-RCRA listed curatives for resins; no HW characteristics
Flyash	None	Consists of ash from boilers
HP990/Water	None	Consists of small quantities of cured resins in water
HP990/Water Cleanup Debris	None	Consists of above waste stream in soil
Isopropanol/Water (weak solution)	None	Waste consists of IPA in water at <27% with a flashpoint >140 F
Lacquer premix without methylene chloride	None	Consists of all materials for lacquers other than methylene chloride or nitrate esters -- all constituents are non-RCRA regulated
Oil	None	Waste contains used hydraulic, fuel, and motor oils
Oil Cleanup Debris	None	Waste consists of fuel oil and soil from spill cleanup
Oil Sludge	None	Waste contains heavy sludges of oil and sediment
Oil/Coolant	None	Waste contains mixtures of used hydraulic oil and machining coolant
Oily Water	None	Material is generated primarily from oil/water separator for compressors.
P/E Contaminated Waste-Composite	None	Material contains <10% explosive contamination and heptane contaminated solid debris.
Tumbler Water	None	Waste consists of aqueous detergent solution from aluminum deburring operations.
Uncured Resins	None	Waste consists of non-hazardous polymeric resins in a semi-cured state
P/E Contaminated Waste – Hybrid	None	Some hybrid propellants, depending on formulation, may only be cleaned up using heptane.

TABLE C-3
Burning Grounds Waste Stream Designations and Associated Major Formulation Ingredients

Waste Stream Designation	Pure Energetic Materials And Their Composition		Waste Codes
	Ingredient	Weight Percent[1]	
P/E Bulk Waste – Aluminized Composite	**Aluminized Composite Propellant**		**D003**
	Aluminum	5 – 22	
	Ammonium perchlorate	60 – 80	
	Polymer binder (e.g., hydroxy-terminated polybutadiene)	9 – 15	
	Ammonium nitrate	0 – 10	
	Aluminized Hybrid Composite Propellant		
	Al	10 – 20	
	AP	43 – 55	
	Polymer binder (hydroxy-terminated polyether, HTPE)	5 – 8	
	BuNENA (n-butyl nitratethyl nitramine)	8 – 12	
	AN	0 – 10	
	Bismuth trioxide	0 – 21	
	Al oxide	0 – 1	
	titanium oxide	0 – 1	
P/E Bulk Waste – Non-Aluminized Composite	**Non-Aluminized Composite Propellant**		**D003**
	Ammonium perchlorate	83 – 88	
	Polymer binder (e.g., hydroxy-terminated polybutadiene)	11 – 16	
	Zirconium compounds (metallic zirconium, zirconium carbide, and zirconium oxide)	1	
	Ammonium nitrate	0 – 10	
	2,2-Bis(ethylferrocenyl)propane	Various	
	Non-Aluminized Hybrid Composite Propellant		
	AP	43 – 70	
	TPEG (terathane polyethylene glycol)	5 – 8	
	BuNENA	8 – 12	
	AN	0 – 10	
	Bismuth trioxide	0 – 21	
	Al oxide	0 – 1	
	titanium oxide	0 – 1	
	Zirconium	1 – 4	

TABLE C-3
Burning Grounds Waste Stream Designations and Associated Major Formulation Ingredients

Waste Stream Designation	Pure Energetic Materials And Their Composition		Waste Codes
	Ingredient	**Weight Percent[1]**	
P/E Bulk Waste – Double Base Propellants	**Double Base Propellants**		**D003, D008**
	Nitramines (cyclotrimethylenenitramine [RDX] and/or cyclotetramethylenenitramine [HMX]	60 – 65	
	Nitrate esters (nitroglycerine, nitrocellulose, and/or butanetrioltrinitrate)	10 – 27	
	Lead compounds (lead citrate, lead salicate, lead resorcilate, lead sesquioxide)	1 – 2	
	Zirconium compounds (metallic zirconium, zirconium carbide, and zirconium oxide)	1	
	Polymers and nitro-organics (e.g., polyglycol adipate, methylnitroaniline, 2-dinitrophenylamine)	8 – 35	
	Bismuth and/or tin	0 – 21	
	Ammonium nitrate	10 – 20	
	Ammonium perchlorate	Various	
	Aluminum	Various	
P/E Bulk Waste – PBX Explosives	**Plastic-bonded Explosives**		**D003**
	Nitramines (RDX and/or HMX)	64 – 82	
	Binder components (e.g., polypropylene glycol, toluene diisocyanate, hexamethylene diisocyanate, isodecyl perlargonate, 2-ethylhexyl acrylate, N-vinyl-2-pyrrolidone, dioctyl maleate, dioctyl adipate, silica)	Approx. 12	
	Aluminum, dibutylin dilaurate	0 – 20	
	Other Waste Streams		
Acetone Squares	Saw dust mixed with acetone squares from Double Base casting cleanup	Not available	**D003, D008,**
P/E Lacquer Squares	Saw dust mixed with nitrate ester lacquers, acetone and triacetin	Not available	**D003**

Notes:

[1] Constituents present at concentrations which may be greater than one percent.

General Note: A small amount (total annual use less than 100 lbs) of boron/potassium nitrate (BKNO3) pellets, starting powder, and/or casting powder are used as an initiator for the burning process.

Attachment C-1
Waste Analysis Plan

Consolidated Waste Analysis Plan

for

The ABL Miscellaneous Treatment Unit ('Burning Grounds')

and

Container Storage Areas

Allegany Ballistics Laboratory

Alliant Techsystems Operations LLC

Allegany Ballistics Laboratory Facility Description and Overview of Manufacturing, Waste Generation, and Waste Management Processes

Alliant Techsystems Operations LLC manufactures solid-fuel rocket motors and explosive warheads as well as other products not directed toward the manufacture of warheads and rocket motors at ABL. Raw materials for solid fuels are mixed to produce propellants that are either cast inside the motor casing (or otherwise fitted into the motor casing) to produce the finished unit. Motor casings may be manufactured on site or received from offsite sources. Wastes may be generated in the propellant preparation, motor casing preparation or motor assembly steps. Explosive warheads are manufactured in a similar process involving explosives preparation, warhead casing manufacture and warhead finishing operations. Operations for other products from the metal fabrication and composites areas generate wastes that are similar to materials from propellant/explosive products manufacture. An overview of manufacturing and waste management is provided in Figure 1. For facility details, see Sections B and C of the RCRA Part B permit application for the Burning Grounds.

Waste from the propellant operations are explosive and are treated on-site via burning in pans. The propellant wastes consist of the propellant and solvents associated with removal of the propellant from the mixing and casting equipment. Wastes from finished motor-assembly operations are also explosive and managed onsite via burning in aboveground pans. The wastes from warhead manufacture are explosive and treated onsite via burning on aboveground pans. Further information on wastes treated in the Burning Ground is provided in Section 1.

Wastes from motor casing preparation are typical of those associated with metals machining and surface preparation. These materials are segregated, containerized and transported offsite for treatment and/or disposal at properly permitted facilities. Miscellaneous articles such as contaminated personnel protective equipment (PPE), spatulas, rags, etc. are containerized and sent offsite for treatment and/or disposal in permitted facilities. Additional information on containerized wastes is found in Section 2.

Section 1—Wastes for Treatment and Treatment Residuals at Burning Grounds

(RCRA Category: Generator Treating Reactive Hazardous Wastes to meet LDRs)

Processes and activities that generate wastes or are used to manage wastes at the facility:

Propellant preparation is closely controlled for safety and to ensure product ballistic performance. Some propellants are incompatible with others. Propellants and their associated wastes are segregated by propellant type to ensure safe handling. Batch processing systems of various sizes are available to produce batches to meet motor production needs while minimizing wastes. The mixing and casting equipment may be utilized for more than one type of propellant necessitating proper cleaning to ensure there is not cross contamination of propellant types. The cleaning typically consists of a mechanical cleaning step followed by a solvent-cleaning step.

Propellants and explosives are grouped by their ingredients into categories. The categories are:

- Aluminized Composite Propellants
- Non-Aluminized Composite
- Hybrid Propellants
- Double Base Propellants
- PBX (plastic-bonded explosives)

The waste materials are also grouped in these categories plus waste propellant, warhead explosives and the associated equipment clean up materials are designated D003 for reactivity per RCRA regulations. The presence of lead in some products adds D008 designation to the wastes. Acetone (F003) and heptane (D001) used for equipment cleaning is distilled and recycled. The still bottoms are D003. The mix bowl cleaning wastes from propellant manufacturing are collected in plastic bags termed "diapers" as the materials are generated. For other manufacturing steps (mold disassembly, final assembly, etc.) wastes are collected in anti-static plastic bags. The materials are segregated, bagged and tagged for housing in less than 90 day storage sheds near each propellant mixing/casting building. The materials are transported from these staging areas to the Burning Grounds as necessary for proper waste management.

Wastes from finished motor assembly are typically solid propellants machined from a cast propellant. Machining of double-base propellants results in water wet propellant wastes. Burlap bags are used to collect this waste. Both the bag and the excess propellant are sent to the Burning Grounds for treatment.

Warheads processed at the facility contain polymer bound explosives. The explosives are primarily RDX and HMX. In some cases, metal-containing catalysts are used to effect the polymerization. The warhead wastes are RCRA hazardous for reactivity. The RCRA code is D003.

The conceptual treatment process is to deactivate the explosive characteristic D003 by open burning as depicted in Figure 2. Burn Pan Ash and Burn Pan Water are the combustion residuals that are subject to Treatment Standards for Hazardous Wastes (§ 268.40 particularly (d) and (e)) and Universal Treatment Standards (UTS) for underlying hazardous constituents (UHC)(§ 268.48).

Waste Analysis Parameters

Information on the sources of wastes to be burned and treatment residues is provided in Table 1-1. This table reflects in excess of 99.9 percent of the materials handled in the Burning Grounds.

Applicable test methods relevant for the wastes shown in Table 1-1 include:

Parameters	Test Method
TC Leaching Procedure	SW-846 1311
Lead	SW-846 6010, SW-846 7420, or SW-846 7421
Acetone	SW-846 8260B
Lead	SW-846 6010, SW-846 7420, or SW-846 7421

Figure 1 MANUFACTURING & WASTE HANDLING OVERVIEW

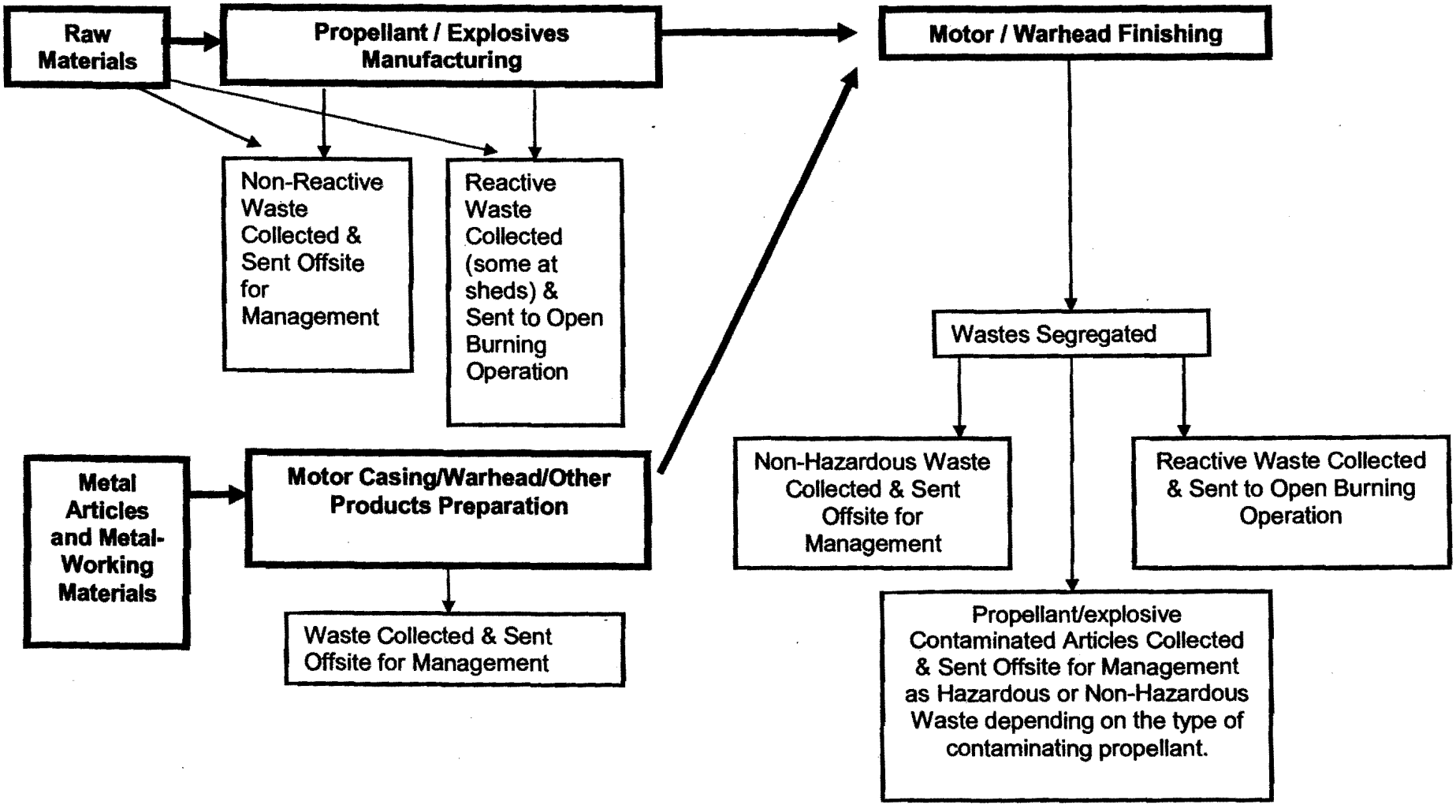
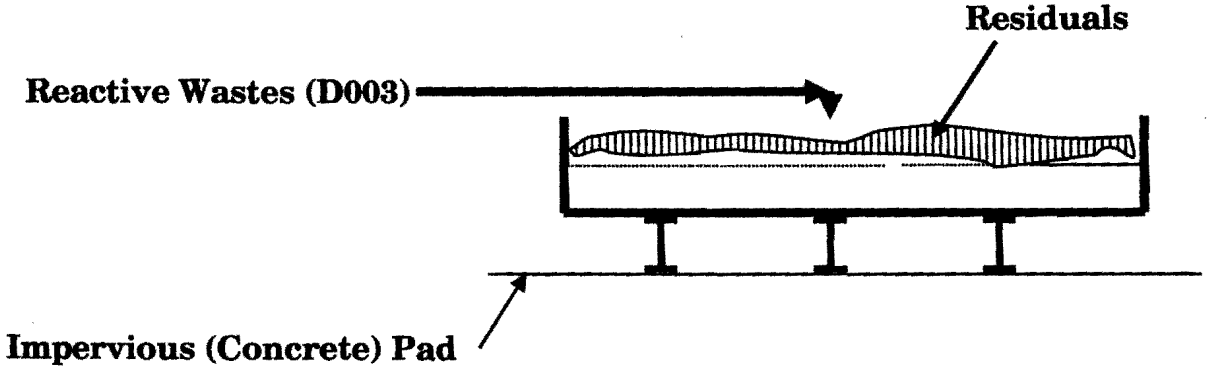


Figure 2 BURNING GROUNDS PROCESS



Conceptual Unit
(Cover removed for illustrative purposes)

TABLE 1-1
Burning Ground Wastes, Codes, Waste Analysis Parameters, LDR Requirements, and Re-evaluation Frequency

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Physical & Chemical Analyses + Frequency	Treatment	LDR Treatment Standards and Test Results
Waste Name: **P/E Bulk Waste – Aluminized Composite Propellants** Waste Description: Bulk propellant or explosive materials that go to the Burning Ground (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale: D003 – reactive (yellow waste ticket); per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	Deactivation and meet section §268.48 standards for underlying hazardous constituents
Waste Name: **P/E Bulk Waste – Non-Aluminized Composite** Waste Description: Bulk propellant or explosive materials that go to the Burning Ground (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale: D003 – reactive (yellow waste ticket); per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	As above
Waste Name: **P/E Bulk Waste –Hybrid** Waste Description: Bulk propellant or explosive materials that go to the Burning Grounds (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale: D003—reactive (yellow waste ticket); per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	As above

TABLE 1-1
Burning Ground Wastes, Codes, Waste Analysis Parameters, LDR Requirements, and Re-evaluation Frequency

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Physical & Chemical Analyses + Frequency	Treatment	LDR Treatment Standards and Test Results
Waste Name: **P/E Bulk Waste – Double Base Propellants** Waste Description: Bulk propellant or explosive materials that go to the Burning Ground (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale: D003 – reactive (yellow waste ticket), D008 – lead; per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003, D008	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	Deactivation plus Lead: 0.11 mg/kg. Toxicity characteristic leaching procedure (TCLP) for Nonwastewater and 0.69 mg/l for Wastewater and meet section 268.48 standards for underlying hazardous constituents
Waste Name: **P/E Bulk Waste – PBX Explosives** Waste Description: Bulk propellant or explosive materials that go to the Burning Ground (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale: D003 – reactive (yellow waste ticket) lead; per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	As above

TABLE 1-1
Burning Ground Wastes, Codes, Waste Analysis Parameters, LDR Requirements, and Re-evaluation Frequency

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Physical & Chemical Analyses + Frequency	Treatment	LDR Treatment Standards and Test Results
Waste Name: **P/E Acetone Squares** Waste Description: Sawdust mixed with acetone containing double base propellant from cleanup operations Waste Code Rationale: D003 - reactive (yellow waste ticket), D008—lead, per process knowledge (acetone squares are generated from the cleanup of double-base propellants containing lead);F003 - acetone; per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Equipment used for mixing and casting double base waste is soaked in acetone for cleaning. The acetone is reused as long as possible before being emptied into sawdust for disposal. Waste is soaked in sawdust to minimize likelihood of detonation during handling. Previous Sensitivity Data for these acetone squares indicate they are reactive, particularly if solvent is allowed to evaporate from the material.	D003, D008 F003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	Deactivation plus Acetone: 160 mg/kg Non Wastewater, 0.28 mg/l for Wastewater and meet section §268.48 standards for underlying hazardous constituents
Waste Name: **P/E Lacquer Squares** Waste Description: Sawdust squares containing nitrate ester lacquers, acetone, and triacetin Waste Code Rationale: D003 - reactive (yellow waste ticket), F003 – acetone; per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Waste liquid explosives are soaked in sawdust to minimize likelihood of detonation during handling. Previous Sensitivity data for these sawdust squares indicate they are reactive, particularly if solvent is allowed to evaporate from the material.	D003, F003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	Deactivation plus Acetone: 160 mg/kg Non Wastewater, 0.28 mg/l for Wastewater and meet section §268.48 standards for underlying hazardous constituents

TABLE 1-1
Burning Ground Wastes, Codes, Waste Analysis Parameters, LDR Requirements, and Re-evaluation Frequency

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Physical & Chemical Analyses + Frequency	Treatment	LDR Treatment Standards and Test Results
Treatment Residuals					
Waste Name: **Burning Ground (BG) Pan Ash** Waste Description: Ash and other residue from the open burning of waste propellants and explosives at the Burning Grounds Waste Code Rationale: D008 – lead; per testing Container Type: Open-head drum Management: Do not combine with other wastes Waste from the production of rocket motors, gas generators, and warheads exhibits the characteristic of reactivity. This material is treated by open burning at the Burning Grounds. Some propellants contain lead as a burn rate modifier. Therefore, the ash remaining after a burn may fail the TCLP for lead. The ash is removed from the pans periodically, placed in drums, and shipped offsite to a permitted treatment, storage, and disposal facility (TSDF).	D008	NWW	Code established based on testing. TCLP metals, dioxins, furans (no pesticides). Sample (representative grab) and re-evaluate only when material containerized for offsite disposal.	None. Containerized for occasional Offsite Disposal	Meet section §268.48 standards for underlying hazardous constituents. Test results above LDRs: TCLP Lead (60 mg/l); 2378 TCDF, 123478 HxCDF, 234678 HxCDF, 1234678 HpCDF, 1234678 HpCDD, OCDD, OCDF

NWW (Non-Wastewater)

UHCs: Analysis for selected waste streams is required for the underlying hazardous constituents found in 40 CFR 268.48. Analysis for dioxins, furans, and/or pesticides is excluded for selected wastes as indicated. Analysis for the solvent list (below) is required for selected waste streams in lieu of full UHC analysis.

Solvent List: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorobenzene, o-, m-, and p-cresol, cyclohexanone, o-dichlorobenzene, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, MEK, MIBK, nitrobenzene, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichlorofluoromethane, xylenes.

Sampling

Propellant/explosive wastes that are reactive (D003) and are managed based on process knowledge. No sampling will be performed.

Treatment residues such as burn pan ash be grab sampled.

Waste Reevaluation Frequencies

Waste parameters for P/E wastes treated at the Burning Ground and treatment residuals will be re-evaluated when:

- Process changes or other factors affecting waste identification have occurred.
- Regulations affecting the definition of hazardous wastes are promulgated that may result in an increase in the number or types of hazardous wastes managed at the facility, or regulations are promulgated affecting the management of existing wastes at the facility.

Special Procedure Requirements

Propellant wastes and explosive wastes are segregated by propellant or explosive types to ensure safe handling. Material segregation procedures are established by the site Safety Department. Additional special handling information, such as ticketing and container type, etc., is noted in Table 1-1.

Chain of Custody Procedure

Standardized Chain of Custody procedures will be employed.

Section 2—Containerized Wastes for Offsite Treatment and/or Disposal (Generator Only)

Processes and activities that generate wastes or are used to manage wastes at the facility

Wastes that are not viewed as RCRA reactive and articles contaminated with low levels of propellants or warhead materials are containerized and sent offsite for proper management. These non-D003 wastes include out of date lab chemicals, unused raw materials, paints, used oil, spent solvents, etc.

The manufacturing process is operated in a campaign mode. Specific products are not necessarily made throughout the year. Not all wastes are available on site at any given time.

As noted in Table 2-1, some wastes are subject to the Treatment Standards (§ 268.40, particularly (d) and (e)) and to UTS for UHC (§ 268.48).

Facility Physical Layout

Containers are stored in the existing Container Storage Buildings 366 and 810. Key information includes:

Building 366: Approx. 150 ft long by 50 ft wide by 20 ft at peak of roof. (All dimensions are approximate.) Open sided. Laid out in rows of separate bays each with secondary containment.

Building 810: Approx. 10 ft long by 12 ft wide by 10 ft at peak of roof. (All dimensions are approximate.) Totally enclosed. Double door front entry. Secondary containment. Insulated, ventilated, heated.

Waste Analysis Parameters

Table 2-1 contains information on the sources, applicable RCRA codes, and LDR category for containerized wastes. The physical and chemical parameters needed to support the waste code determination are noted in the column headed "Hazardous Waste Parameters." Waste codes for solvents are used to indicate the groups of the chemical species to analyze. Analyses needed to ascertain if there are Underlying Hazardous Constituents in the waste stream are identified in the column "UHCs to be analyzed." Streams for which testing is needed to confirm LDR requirements are noted with the term "Required" followed by the type of information needed. The chemicals to be included in the Solvent List are noted at the end of Table 2-1. Where testing data have indicated, the last column titled "Constituents Above LDRs", lists wastes exceeding the LDR Standards.

Analysis methods include those identified in Table 2-2.

Sampling

Grab sampling techniques will be used.

Waste Reevaluation Frequencies

Waste parameters will be re-evaluated when:

- Process changes or other factors affecting waste identification have occurred.
- Regulations affecting the definition of hazardous wastes are promulgated that may result in an increase in the number or types of hazardous wastes managed at the facility, or regulations are promulgated affecting the management of existing wastes at the facility.

To ensure the availability of a complete LDR baseline assessment, RCRA wastes will be analyzed for UHCs once when the waste is available from the manufacturing operations. Additional sampling and characterization will occur only if triggered by the process change or regulatory change provisions noted above.

Special Procedure Requirements

Material segregation procedures to avoid incompatibilities are established by the site Safety Department. Additional special handling information, such as ticketing and container type, etc., is noted in Table 2-1.

Chain of Custody Procedure

Standardized Chain of Custody procedures and documentation will be employed.

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Acetone** Waste Description: Waste acetone only Waste Code: D001 – ignitable, F003 – listed solvents Container Type: Closed-head drum Management: Acetone may also be added to Waste Flammable or Paint Related Waste as appropriate Acetone is used in the Composite Structures area parts cleaning in 5-gallon pails or smaller containers. Some parts are degreased while others are cleaned to remove uncured, non-regulated resins. No other solvents are added and the only materials that may be in the acetone are the non-regulated resins.	D001, F003, F005	NWW	Flash Point, F003, F005, TCLP metals	Solvent list (high total organic carbon (TOC))	Acetone, Toluene
Waste Name: **Actrel** Waste Description: Waste actrel only Waste Code: None Container Type: Closed-head drum Management: Actrel may also be added to Waste Flammable as appropriate Process knowledge may be used for the general waste stream. However, TCLP for heavy metals should be run since cases are grit blasted prior to being degreased. Actrel is used to degrease empty rocket motor cases after they have been grit blasted. The degreased cases then move on for surface coating. The Actrel is recycled in order to be reused for further degreasing rather than disposal after a single pass. When the material can no longer be cleaned for further use, it is drummed for disposal. No other solvents or materials are added to Waste Actrel drums.	None	NWW	Flash Point, Total metals	Total metals	None
Waste Name: **Alodine Liquid** Waste Description: Alodine rinsewater, possibly with concentrated alodine powder or liquid Waste Code: D007 – chromium Container Type: Closed-head drum Management: Do not combine with other wastes Aluminum rocket motor cases are sprayed with a concentrated solution (pH of ~2) of distilled water and Alodine Powder. The units then undergo a double rinse with distilled water to remove residue. The rinsewater which is collected for disposal has a pH between 5 and 7. Only Alodine rinsewater or small quantities of concentrated solution are added to drums. Alodine powder is known to contain hexavalent chromium and previous analytical testing has shown the solution to be above TCLP limit for chromium.	D007	NWW	Total metals	Required – 268.48 list (no dioxins / furans / pesticides)	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Alodine Solids** Waste Description: Rags, gloves, etc. contaminated with alodine solution Waste Code: D007 – chromium Container Type: Open-head drum Management: Do not combine with other wastes The alodine process described above also generates rags, gloves, and other solid debris contaminated with alodine solution. This is the only waste that is added to drums. Material is known from previous analytical testing to be above TCLP limit for chromium.	D007	NWW	TCLP metals	Required – 268.48 list (no dioxins / furans / pesticides)	-
Waste Name: **Ammonium Perchlorate (AP) Water** Waste Description: Water contaminated with AP from hopper cleaning, building cleaning etc Waste Code: Not regulated Container Type: Closed-head drum Management: Do not combine with other wastes Water is used to clean AP contaminated hoppers, grinding equipment and building surfaces in the AP grinding area. Only AP, ammonium nitrate or ammonium sulfate may be processed in this building and equipment. Therefore, any water used for cleaning would contain only AP, AN, or AS and ordinary building contamination (soil, grass, etc.). This water is kept separate from any machining wastewaters that may contain NG or other materials. Material does not contain any RCRA listed chemicals nor does it exhibit any characteristics of RCRA waste.	None	NA	None	None	None
Waste Name: **Asbestos** Waste Description: Double bagged, water wet asbestos only Waste Code: Not regulated Container Type: Open-head drum Management: Do not combine with other wastes Process generating the material is asbestos abatement projects. According to approved work plans, only asbestos and asbestos containing or contaminated items are added to bags or drums. Material is non-RCRA regulated.	None	NA	None	None	None
Waste Name: **Bondliner** Waste Description: Mixtures of any bondliner formulations containing organic or halogenated solvents (toluene, MEK, MIBK, ethyl acetate, xylene, etc.) Waste Code: D001 - ignitable; F003 & F005 - listed solvents Container Type: Closed-head drum Management: Do not combine with other wastes Process consists of mixing above solvents with rubber compounds to form an adhesive solution. The solution is then	F003, F005, D001, D007	NWW	Flash Point, F003, F005, Total metals	Solvent list (high TOC)	Toluene, MEK, Isobutanol

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
sprayed on the interior surface of empty rocket motor cases. Waste material consists of remaining solution and solvent used to cleanup spray equipment (toluene/ethanol solution and n-propyl bromide). Waste accumulation sheets that indicate the materials added to the drums are also maintained on this material.					
Waste Name: **Cadmium Liquid** Waste Description: Coolant contaminated with cadmium (from special operations) Waste Code: D006 - cadmium Container Type: Closed-head drum Management: Do not combine with other wastes The machining of cadmium-plated motor cases creates cadmium-contaminated coolant. Such machining is not routinely conducted. Any coolant from these machining operations is segregated from other waste streams and drummed to avoid cross-contamination of waste streams.	D006	NWW	pH, Flash Point, Total metals	Required – 268.48 list (no dioxins/ furans / pesticides)	-
Waste Name: **Cadmium Solids** Waste Description: Rags, gloves, etc. contaminated with cadmium (from special operations) Waste Code: D006 - cadmium Container Type: Open-head drum Management: Do not combine with other wastes Special operations such as machining or hand buffing of cadmium-plated motor cases creates cadmium contaminated solid debris (rags, personal protective equipment (PPE), etc.). Such special operations are not routinely conducted. Any wastes from these operations is segregated from other waste streams and drummed to avoid cross-contamination of waste streams.	D006	NWW	TCLP metals	Required – 268.48 list (no dioxins/furans/ pesticides)	-
Waste Name: **Chemlok/Water** Waste Description: Water based Chemloks only (805, 855, 8560) which may or may not be diluted with water Waste Code: Not regulated Container Type: Open-head drum Management: Do not combine with other wastes. ***Do NOT add solvent based Chemloks to this drum (they should go in Bondliner, Waste Flammable, or Paint Related Waste drums).*** Material is no longer disposed individually and is combined with bondliner and solvent-based Chemloks. Process knowledge will be used to determine the constituents when waste accumulation records are kept. Otherwise, testing of the waste will be conducted. Process involves spraying water based Chemlok material (adhesive solution) on the interior of empty rocket motor cases to improve the bond between the case and the propellant, which will be cast later. Waste material includes residuals from spraying, water from cleaning spray equipment, and out of shelf-life material.	None	NWW	Flash Point, F002, F003, F005, TCLP metals	Required – 268.48 list (no dioxins / furans / pesticides)	Toluene, Acetone, Methylene Chloride

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Coolant** Waste Description: Machining or maintenance coolants such as Cimcool, propylene glycol, etc. Waste Code: Not regulated Container Type: Closed-head drum Management: Do not combine with other wastes Water based coolants (non-regulated) are used during metal machining processes. The liquid may contain leachable levels of heavy metals depending on the particle size of the machining waste. Valenite VNT Valcool coolant must be kept segregated from other coolants due to metals content.	None	NWW	Flash Point, total metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: **Corrosives (Miscellaneous)** Waste Description: Oakite 32, 33, 132, acids, photo developing solutions, certain boiler chemicals Waste Code: D002 – corrosive Container Type: Closed-head poly-lined drum Management: Do not mix products without authorization	D002	NWW	pH, total metals	Required – 268.48 list (no dioxins / furans / pesticides)	-
Waste Name: **Cured Resins** Waste Description: Resins and plasticizer materials (such as Epon products or other epoxy type materials that contain no regulated chemicals) which have cured and hardened Waste Code: Not regulated Container Type: Open-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Material has enough contact with moisture to begin curing and hardening to form a solid during consolidation and storage. Waste accumulation sheets are also maintained for drums of this waste.	None	NWW if RCRA trig-gered.	None	Evaluate if RCRA triggered.	-
Waste Name: **Curing Agents** Waste Description: Materials used to cure resins or epoxies (such as DBTDA, DBTDL, Ethacure, ECA 100, Anchor 1115, Epon curatives (DETDA), etc.). Waste Code: Not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Waste accumulation sheets are also maintained for drums of this waste.	None	NWW if RCRA trig-gered.	Total metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: **ECA 100** Waste Description: ECA 100 only	None	NWW if RCRA	None	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Code: Not regulated Container Type: Closed-head drum Management: May be added to Curing Agents as appropriate. Material is unused and in its original container. Material Safety Data Sheet may be used to determine hazards.		trig-gered.			
Waste Name: Flammable Liquids (Miscellaneous) Waste Description: Various flammable liquids Waste Code: D001 – ignitable, F002, F003 & F005 - listed solvents Container Type: Closed-head drum Management: Large quantities of any specific material should be in drums for specific wastes (such as acetone). This should be used for small quantities of various solvents, solvent based Chemloks, etc. Process knowledge may be used to determine the constituents when the drum contains only one material from a specific process. However, material should be tested for organic compounds in order to determine which F listed wastes are contained in it. Wastes from individual buildings are known to contain fewer "D" codes and are characterized separately.	F002, F003, F005, D001, D006, D007, D010	NWW	Flash Point, F002, F003, F005, Total metals	Required - Solvent list (high TOC)	-
Waste Name: Flyash Waste Description: Ash from combustion of coal in boilers Waste Code: Not regulated Container Type: Roll-off Management: Shipment offsite for disposal Ash from the combustion of coal in the steam-generating boilers is accumulated in a roll-off to be shipped offsite for disposal.	None	NWW if RCRA trig-gered.	TCLP metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: Heptane Waste Description: Waste heptane only Waste Code: D001 – ignitable Container Type: Closed-head drum Management: Do not combine with other wastes Spent heptane is generated from the cleaning of composite propellant-contaminated mixing and casting equipment.	D001	NWW	Flash Point, TOTAL metals	Not required	-
Waste Name: HP990/Water Waste Description: Solution of water and HPS 990 Sealant from Bldg 368. Waste Code: Not regulated Container Type: Closed-head drum Management: Do not combine with other wastes Process involves the use of an ultraviolet cure epoxy resin. Composite wound units are placed in a pressurized resin	None	NWW if RCRA trig-gered.	pH, TOTAL metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
bath. The resin is used to seal the porous surface of the unit. The unit is then placed in a water bath under ultraviolet lights to cure. This water is drummed after a specific number of units have been cured to maximize curing efficiency. The only materials that may be present in the solution are water and a mix of the cured and uncured resin that would present no hazards.					
Waste Name: **Isocyanates** Waste Description: Waste isocyanates that are not part of a bondliner system, paint system, etc. This usually consists of off-spec materials for disposal. Most isocyanates are nonhazardous Waste Code: D001 – ignitable, F002 – chlorinated solvents Container Type: Closed-head drum Management: Do not combine with other wastes Materials are unused (residuals and expired shelf life) and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards and constituents. Waste accumulation sheets are also maintained for drums of this waste.	D001, F002	NWW	Flash Point, F002, F003, F005, TOTAL metals	Required - Solvent list (high TOC); TCLP Metals	-
Waste Name: **Isopropanol/Water Solution** Waste Description: Mixture of IPA and water from RDX drying operations Waste Code: D001 – ignitable or not regulated, depending on alcohol concentration Container Type: Closed-head drum Management: Do not combine with other wastes Process involves preparation of RDX for use. RDX is packaged wet with a water/isopropanol mixture (isopropanol is used as an anti-freeze agent). RDX must be dried and ground to the proper size prior to being mixed in propellant. The liquid is removed prior to grinding and drummed for disposal. RDX content of the liquid is too low to create the characteristic of reactivity.	D001 or None (See text to left)	NWW	Flash Point, TOTAL metals	Not required	-
Waste Name: **Lab Solvents** Waste Description: Mixed solvents from lab operations Waste Code: D001 - ignitable; F002, F003 & F005 - listed solvents Container Type: Closed-head drum Management: Solvents and acids/bases should be kept separate. Materials are residuals from analytical or research procedures. Material Safety Data Sheets may be used to determine hazards and constituents. Waste accumulation sheets are also maintained for drums of this waste.	F002, F003, F005, D001	NWW	Flash Point, F002, F003, F005	Solvent list (high TOC)	Toluene, Acetone, Isobutanol, Methylene Chloride

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Lacquer Premix with Methylene Chloride** Waste Description: Mixture of all materials for lacquers with other methylene chloride or nitrate esters Waste Code: F002 Container Type: Closed-head drum Management: Do not combine with other wastes In order to safely transport nitroglycerin (NG), a stabilizer mixture must be added. This mixture consists of a plasticizer and antioxidant compounds. None of the materials are regulated under RCRA. The mixture is added to dessicators (NG containers) prior to adding methylene chloride. The dessicators are then shipped to the NG manufacturing facility where the NG is added and the dessicators are returned to ABL. Premix may be made ahead of time and stored prior to adding the methylene chloride. Waste is generated from mix residuals or off spec batches. Any materials that contain methylene chloride or NG are segregated and treated separately.	D001, F002	NWW	Flash Point, F002, TCLP metals	Solvent list	Toluene, MEK, Methylene Chloride
Waste Name: **Lacquer Premix without Methylene Chloride** Waste Description: Mixture of all materials for lacquers other than methylene chloride or nitrate esters Waste Code: Not regulated Container Type: Closed-head drum Management: Small quantities of this material may be added to Uncured Resins drums. In order to safely transport nitroglycerin (NG), a stabilizer mixture must be added. This mixture consists of a plasticizer and antioxidant compounds. None of the materials are regulated under RCRA. The mixture is added to dessicators (NG containers) prior to adding methylene chloride. The dessicators are then shipped to the NG manufacturing facility where the NG is added and the dessicators are returned to ABL. Premix may be made ahead of time and stored prior to adding the methylene chloride. Waste is generated from mix residuals or off spec batches. Any materials that contain methylene chloride or NG are segregated and treated separately.	None	NWW if RCRA trig-gered.	Flash Point, F002, TOTAL metals	Required – 268.48 list (no dioxins / furans / pesticides)	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Lead Solids** Waste Description: Rags, gloves, bags, freezettes, etc. contaminated with lead salts or lead salt paste Waste Code: D008 - lead Container Type: Open-head drum Management: Large quantities of lead salts or lead salt paste should be drummed separately from the contaminated materials. Lead citrate powder is used to change the burn rate properties of NG based propellants. In order to use the material, it must be ground to the proper size and then incorporated into a paste, which is used during propellant mixing. A paste is utilized in order to obtain a homogenous mixture without lumps. The primary generation of this waste is from the lead citrate processing building (384). The dried lead citrate is added to a grinding unit and heptane is added. The material is then ground to correct particle size and the heptane is evaporated off and recovered for reuse. The dried material is then mixed with a plasticizer (polyglycol adipate, or PGA) and carbon black. The mixed material is run through a roll mill to remove any lumps. Additional waste is generated in the propellant mixing areas when paste containers are emptied into propellant mixes. Waste materials include rags, paint paddles, PPE, tape, containers, etc. that become contaminated with the lead or lead paste during the process.	D008	NWW	None	Required – 268.48 list (no dioxins / furans / pesticides)	UHC: Bis (2-ethyl hexyl) phthalate
Waste Name: **Methylene Chloride** Waste Description: Waste methylene chloride only. Waste Code: F002 - chlorinated solvent Container Type: Closed-head drum Management: Methylene chloride that is reclaimed from Bldg 352 should be stored in poly lined closed-head drums in case of water contamination from the recovery system Bldg 352 Process - NG with methylene chloride is received in dessicators. The methylene chloride must be stripped from the NG before it can be used to manufacture propellant. Air is bubbled through the liquid in the dessicators to drive off the methylene chloride, which is much more volatile than NG. The methylene chloride vapor is captured and condensed to control air emissions. The solvent that is condensed is collected and reused in empty dessicators that are returned to the NG supplier for the next shipment. Solvent may be recirculated through the system to remove moisture. If moisture level is too high and cannot be reduced, the material is disposed of.	F002	NWW	None	Solvent list	Methylene Chloride
Waste Name: **Mold Release Agents (MS143/MS145)** Waste Description: Waste halogenated solvent-based mold release agents only. Waste Code: F002 - chlorinated solvent Container Type: Closed-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Waste accumulation sheets are also maintained for drums of this waste.	F002	NW W	None	Required - Solvent list	-
Waste Name: **Oakite Solution - Acidic** Waste Description: Oakite 32, 33, 132 solutions with a pH of 1 to 6	D002	NWW		Required – 268.48 list	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Code: D002 – corrosive Container Type: Closed-head poly-lined drum Management: Do not mix products without authorization Pipe shop and mechanics use acidic solution to clean parts. Only material that may be introduced into the waste is dirt and oils. Material Safety Data Sheets may be used to determine hazards.					
Waste Name: Oakite Solution – Alkaline Waste Description: Oakite Enprox and Inpro-Tect solutions with a pH of 8-14 Waste Code: D002 – corrosive Container Type: Closed-head poly-lined drum Management: Do not mix products without authorization Metal fabrication area uses alkaline solution to clean parts. Only material that may be introduced into the waste is dirt and oils. Material Safety Data Sheets may be used to determine hazards.	D002	NWW	None	Required – 268.48 list	-
Waste Name: Oil Waste Description: Waste motor oil, fuel oil, and hydraulic oils Waste Code: Not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Because shops also use kerosene, varsol, or other solvents, material should be tested for solvents that may be inadvertently added to the drum with the oils.	None	NWW if RCRA trig-gered.	Flash Point, TOTAL metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: Oil Cleanup Debris Waste Description: Rags, pads, coveralls, soil, absorbent, etc. which is collected from any oil spills Waste Code: Not regulated Container Type: Open-head drum Management: Do not mix products without authorization Waste is generated when fuel oil or hydraulic oil spills are cleaned up. The only materials introduced into the oil stream are adsorbents (kitty litter, etc.), rags, PPE, and other cleanup materials.	None	NWW if RCRA trig-gered.	TCLP metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Oil Sludge** Waste Description: Thick residual oil material that settles out of oil in tanks, etc. Usually has to be physically cleaned out (doesn't drain) Waste Code: not regulated Container Type: Open-head drum Management: Do not mix products without authorization Because shops also use kerosene, varsol, or other solvents, material should be tested for solvents that may be inadvertently added to the drum with the oils.	None	NWW if RCRA trig-gered.	TCLP metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: **Oil/Coolant** Waste Description: Mixture of waste oil and coolant Waste Code: not regulated Container Type: Closed-head drum Management: Preferred method is to keep oils and coolants separate if possible Because shops also use kerosene, varsol, or other solvents, material should be for tested solvents that may be inadvertently added to the drum with the oils.	None	NWW if RCRA trig-gered.	Flash Point, TOTAL metals if triggered by process or regulatory changes	Evaluate if RCRA triggered.	-
Waste Name: **Oil/Solvent** Waste Description: Waste oil of any type that may have been mixed with cleanup solvents such as varsol, kerosene, etc. (solvent may make material flammable) Waste Code: not regulated but potentially D001 - ignitable Container Type: Closed-head drum Management: Do not mix products without authorization Because shops also use kerosene, varsol, or other solvents, material should be tested at least annually to detect solvents that may be inadvertently added to the drum with the oils.	D001	NWW if RCRA trig-gered.	Flash Point, TOTAL metals, if triggered by process or regulatory changes	Evaluate if RCRA triggered.	Flash Point tested at 140 °F
Waste Name: **Oily Water** Waste Description: Aqueous solution with oil or oily machine coolants Waste Code: not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Material is generated primarily from oil/water separator systems for compressors. No other materials should be introduced into the wastestream.	None	NWW if RCRA trig-gered.	Flash Point, TOTAL metals if triggered by process or regulatory changes	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **P/E Contaminated Waste - Composite** Waste Description: Rags, spatulas, material containers, etc. that are contaminated with composite propellant or explosives, but the total quantity of P/E does not exceed approximately 10%, by weight. (Includes heptane contaminated sawdust) Waste Code: Not regulated (blue waste ticket) Container Type: Conductive or anti-static plastic bags that are loaded into cubic yard boxes Management: These materials must be shipped offsite for treatment and disposal Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and must be cleaned out before the mixer may be used again. These materials do not contain enough propellant contamination to meet the definition of reactivity. Composite propellant does not contain any RCRA listed wastes, nor is the heptane used for cleaning listed. Waste logs are maintained for each bag and box of waste generated.	None	NWW if RCRA trig-gered.	None	Evaluate if RCRA triggered.	UHC: TCLP metals below UTS
Waste Name: **P/E Contaminated Waste - Double Base** Waste Description: Rags, spatulas, material containers, etc. which are contaminated with double base propellant or explosives, but the total quantity of P/E does not exceed approximately 10% by weight. Waste Code: D008 – lead, F003 - acetone (yellow waste ticket), F005 (Toluene and MEK may be used for cleanup of these propellants) Container Type: Conductive or anti-static plastic bags that are loaded into cubic yard boxes Management: These materials must be shipped offsite for treatment and disposal Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and must be cleaned out before the mixer may be used again. These materials do not contain enough propellant contamination to meet the definition of reactivity. Double base propellant contains lead compounds (D008) and uses acetone (F003 listed) for cleanup. Waste logs are maintained for each bag and box of waste generated.	D008, F003, F005	NWW	None	268.48 list (no dioxins / furans / pesticides)	Acetone, MEK
Waste Name: **P/E Contaminated Waste - Hybrid** Waste Description: Rags, spatulas, material containers, etc. that are contaminated with hybrid propellant or explosives, but the total quantity of P/E does not exceed approximately 10% by weight Waste Code: F003 - acetone (yellow waste ticket for nitrate ester based hybrids) or not regulated (blue waste ticket for AP-based hybrids), F005 (Toluene and MEK may be used for cleanup of these propellants) Container Type: Conductive or anti-static plastic bags that are loaded into cubic yard boxes Management: These materials must be shipped offsite for treatment and disposal Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and must be cleaned out before the mixer may be used again. These materials do not contain enough propellant contamination to meet the definition of reactivity. Hybrid propellant does not contain any RCRA listed wastes. Composite based hybrids use heptane (which is unlisted) for cleaning. Double base hybrids use acetone (F003 listed) for cleaning. Waste logs are maintained for each bag and box of waste generated.	F003 F005	NWW	None	Required – 268.48 list (no dioxins / furans / pesticides)	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Paint Related Waste Material (liquid)** Waste Description: Paints (1 or 2 part types, including epoxies, polyurethanes, and other topcoats, primers, etc.), thinners (including solvents used for thinning which may not be a trade name thinner product) Waste Code: D001 - ignitable; D007 & D008 - chromium or lead ; F003 & F005 - listed solvents Container Type: Closed-head drum Management: Paint is mixed and sprayed on exterior surface of either empty or propellant containing rocket motor cases. Waste consists of either residual paint that was mixed and not needed and off-spec or out of shelf-life paints. Material Safety Data Sheets may be used to determine hazards. Waste accumulation sheets that indicate the materials added to the drums are also maintained on this material.	F003, F005, D001, D007, D008	NWW	Flash Point, F003, F005, TOTAL metals	Required – 268.48 list (no dioxins / furans / pesticides)	Toluene, Acetone, MEK TCLP metals not tested.
Waste Name: **Paint Related Waste Material (solid)** Waste Description: Paint booth filters, rags, other solid items such as mixing cups, etc. which are contaminated with paint Waste Code: D007 & D008 - chromium or lead ; F003 & F005 - listed solvents Container Type: Open-head drum Management: Mixing cups which have been wiped clean or rinsed clean with solvent may be disposed of in ordinary trash Paint is mixed and sprayed on exterior surface of either empty or propellant containing rocket motor cases. Waste consists of rags, PPE, containers, and used paint booth filters contaminated with paint. The debris would be contaminated with the same materials that have been added to the liquid paint waste drums. Material Safety Data Sheets may be used to determine hazards.	F003, F005, D007, D008	NWW	F003, F005, TCLP metals	Required – 268.48 list (no dioxins / furans / pesticides)	Toluene, MEK, Ethylbenzene, Xylenes, 1,2-Dichloro-ethane, Naphthalene, Di-n-butyl phthalate,. TCLP for Cr needed.
Waste Name: **Solvent-Contaminated Rags** Description: Rags contaminated with solvents from composite structure clean-up Waste Code: F003 & F005 – solvents Container Type: Plastic bags that are loaded into cubic yard boxes Management: These materials must be shipped offsite for treatment and disposal Rags are generated from hand cleaning operations of winding equipment and solvents may include isopropyl alcohol, toluene, MEK, acetone, or other F003, F005, or non-listed solvents.	F003, F005	NWW	F003, F005, TCLP metals if triggered by process or regulatory changes	Required – Solvent List	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Styrene & Inhibitors** Waste Description: Waste styrene monomer, or styrene mixed with cobalt octoate, Santoflex, and MEKP Waste Code: Not regulated Container Type: Closed-head drum Management: Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Waste accumulation sheets are maintained for drums of this waste.	D001	NWW if RCRA trig-gered.	None	Evaluate if RCRA triggered.	-
Waste Name: **Trichloroethylene** Waste Description: Waste trichloroethylene only Waste Code: F002 - chlorinated solvent Container Type: Closed-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Waste accumulation sheets are also maintained for drums of this waste.	F002	NWW	Flash Point, F003, F005, TOTAL metals	Required - Solvent list	-
Waste Name: **Tumbler Water** Waste Description: Water containing detergent, cutting oils, and sediment from aluminum deburring operations Waste Code: Not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Material consists of an aqueous detergent solution that is used in tumbling machines to de-burr metal parts. Used tumbler water is accumulated in a vertical 3000-gallon polyethylene tank or drums dependent upon production needs. The waste is removed from the tank or drums by vacuum truck to be transported to an industrial wastewater pre-treatment facility.	None	NWW if RCRA trig-gered.	TOTAL metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: **Uncured Resins** Waste Description: Plasticizer or resinous materials such as R45M, Rucoflex, etc. that are still in a liquid form Waste Code: Not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Material may have had enough contact with moisture to begin curing and hardening to form a solid during consolidation and storage. Waste accumulation sheets are also maintained for drums of this waste.	None	NWW if RCRA trig-gered.	Flash Point if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Used Grit** Waste Description: Used grit-blasting material Waste Code: Not regulated or D006, D007, D008 Container Type: Open-head drum Management: If any special blasting is conducted (such as stripping cad-plated cases, etc.) grit is held, sampled, and analyzed prior to disposal. Various types of metal cases are grit-blasted in different areas on site. Previous analysis of grit has not shown any metals levels close to the limits.	D006, D007, D008	NWW	TCLP metals	Required – 268.48 list (no dioxins / furans / pesticides)	-
Waste Name: **Valenite VNT Valcool Coolant** Waste Description: Used Valcool coolant from broaching machine operations Waste Code: D007– chromium, D008- lead; F003-acetone; D001 (due to acetone) Container Type: Closed-head drum Management: Segregate from other coolants in closed head drums Valcool coolant from broaching machines picks up chromium and lead from machining operations and must be segregated from other coolants and treated separately. Drums are sent offsite from disposal.	D001, D007, D008, F003	NWW	nONE	Required – 268.48 list (no dioxins / furans / pesticides)	-
Waste Name: **Varsol** Waste Description: Waste varsol only Waste Code: D001 - ignitable Container Type: Closed-head drum Management: Varsol may be added to a Waste Flammable drum as appropriate. Maintenance shops use varsol to clean oily parts. Only material that may be introduced into the waste is dirt and oils. Material Safety Data Sheets may be used to determine hazards.	D001	NWW	Flash Point, TOTAL metals	Not required	-
Waste Name: **Versatec Developer Solution** Waste Description: Solution from drafting equipment only Waste Code: D001 - ignitable Container Type: Closed-head drum Management: Versatec may be added to a Waste Flammable drum as appropriate. Drafting department equipment uses Versatec Developer Solution for printing drawings. Residual material is consolidated from its original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards.	D001	NWW	nONE	Not required	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Watershield** Waste Description: Watershield (with or without water added) only Waste Code: D001 – ignitable, D006 – Chromium, D007 - Cadmium Container Type: Closed-head drum Management: NO other mold release materials shall be added to this material. Water based mold release is applied to parts in a dip tank. The parts are then oven dried to remove any moisture. The mold release prevents propellant from sticking to the mold parts so they can be removed once the propellant is cured. Residual or off spec material is consolidated from its original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards.	D001, D006, D007	NWW	NONE.	Evaluate if RCRA triggered.	Chromium, Cadmium

WW = (Wastewater), **NWW** (Non-Wastewater), **NA** = Not Applicable

GENERAL NOTE: Some entries for specific materials state that they may be added to another drum (Waste Flammable, Bondliner, etc.) as appropriate. This means there is only a small quantity of the material to be disposed of and there is no reason to have an entire drum in that area for that one material. For example, a painting area has a quart of acetone to dispose of. They have a Waste Paint drum, but no acetone drum since this is not a usual occurrence. Therefore, they may add the acetone to the Waste Paint drum since acetone is a constituent of the paint waste.

Note 1: **Required** = Testing to be accomplished.

Note 2: **TS** = Treatment Standard, **UTS** = Universal Treatment Standard

UHCs: Analysis for selected waste streams is required for the underlying hazardous constituents found in 40 CFR 268.48. Analysis for dioxins, furans, and/or pesticides is excluded for selected wastes as indicated. Analysis for the solvent list (below) is required for selected waste streams in lieu of full UHC analysis.

Solvent List: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorobenzene, o-, m-, and p-cresol, cyclohexanone, o-dichlorobenzene, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, MEK, MIBK, nitrobenzene, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichlorofluoromethane, xylenes

TABLE 2-2
Analytical Methods

Waste Code	Parameters	Analytical Methods
D001	Flashpoint	ASTM D93-99a or ASTM D3278-96e1
D002	pH	SW-846 1110 or SW-846 9040B
D004 to D043	TCLP	SW-846 1311
D004	Arsenic	SW-846 6010B, SW-846 7060A, or SW-846 7061A
D005	Barium	SW-846 6010B, SW-846 7080A, or SW-846 7081
D006	Cadmium	SW-846 6010B, SW-846 7130, or SW-846 7131A
D007	Chromium	SW-846 6010B, SW-846 7190, or SW-846 7191
D008	Lead	SW-846 6010B, SW-846 7420, or SW-846 7421
D009	Mercury	SW-846 7470A or SW-846 7472
D010	Selenium	SW-846 6010B, SW-846 7740, or SW-846 7741A
D011	Silver	SW-846 6010B, SW-846 7760A, or SW-846 7761
D018	Benzene	SW-846 8021B or SW-846 8260B
D019	Carbon tetrachloride	SW-846 8021B or SW-846 8260B
D021	Chlorobenzene	SW-846 8021B or SW-846 8260B
D022	Chloroform	SW-846 8021B or SW-846 8260B
D023	o-Cresol	SW-846 8041 or SW-846 8270C
D024	m-Cresol	SW-846 8041 or SW-846 8270C
D025	p-Cresol	SW-846 8041 or SW-846 8270C
D026	Cresol	SW-846 8041 or SW-846 8270C
D027	1,4-Dichlorobenzene	SW-846 8041 or SW-846 8270C
D028	1,2-Dichloroethane	SW-846 8021B or SW-846 8260B
D029	1,1-Dichloroethene	SW-846 8021B or SW-846 8260B
D030	2,4-Dinitrotoluene	SW-846 8091 or SW-846 8270C
D032	Hexachlorobenzene	SW-846 8081A or SW-846 8270C
D035	Methyl ethyl ketone	SW-846 8021B or SW-846 8260B
D036	Nitrobenzene	SW-846 8091 or SW-846 8270C
D038	Pyridine	SW-846 8091 or SW-846 8270C
D039	Tetrachloroethene	SW-846 8021B or SW-846 8260B
D040	Trichloroethene	SW-846 8021B or SW-846 8260B
D041	2,4,5-Trichlorophenol	SW-846 8041 or SW-846 8270C
D042	2,4,6-Trichlorophenol	SW-846 8041 or SW-846 8270C
D043	Vinyl chloride	SW-846 8021B or SW-846 8260B
F001	VOCs	SW-846 8021B or SW-846 8260B
F002	VOCs	SW-846 8021B or SW-846 8260B
F003	VOCs	SW-846 8021B or SW-846 8260B
F005	VOCs	SW-846 8021B or SW-846 8260B

References

1. USEPA. *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes: A Guidance Manual.* USEPA OSWER 9938.4-03. April 1994.

Section F
Procedures to Prevent Hazards

Inspections

SECTION F

Procedures to Prevent Hazards

This section contains the information required to demonstrate compliance with the preparedness and prevention requirements in 40 CFR 264 Subpart C and the inspection requirements in 40 CFR 264 Subpart I for containers and in 40 CFR 264 Subpart X for miscellaneous units.

F-1 Security [40 CFR 264.14 and 270.14(b)(4)]

ABL is a government-owned defense facility, operated by ATK. Security controls and procedures play a significant role in the operation of ABL, because many operations require constant protection of Department of the Navy classified material and ATK proprietary materials. Security personnel are responsible for controlling access to the facility and for implementing security and safety requirements issued by the Department of the Navy and ATK. Security personnel are also responsible for providing fire protection and emergency services.

F-1a Security Procedures and Equipment [40 CFR 270.14(b)(4) and 264.14]

F-1a(1) 24-Hour Surveillance [40 CFR 264.14(b)(1)]

Alliant Techsystems Operations LLC fulfills the security procedures and equipment requirements through the use of a barrier and other methods to control entry. These facilities will be maintained for the life of the RCRA permit.

At the facility's discretion for operational security purposes, security guards and firefighting guards are on duty 24 hours a day, 7 days a week. Guards are posted at the main plant entrance to control access by personnel and to prevent unauthorized entry to the facility. Other access gates are either identification card access or controlled remotely. Guards patrol and monitor the entire ABL facility, including the Burning Grounds and the hazardous waste storage unit. Lighting is provided around the perimeter and throughout the operating areas. Remotely operated video cameras are mounted in strategic locations throughout the facility. The cameras are operated from the main security building. The video camera surveillance system allows the guards to monitor virtually all portions of the plant. This surveillance system is implemented at the discretion of the facility owner and operator and is not submitted to fulfill the security procedures and equipment requirements for RCRA permitting.

F-1a(2)(a) Barrier [40 CFR 264.14(b)(2)(i)]

A 7-ft-high chain-link fence with a 1-ft top guard consisting of three strands of twisted double-strand barbed wire surrounds the active portion of the facility. Locked gates and attendants control entry through the fence. This fence meets the security requirements of 40 CFR 264.14(b)(2) for an artificial barrier. Both the Burning Grounds and the hazardous waste storage unit are within the fenced perimeter of the facility. The Burning Grounds is also surrounded by its own 7-ft-high chain-link fence.

F-1a(2)(b) Means to Control Entry [40 CFR 264.14(b)(2)(ii)]

Entry to the active portion of the facility is through gates controlled by identification card access and can be remotely controlled by security guards. All employees must display their security badges upon entry to the facility. All visitors and contractors must sign in with the guards and receive and wear an appropriately classed badge. An ABL employee must escort visitors. Unescorted contractors working onsite receive a security and safety briefing, are required to read and sign a "Contractor Safety and Security" handbook, and are given instructions on specific travel routes to and from their job sites. ABL personnel are trained to constantly observe work areas and report all emergencies, unauthorized or unidentified personnel, or anything unusual to the Security Office.

F-1a(3) Warning Signs [40 CFR 264.14(c)]

Signs are placed at 100-ft intervals along the facility's perimeter fence. The signs read "Danger, Keep Out, US Government Reservation, Trespassers will be Prosecuted to the Full Extent of the Law." Signs that describe the "Conditions of Entry" for personnel are posted at the main gate. Signs posted around the Burning Grounds and the hazardous waste storage unit read "Danger, Unauthorized Personnel Keep Out." Signs are legible from at least 25 ft. The signs are written in English. There is no other predominant language in the area surrounding ABL.

F-1b Waiver [40 CFR 264.14(a)]

A waiver from the security requirements of 40 CFR 264.14(a)(1) and (2) is not sought for either the Burning Grounds or the hazardous waste storage buildings.

F-2 Inspection Schedule [40 CFR 264.15, 270.14(b)(5)]

F-2a General Inspection Requirements [40 CFR 270.14(b)(5), 264.15(a) and (b), and 264.33]

The hazardous waste storage unit and the Burning Grounds are inspected for malfunctions and deterioration, operator errors, and discharges. Inspections are conducted in accordance with written SOPs.

All facility communications, emergency alerting system and fire protection, spill control, and decontamination equipment are inspected, tested, and maintained as necessary to assure their proper operation in time of emergency. Where applicable, equipment is inspected to recognized standards. Records and operation logs are maintained for each inspection performed.

Inspection records for both the Burning Grounds and the hazardous waste storage unit are maintained in the Environmental Department. The form includes date, time, inspector's name and signature, observations, and remedial actions taken. Records are kept for 3 years.

A copy of the inspection form for the Burning Grounds is provided in Figure F-1. The frequency of inspection items is indicated on the inspection form.

A copy of the inspection form for the hazardous waste storage units is provided in Figure F-2. The unit is inspected weekly by operating personnel.

F-2a(1) Types of Problems Addressed at the Inspection [40 CFR 264.15(b)(3)]

Burning Grounds

The following types of problems are looked for during inspections of the Burning Grounds:

Burning Pans (before collecting waste)
- Erosion of soil in burn pan
- Foreign objects or debris
- Tall grass or weeds
- Pan temperature
- Pan integrity

Personal Protection (before use)
- Flame resistant coveralls
- Conductive shoes
- Safety glasses

Fire Protection (before use)
- Rubber tamper
- Water hoses
- Two-way communication

Ignition Items (before use)
- Electric matches
- Firing circuit continuity check
- Ignition Control System

Traffic Control (before ignition)
- Gates closed
- Signs posted

Fire Control (after completion of burn)
- Grass fires

Examples of possible problems and remedial actions for the Burning Grounds are presented below.

Problem	Remedial Action
Erosion of burning pan	Submit Work Order to Maintenance for repair
Foreign objects or debris in pan	Remove and dispose
Tall weeds or grass	Contact Grounds Crew and have grass cut
Missing fire protection item	Procure from Stores before proceeding
Missing ignition system item	Procure from Stores before proceeding
Electric match not properly connected to firing circuit	Repair connection before igniting pans
Gates open or signs not posted	Close gates and post signs before burning
Weather conditions unacceptable (See Section D-8)	Postpone bum until weather conditions acceptable

Building 366 and Building 810 Container Storage

The types of problems looked for during inspections of the Building 366 and Building 810 container storage area are listed below:

Containers and Containment Cells

- Absent or illegible labels
- Leaking, bulging, rusted, or distorted drums
- Absence of drum bungs or closure rings
- Accumulated residue, water, or foreign material in cell containment

Structural Equipment and Operating Area

- Roof leaks, physical deterioration of structure
- Cracks or deterioration of concrete base or cell members
- Absent or illegible warning signs
- General housekeeping and cleanliness

Examples of possible problems and remedial actions for the hazardous waste storage unit are presented below.

Problem	Remedial Action
Missing or illegible label	Affix a proper legible label
Leaking drum	Transfer material to new drum or provide over pack.
Missing or insecure bung or lid	Install and tighten bung or lid
Distorted or rusted drum	Notify supervision. Transfer material if conditions affect the structural integrity of the drum.
Foreign residues in diked area disposal	Clean up residue and place in container for disposal

F-2a(2) Frequency of Inspections [40 CFR 264.15(b)(4)]

Burning Grounds

Burning Grounds facilities and equipment are inspected according to the frequencies listed below.

Burn Pans

Burn pans are inspected before waste is collected from the less-than-90-day storage areas to ensure that the pans are safe to receive waste.

Firing Circuit

The firing circuit is checked with a circuit tester before waste is collected to ensure that the control panel is short-circuited. This ensures that the circuit does not have a voltage potential between the two lines of the firing circuit, which in turn prevents premature firing of the electric match when the match is connected to the firing circuit.

Protective Equipment

PPE is inspected before each use.

Fire Protection

Fire protection equipment is inspected before each use.

Ignition Items

The firing circuit is checked before each burn using a circuit tester to ensure that the electric match is properly connected to the firing circuit before burning is initiated. Electric matches and the ignition control system are inspected to ensure they are in good condition.

Traffic Control

Traffic control items (gates closed and signs posted) are inspected before each burn to ensure that unauthorized personnel do not enter the unit during a burn event.

Fire Control

The unit is inspected after each burn event to ensure that no grass fires are burning in or around the Burning Grounds.

Building 366 Container Storage

This building is inspected weekly when it contains wastes.

Monitoring Equipment

No permanent monitoring equipment is installed at the container storage building. In the event of a leak or other incident, portable equipment (e.g., air pumps, Draeger tubes, oxygen meters, or flammable vapor meters) is available from the Safety and Environmental Department. All such monitoring equipment is inspected and calibrated before use and maintained in accordance with the manufacturer's recommendations.

Areas Subject to Spills

The loading/unloading area is the center aisle driveway at the container storage building. This area is inspected after each material transfer to or from the area. Containers and containment cells are inspected weekly by operations personnel.

Operating and Structural Equipment

The concrete floor is checked visually during the weekly container area inspection. Forklifts, vehicles, and material transfer equipment (not dedicated to container area use) are on an annual preventive maintenance schedule.

Building 810

This building is inspected weekly when it contains waste.

Monitoring Equipment

There is no permanent monitoring equipment installed at the Building 810 container storage building. In the event of a leak or other incident, portable equipment (e.g., air pumps, Draeger tubes, oxygen meters, or flammable vapor meters) is available from the Safety and Environmental Department. All such monitoring equipment is inspected and calibrated before use and maintained in accordance with the manufacturer's recommendations.

Areas Subject to Spills

Loading and unloading of waste occurs at the front door. This area is inspected after each material transfer to or from the area. Containers and containment cells are inspected weekly by operations personnel.

Operating and Structural Equipment

The concrete floor will be checked visually during the weekly container area inspection.

F-2b Specific Process Inspection Requirements [40 CFR 270.14(b)(4) and 264.15(b)(4)]

F-2b(1) Container Inspection [40 CFR 264.174]

As discussed in Section F-2a, the containers and the container storage area are inspected weekly for leaks, spills, and deterioration caused by corrosion and other factors.

F-2b(2) Tanks System Inspection [40 CFR 264.195]

Not applicable.

F-2b(3) Waste Pile Inspection [40 CFR 270.18(d), 264.254(b)]

Not applicable.

F-2b(4) Surface Impoundment Inspection [40 CFR 270.17(c), 264.226(b), 264.226(c)]

Not applicable.

F-2b(5)(a) Incinerator and Associated Equipment [40 CFR 264.347(b)]

Not applicable.

F-2b(6) Landfill Inspection [40 CFR 264.303(b)]

Not applicable.

F-2b(7) Land Treatment Facility Inspection [40 CFR 264.273(g)]

Not applicable.

F-2b(8) Miscellaneous Unit Inspections [40 CFR 270.14(b)(5) and 264.602]

The general inspection requirements described in Section F-2a ensure compliance with the environmental performance standards discussed in Section D-8.

F-2b(9) Boilers and Industrial Furnaces (BIF) Inspections [40 CFR 264.15, 266.102(a)(2)(ii), 266.102(e)(8), 266.111(e)(3)]

Not applicable.

F-2b(10) Containment Building Inspection [40 CFR 264.1101(c), 264.1101(c)(4)]

Not applicable.

F-3 Waiver or Documentation of Preparedness and Prevention Requirements [40 CFR 270.14(b) and 264.32(a) through 264.32(d)]

A waiver from the preparedness and prevention requirements for the Burning Grounds and the hazardous waste storage units is not sought.

F-3a Equipment Requirements [40 CFR 270.14(b) and 264.32]

F-3a(1) Internal Communications and Alarms System [40 CFR 264.32(a)]

ABL provides internal communications by the following methods: telephones (cellular and fixed), and the plant emergency alerting system. The internal communication system can be utilized to summon the plant security force, fire brigade, supervision, and the plant spill response team.

Burning Grounds

Under normal circumstances, no personnel (other than the Burning Grounds operator) are allowed to perform work activities at the Burning Grounds when waste is present on the burn pans. Grass mowing and other maintenance activities are performed only when the burn pans are empty of untreated reactive wastes. The Burning Grounds operator carries a cellular telephone at all times while performing duties at the Burning Grounds. If other personnel must perform duties within the Burning Grounds alone while waste is present, a cellular telephone is carried. No burning occurs while personnel are within the fenced Burning Grounds.

Building 366 Container Storage

Personnel performing duties at the hazardous waste storage unit have cell phones in their possession. Security personnel with two-way radios are on duty 24 hours per day, 7 days per week to respond to emergencies. If any personnel must perform duties alone at the hazardous waste storage unit, a cellular telephone is carried.

Building 810 Container Storage

The provisions for internal communications and alarms systems at the Building 810 container storage unit are the same as those for Building 366.

F-3a(2) External Communications [40 CFR 264.32(b)]

Only ABL personnel are typically allowed on site in response to emergencies. If outside assistance is needed, communication is made by telephone through the regional Civil Defense office by dialing 911. Security and plant protection would use the telephone to contact ambulances.

F-3a(3) Emergency Equipment [40 CFR 264.32(c)]

Portable fire extinguishers are carried in all explosive-carrying vehicles and are placed strategically throughout the plant operating areas. ABL has a spill response vehicle to respond to any and all spills on location. It is equipped with the following:

Spill Kits: drain blocker, absorbent pads and booms for non-aggressive materials; oil pads and booms; pads and booms for acidic and caustic materials.

Respiratory Equipment: half- and full-face respirators with cartridges, self-contained breathing apparatus (SCBA) units with spare bottles.

Personal Protective Equipment: full complement of Level B and Level C suits.

Spill Prevention Materials: drum bungs (small and large), patch putty, sealant sticks, and puncture repair kit.

Medical Supplies: fully stocked medical "jump kit," oxygen cylinder and cannulas, sterile solutions, eyewash bottles.

Material Transfer Supplies: scoops, funnels (large and small), drum pumps, spatulas, and drum funnels.

Cleanup Supplies: bucket, detergent, shovel, water hose, broom, dustpan, decontamination pools.

Burning Grounds

The following emergency equipment is maintained at the Burning Grounds:

- Water hose
- Plastic rakes
- Rubber fire tampers

Building 366 Container Storage

The following spill response equipment is stored at the Building 366 hazardous waste storage unit:

- Overpack drum
- Oil absorbent pads
- Absorbent

Building 810 Container Storage

The following spill response equipment will be stored at the Building 810 hazardous waste container storage unit:

- Overpack drum
- Absorbent

F-3a(4) Water for Fire Control [40 CFR 264.32(d)]

Water is available in adequate volumes and pressures to supply fire fighting water streams. The reservoir capacity is 1.4 million gallons and is located to give hydrant pressures of 125 psi.

Burning Grounds

Four yard hydrants with water hoses are located within the Burning Grounds. Water is used to fight grass fires and to cool burn pans before waste is placed on the pans, when less than 24 hours have elapsed since the previous burn. Under no circumstances will attempts be made to extinguish fires involving explosives.

Building 366 Container Storage

A fire hydrant is located approximately 100 ft from this building.

Building 810 Container Storage

A fire hydrant is located approximately 80 ft from this building.

F-3b Aisle Space Requirement [40 CFR 264.35]

Burning Grounds

The aisle space requirement is not applicable to the Burning Grounds. As shown on Drawing B-2 in Appendix B, there is sufficient space between the burn pans to allow the unobstructed movement of personnel, fire protection equipment, or spill control equipment in an emergency.

Building 366 Container Storage

Aisle space requirements will be established in accordance with Life Safety Code 101 and in accordance with sound safety practices. Aisle space is maintained in the container storage area to allow unobstructed movement of personnel and material handling, spill control, and decontamination equipment.

Building 810 Container Storage

Aisle space requirements are established in accordance with Life Safety Code 101 and in accordance with sound safety practices. Aisle space is maintained in the container storage area to allow unobstructed movement of personnel and material handling, spill control, and decontamination equipment.

F-4 Preventive Procedures, Structures, and Equipment [40 CFR 270.14(b)(8)]

F-4a Unloading Operations [40 CFR 270.14(b)(8)(i)]

Burning Grounds

Typically, wastes are loaded onto the explosive waste transport truck and unloaded onto the burn pans by hand. Wastes weighing more than 50 lbs in a single container are loaded and unloaded with a minimum of two people to avoid injury and to ensure that the waste is safely handled, unless mechanical equipment is available.

Building 366 Container Storage

Loading and unloading operations are typically conducted using a forklift. The bungs of the drum are tightened before unloading and transfer. This assures that no material is spilled in loading, unloading, or transfer. Waste containers are placed on pallets to be loaded by forklift onto hazardous waste transport trucks for shipment to offsite treatment or disposal facilities.

Building 810 Container Storage

Loading and unloading operations will be conducted by forklift, by hand, or by handtruck. Waste will be moved in small quantities and in the original containers where possible.

F-4b Runoff [40 CFR 270.14(b)(8)(ii)]

Burning Grounds

The Burning Grounds is located in a relatively flat area adjacent to the North Branch Potomac River. No discrete drainage features are present to channel runoff to the river. Runoff from this area would travel by overland flow to the river. Contamination of runoff will be minimized by conducting all treatment in burn pans, which will be placed on paved surfaces and by inspecting the area around the burn pans for the presence of and collection of ejected untreated wastes. Burn pan covers will minimize exposure of the burn pans to precipitation, thereby minimizing the risk of runoff from the waste treatment unit. Standing water is removed from the burn pans as needed to maintain a dry burn pan surface and prevent any accumulated waste from spilling out of the burn pan.

The 100-year flood elevation does not extend to the burn pan locations and is not expected to affect the pans.

Building 366 Container Storage

The hazardous waste storage containment area was designed and constructed in such a manner to prevent run-on. The containment area is protected from rainfall by a roof. Runoff from the roof and surrounding areas drains through the plant drainage ditches to the North Branch Potomac River. No runoff is expected from the waste storage area.

The hazardous waste storage unit is located at an elevation of 680 ft, which is 15 ft above the 100-year flood elevation in that area. No special precautions for flooding are necessary.

Building 810 Container Storage

The building was designed and constructed in such a manner to prevent run-on. The containment area is protected from rainfall by a roof and walls. Runoff from the roof and surrounding areas drains through the plant drainage ditches to the North Branch Potomac River. No runoff is expected from the future waste storage area.

The hazardous waste storage unit is located at an elevation of 669 ft, which is 4 ft above the 100-year flood elevation in that area. No special precautions for flooding are necessary.

F-4c Water Supplies [40 CFR 270.14(b)(8)(iii)]

The surface water and groundwater at the developed portion of ABL are not water supplies and are not upgradient of public or private water supplies. Groundwater extracted by the CERCLA groundwater remediation system is treated before discharge to the North Branch Potomac River and is used onsite for steam generation, as needed. The OB unit is operated to minimize releases, as described in Section D. The container storage units are equipped with secondary containment to prevent releases, also as described in Section D.

F-4d Equipment and Power Failure [40 CFR 270.14(b)(8)(iv)]

Equipment failure would have no adverse effects on either the Burning Grounds or the hazardous waste storage units. Only standard industrial equipment is or will be used, and redundant equipment is available from other areas if needed. In the event of physical failure of a burn pan, use of this pan would be discontinued until its repair.

Power failure should have no adverse effects on either the Burning Grounds or the hazardous waste storage units. Operations are only conducted during the day shift, and no equipment requiring connection to the electrical power grid is required.

F-4e Personal Protective Equipment [40 CFR 270.14(b)(8)(v)]

Burning Grounds

Personnel present during Burning Grounds operations are required to wear safety shoes, safety glasses, and flame-retardant coveralls. The Burning Grounds operator is required to wear latex or vinyl gloves when handling all waste except rough or abrasive items. The operator is required to wear canvas gloves when handling rough or abrasive items.

Building 366 Container Storage

During loading and unloading operations at the hazardous waste storage unit, personnel are required to wear protective clothing, safety glasses, and safety shoes. For hazardous

waste sampling and transfer operations, operators are also required to use face shields or goggles and protective gloves.

Building 810 Container Storage

Procedures and equipment used to prevent undue exposure of personnel to hazardous waste at the Building 810 container storage unit are the same as those for Building 366.

F-5 Prevention of Reaction of Ignitable Reactive, and Incompatible Wastes [40 CFR 270.14(b)(9)]

F-5a Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Wastes [40 CFR 270.14(b)(9) and 264.17(a)]

Plant safety rules prohibit matches, lighters, flash bulbs, open flame, or heat-producing devices at the plant except by specific authorization. Smoking is prohibited in all operating areas and is permitted only in specific areas designated by signage. Written permits are issued for use of heat producing devices and portable power tools. These rules apply throughout the plant, including the Burning Grounds and the container storage building.

The source of ignition for open burning (i.e., electric matches) is not transported in the same vehicle as waste explosives. Starting powder and electric matches are stored in separate containers in the isolation box located within the fenced area of the Burning Grounds.

F-5b General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste [40 CFR 270.14(b)(9) and 264.17(b)]

Burning Grounds

Wastes treated at the Burning Grounds may exhibit the characteristic of reactivity.

Containers for reactive wastes are lined with conductive or anti-static bags. Reactive wastes are kept out of direct sunlight until placement on the burn pan to prevent solar heating or material degradation.

Reactive wastes treated by open burning are segregated according to compatibility. The reactive wastes are evaluated for compatibility before they can be treated. Incompatible wastes are not placed on the same pan.

Building 366 Container Storage

Explosive reactive wastes are not stored at Building 366.

Ignitable wastes are stored in sealed containers, in a covered, non-enclosed area to prevent direct exposure to sunlight but allow natural ventilation. No additional precautions for prevention of waste ignition are required at the hazardous waste storage unit.

No containers that may have held incompatible materials are used for waste storage. Incompatible wastes are not stored in the same cell. The only potential compatibility issues among the most commonly stored wastes at the unit are between ignitable (D001, F003, and

F005) and corrosive (D002 wastes). Other wastes are evaluated for compatibility before they are placed in the unit.

Building 810 Container Storage

Explosive reactive wastes are not stored at Building 810.

Ignitable wastes are stored in sealed containers, in a covered, non-enclosed area to prevent direct exposure to sunlight but allow natural ventilation. No additional precautions for prevention of waste ignition are required at the hazardous waste storage unit.

No containers that may have held incompatible materials are used for waste storage. Incompatible wastes are not stored in the same cell. The only potential compatibility issues among the most commonly stored wastes at the unit are between ignitable (D001, F003, and F005) and corrosive (D002 wastes). Other wastes are evaluated for compatibility before they are placed in the unit.

F-5c Management of Ignitable or Reactive Wastes in Containers [40 CFR 270.15(c) and 264.176]

Building 366 Container Storage

Explosive reactive wastes are not stored in containers at the hazardous waste storage area. The hazardous waste storage area is located at least 50 ft from the facility's property line and therefore meets the 50-ft setback requirement for management of ignitable waste.

Building 810 Container Storage

Explosive reactive wastes are not stored in containers at the hazardous waste storage building once permitted. The hazardous waste storage building is located at least 50 ft from the facility's property line and therefore meets the 50-ft setback requirement for management of ignitable waste.

F-5d Management of Incompatible Wastes in Containers [40 CFR 270.15(d) and 264.177]

Burning Grounds

Incompatible wastes are not stored in containers at the Burning Grounds.

Building 366 Container Storage

No containers that may have held incompatible materials are used for waste storage. Incompatible wastes are not stored in the same cell. The only potential compatibility issues among the most commonly stored wastes at the unit are between ignitable (D001, F003, and F005) and corrosive (D002 wastes). Combination of these wastes could cause a fire or explosion. Fire extinguishers are available in both buildings 366 and 810. In addition the facility maintains its own fire station for response. Other wastes are evaluated for compatibility before they are placed in the unit.

Building 810 Container Storage

No containers that may have held incompatible materials are used for waste storage. Incompatible wastes are not stored in the same cell. The only potential compatibility issues among the most commonly stored wastes at the unit are between ignitable (D001, F003, and F005) and corrosive (D002 wastes). Combination of these wastes could cause a fire or explosion. Fire extinguishers are in both building 366 and 810. In addition the facility maintains its own fire station for response. Other wastes are evaluated for compatibility before they are placed in the unit.

F-5e Management of Ignitable or Reactive Wastes in Tank Systems [40 CFR 270.16(j), 264.198]

Not applicable.

F-5f Management of Incompatible Wastes in Tank Systems [40 CFR 270.16(j), 264.199]

Not applicable.

F-5g Management of Ignitable or Reactive Wastes Placed in Waste Piles [40 CFR 270.18(g), 264.256]

Not applicable.

F-5h Management of Incompatible Wastes Placed in Waste Piles [40 CFR 270.18(h), 264.257]

Not applicable.

F-5i Management of Ignitable or Reactive Wastes Placed in Surface Impoundments [40 CFR 270.17(h), 264.229]

Not applicable.

F-5j Management of Incompatible Wastes Placed in Surface Impoundments [40 CFR 270.17(h), 264.230]

Not applicable.

F-5k Management of Ignitable or Reactive Wastes Placed in Landfills [40 CFR 270.21(f), 264.312]

Not applicable.

F-5l Management of Incompatible Wastes Placed in Landfills [40 CFR 270.21(g), 264.313]

Not applicable.

F-5m Management of Ignitable or Reactive Wastes Placed in Land Treatment Units [40 CFR 270.20(g), 264.281]

Not applicable.

F-5n Management of Incompatible Wastes Placed in Land Treatment Units [40 CFR 270.20(h), 264.282]

Not applicable.

F-5o Management of Incompatible Wastes in Containment Buildings [40 CFR 264.1101(a)(3)]

Not applicable.

Figures

Figure F-1

ABL BURNING GROUNDS
DAILY INSPECTION CHECK SHEET

Inspector's Name _____ **Signature** _____

Date _____ **Time** _____ AM/PM

Item	Frequency	Condition	Acceptable?		
			Yes	No*	N/A
Burn Pans	Prior to Collecting Waste/Loading Pans	Erosion of Liner Material Foreign Objects/Debris Tall Weeds/Grass (Max. height: 6-8 in.) Pans Cooled[3]			
[redacted]					
Personal Protective Equipment (PPE)	Prior to Collecting Waste/Loading Pans	Flame Resistant Coveralls Conductive Shoes Safety Glasses Gloves (as needed)			
Fire Protection	Pre-Burn	Rubber Fire Beater; Present, Serviceable Water/Hoses; Present, Serviceable Two-Way Communications; Present, Serviceable			
Ignition Items	Pre-Burn	Electric Matches; Present Starting/Casting Powder; Present Blasting Machine; Present, Serviceable			
Traffic Control	Pre-Burn	Gates Closed Sign Posted			
Fire Control	Post-Burn	Grass Fires; No flames or smoke visible			

***REPORT ALL UNACCEPTABLE CONDITIONS OR SUSPECTED DAMAGE TO SUPERVISION IMMEDIATELY UPON DISCOVERY.**

[redacted]

NOTES:
1. All tools shall be non-sparking type as specified by the procedure.
2. If an unexpected fire or explosion incident occurs, Burning Grounds personnel shall notify the Security Department in accordance with the ABL Emergency Control Plan.
3. If less than 24 hours has elapsed since previous burn, pans shall be wetted and shall pass a safety inspection.

WEEKLY INSPECTION HAZARDOUS WASTE STORAGE

	BLDG_____	YES	NO
1.	Container labels are present and legible	_____	_____
2.	Containers are free of leaks	_____	_____
3.	Container bungs or lids are installed and tight/secure	_____	_____
4.	Containers contain no distortion of shape or severe rust	_____	_____
5.	No foreign residues inside diked areas of 366 or 810	_____	_____
6.	Aisle space clear and free of spills	_____	_____
7.	Structure in acceptable condition (roof, containment cells, concrete floor, etc.)	_____	_____
8.	Housekeeping and cleanliness acceptable	_____	_____

9. *Observations:

_____

_____

11. *Remedial Actions Taken

_____

_____

12. *Area supervisor must be notified of discrepancies
Supervisor Name_____Date_____

_____ _____

Inspector's Name Signature

Date _____ Time _____AM/PM

*May be left blank

Section H
Personnel Training

SECTION H

Personnel Training [40 CFR 270.14(b)(12) and 264.16]

This section describes Alliant Techsystems Operations LLC's training program for all employees involved in hazardous waste management activities at the Burning Grounds and hazardous waste storage units.

H-1 Outline of the Training Program [40 CFR 264.16(a)(1)]

All employees assigned to hazardous waste duties at the Burning Grounds and the hazardous waste storage units are trained within 6 months of assignment. Employees must be trained and demonstrate competency before being allowed to work without direct supervision.

This personnel training program is designed to ensure that all hazardous waste treatment and storage operations are conducted in a safe and environmentally sound manner. The training program teaches personnel to follow the General Operating Procedures (GOPs) and Unit Operating Procedures (UOPs) and other requirements that ensure that operations are conducted in compliance with environmental regulations.

Employees are trained in the procedures that are necessary to perform their job functions. Employees are trained for specific operations. The corresponding procedures include the following: the particular hazard of the material and operations; proper and safe operating procedures; required safety equipment; response to emergencies, unforeseen events, equipment malfunctions, or lack of facilities; and other safety precautions. No employee may perform an operation without supervision until completion of training in that operation.

H-1a Job Title/Job Description [40 CFR 264.16(d)(1) and (2)]

Burning Grounds

Two employee classifications are involved in hazardous waste treatment operations: Operations Supervisor and Burning Grounds Operator. The job titles and job descriptions are provided below:

1. Operations Supervisor
   a. Hazardous Waste Duties
      - Coordinate Burning Grounds operations
      - Monitor Burning Grounds compliance
      - Determine suitability of meteorological conditions for open burning operations
   b. Qualifications
      - High school diploma or equivalent

2. Burning Grounds Operator
   a. Hazardous Waste Duties
      - Collect reactive hazardous waste from storage areas and transport to Burning Grounds
      - Prepare burn pans for waste treatment
      - Ignite burn pans
      - Inspect Burning Grounds and report any discrepancies
      - Cleanup and properly dispose of all residual material
      - Maintain all Burning Ground equipment and reactive waste containers
   b. Qualifications
      - High school diploma or equivalent

Buildings 366 and 810 Container Storage Units

Three employee classifications are involved with hazardous waste storage: Environmental Engineer, and Hazardous Material Handler. The job title and job descriptions are provided below.

1. Environmental Engineer
   a. Hazardous Waste Duties
      - Schedule waste shipments
      - Maintain manifest records
      - Assist Hazardous Material Handler in the operation of the hazardous waste storage unit
   b. Qualifications
      - BS degree in engineering or the natural sciences

2. Hazardous Material Handler
   a. Hazardous Waste Duties
      - Identify and label all hazardous waste material
      - Transport hazardous waste materials to the storage unit
      - Maintain inventory of hazardous waste containers stored at the unit
      - Transfer and consolidate like hazardous waste materials
      - Monitor integrity of hazardous waste containers
      - Inspect hazardous waste storage unit and report any discrepancies
   b. Qualifications
      - High school diploma or equivalent

H-1b Training Content, Frequency, and Techniques [40 CFR 264.16(c) and (d)(3)]

Training is given within six months of hiring and prior to reassignment to any new area. Hazardous waste training is conducted individually through GOPs and UOPs. Employees are trained in the procedures necessary to perform their job functions. Prior to performing an operation, employees must read the applicable procedures and then accompany trained employees for on-the-job training. Once these items are accomplished, the employees must sign off on their training records. At this point, the employees perform the operation in the presence of a supervisor or foreman. Once the supervisor has signed the record indicating that the employee has successfully performed the operation, the employee may perform it as part of his or her job. Procedures are reviewed annually and updated as necessary. All

employees who handle hazardous wastes must complete all three levels of training prior to performing hazardous waste operations. The training outline must include:

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;
- Communications or alarm systems;
- Response to fires (at container storage units);
- Response to groundwater contamination incidents; and
- Shutdown of operations.

Burning Grounds

Hazardous waste training for the Burning Grounds Operator consists of the following:

- Safety—including the Contingency Plan
- Operations
  - Pre-operation preparations and checks
  - Waste collection
  - Unloading of explosives
  - Explosives placement and set up of ignition train
  - Videotaping of pan configurations
  - Prohibitions and limitations
  - Ignition and burning of pans
- Unusual Events
  - Unsuitable meteorological conditions
  - Misfires
  - Grass fires
  - Explosive reactions
- Housekeeping and Clean-Up Operations

Buildings 366 and 810 Container Storage

Hazardous waste training for the hazardous waste storage units consists of the following:

- Safety—including the Contingency Plan and spill response
- Reuse of containers
- Accumulation of waste at source
- Non-P/E-related wastes (hazardous and non-regulated) packaging requirements
- Labeling
  - General
  - Specific labeling requirements
- Recordkeeping
  - Generating area
  - Material handling
- Container shipment to storage
  - Generating areas
  - Material handling

  - Receipt at hazardous waste storage Building 366
- Storage and inspection
- Transfer between drums
- Sampling hazardous waste drums
- Shipment of hazardous wastes

H-1c Training Director [40 CFR 264.16(a)(2)]

The Environmental Engineer directs personnel training for hazardous waste operations. This individual is qualified to direct hazardous waste operations training by virtue of experience and training in the field of hazardous waste management. The training director's experience may include:

- Experience in explosive production operations, analytical chemistry, research operations, security, safety, and environmental
- Experience in hazardous waste treatment, storage, and disposal (TSD) services
- OSHA-approved Hazardous Waste Operations and Emergency Response (HAZWOPER) 1910.120
- HAZWOPER Supervisor's Program
- HAZWOPER Train the Trainer
- Fundamentals of Industrial Hygiene Monitoring
- Training for Hazardous Waste Transportation
- Hazardous Materials Technician

H-1d Relevance of Training to Job Position [40 CFR 264.16(a)(2)]

The training program has been established to provide training to personnel at levels that are relevant to their position within the plant. All facility personnel responsible for handling waste or for any associated requirements (labeling, disposal, recordkeeping, emergency response, etc.) are required to receive hazardous waste training relevant to their assigned duties. Sections H-1a and H-1b have details.

H-1e Training for Emergency Response [40 CFR 264.16(a)(3)]

Hazardous waste training includes procedures to be followed in response to spills, explosions, fires, and other emergencies. Sitewide emergency training includes site alarms and appropriate actions. Communications systems are inspected as required, but no additional training is deemed necessary. The Burning Grounds training includes procedures for shutdown of operations; no such training is applicable for the hazardous waste storage units. Neither the Burning Grounds nor the hazardous waste storage units has any waste feed cut-off equipment or monitoring equipment; therefore, no training in these subjects is required.

H-2 Implementation of Training Program [40 CFR 264.16(b), (d)(4), and (e)]

Individuals receiving hazardous waste training place their name, employee number, date, and signature on a sign-in roster for each class. Introductory training for personnel with hazardous waste management duties is conducted within 6 months of employment, assignment to the facility, or transfer to a new position within the facility. The Human Resources Department maintains records documenting that each individual has received the required training. The Human Resources Department maintains all hazardous waste training records. Records are maintained on each employee receiving hazardous waste training until 3 years after the employee leaves the facility or until closure of the hazardous waste unit where he or she performs his or her duties.

Section G
Contingency Plan

SECTION G

Contingency Plan [40 CFR 270.14(b)(7), 264.50 through 264.56, 264.52(b)]

Alliant Techsystems Operations LLC has prepared and maintains an Integrated Emergency Control Plan (IECP) for Allegany Ballistics Lab (ABL) that fulfills the requirements of a facility Contingency Plan under 40 CFR Section 264 Subpart D. The IECP describes response actions to be taken for all forms of disaster or emergency on the facility, including fires, explosions, or any unplanned release of hazardous waste or hazardous waste constituents to air, soil, or waters of the state from the hazardous waste container storage units or the Burning Grounds. The plan also describes the organization, procedures, facilities, and equipment available at ABL to respond to disasters/emergencies.

G-1 General Information

A copy of the IECP and all revisions will be sent to the Mineral County Office of Emergency Services, Allegany County Civil Defense and Disaster Preparedness Agency, Cresaptown Volunteer Fire Department, Short Gap Volunteer Fire Department, and Western Maryland Health System. These copies are provided as courtesy copies only. No outside emergency agencies take part in emergency activities at ABL. The only exception is an ambulance that would enter the ABL facility under escort to provide medical assistance. All assistance should be provided outside of the hazardous waste storage and treatment facilities. The ABL Security Department maintains this document.

Facility Name, Location, Operator, and Site Plan

Facility Name:	Naval Industrial Reserve Ordnance Plant (NIROP) Allegany Ballistics Laboratory (ABL)
Location:	210 State Route 956 Rocket Center, Mineral County, West Virginia Latitude 39 deg 33 min 30 sec N, Longitude 78 deg 50 min W UTM Zone 17 4381000 N, 686000 E
Owners:	Plant 1 - Department of the Navy, Naval Sea Systems Command Plant 2 -Alliant Techsystems Operations LLC
Operator:	Alliant Techsystems Operations LLC
Site Plan:	Drawing B-3 (Section B) is a copy of the ABL site plan.

Description of Facility Operations

ABL is primarily a solid propellant rocket motor development and production facility operated by Alliant Techsystems Operations LLC. ABL consists of Plant 1, which is owned by the Department of the Navy, NAVSEA, and Plant 2, which is owned by Alliant Techsystems Operations LLC. Both plants are operated by Alliant Techsystems Operations LLC. Plant 1 is about 1,572 acres; about 400 acres are developed bottomland and the

remainder is largely undeveloped forested mountainous land. Plant 2 is 57 acres of bottomland adjacent to Plant 1.

Construction at ABL began in 1942. The site was originally operated by Kelly Tire Company, and the original purpose of the facility was loading and testing of 50-caliber ammunition for the U.S. Army. George Washington University personnel also worked on development of solid propellants for bazooka ammunition during this period. In December 1945, the Navy assumed oversight responsibility for the facility. Since 1946, the predominant industrial operations at ABL have been associated with research, development, production, and testing of solid-propellant rocket motors.

Burning Grounds

The Burning Grounds is an 8-acre site on Plant 1 of ABL. The unit is surrounded by a 7-foot-high chain-link fence. The unit consists of six burn pan sites. The pans are ignited using an electric match, which is energized remotely using a standard blasting machine. The site has four yard hydrants with hoses attached. The unit is used for treatment of reactive (explosive) hazardous waste by open burning.

The Burning Grounds is limited to a total of 1,355 lbs of P/E material per burn, distributed over six pan sites. Each pan has a limit on the quantity of P/E material burned based on the site's proximity to inhabited buildings, property line, and other sensitive features (See Figure D-1, in Section D, for pan locations). The P/E material load limits are as follow:

- Pan A 200 pounds
- Pan B 200 pounds
- Pan C 155 pounds
- Pan D/Tie-Down Unit 400 pounds
- Pan E 200 pounds
- Pan F 200 pounds

The explosive waste to be burned that day is transported to the Burning Grounds by light-duty pickup truck equipped with a special electrically conductive, non-sparking bed liner. The waste is unloaded from the truck onto the pans. After the meteorological conditions are determined to be suitable for burning (see Table D-1, in Section D) for meteorological conditions), the Burning Grounds operator spreads the waste on the pan and squibs each pan by connecting an electric match to the wiring system for the pan and then placing the electric match in the pan. The pans are then ignited remotely by the operator from the Burning Grounds control room by connecting a blasting machine to the circuit corresponding to the pan to be ignited and twisting the blasting machine handle to energize the circuit and ignite the pan. Pans are ignited consecutively, allowing the fire in one pan to die down before the next pan is ignited.

Building 366 Container Storage

The Building 366 hazardous waste storage unit is a building designed specifically for drum storage. The unit consists of 40 cells capable of storing eight drums each. The storage pad is covered by a fixed roof, which protects the waste containers from precipitation. The unit is used for the storage of containerized waste, both hazardous and nonhazardous.

Before starting a new waste container, the person responsible for the waste contacts the Environmental Department. A representative typically issues a waste label and an aluminum tag imprinted with an internal tracking number. The drum tracking number, waste name, generator name, and generator ID number are recorded on the waste label. The aluminum tags bearing the tracking numbers are attached to drums to enable drum identification if the waste labels become illegibl e. It is anticipated that in 2016 that an electronic tracking system will replace the Environmental Department issued labels and tags.

The drum tracking number, the date the number was assigned, the drum location, and the waste name are recorded in a waste log. Once a drum is filled, the accumulation start date is recorded on the waste label, the drum is transferred to the hazardous waste storage unit within 3 days, and the date the drum is transferred is recorded in the log. Shipment dates and manifest numbers for each drum are also recorded in the log. The log will be replaced by the electronic system.

Drums are delivered to the site by forklift or by lift-gate truck. The drums are placed in one of the 40 cells in the unit and are inspected weekly. Drums are loaded by forklift onto the hazardous waste transporter truck for offsite shipment to a treatment, storage, or disposal facility.

Building 810 Container Storage

The hazardous waste container storage unit is a small metal-sided building near the Building 366 drum storage facility. The inside dimensions of the building are 19 ft 4 inches by 15 feet 4 inches, with a 10-foot ceiling. Building 810 has a fixed roof and permanent walls, which will protect the waste containers from precipitation. The unit will be for the storage of containerized waste, both hazardous and nonhazardous. Secondary containment is provided by nine portable containment modules placed within the building. Each containment module is topped with a rigid grate designed to ensure waste containers do not contact any liquids collected by the containment modules.

G-2 Emergency Coordinators [40 CFR 264.52(d) and 264.55]

Names, Addresses, and Telephone Numbers [40 CFR 264.52(d) and 264.55]

The names and telephone numbers of persons designated to act as Emergency Coordinators for both the Burning Grounds and the hazardous waste storage units are provided in Table G-1, "Emergency Coordinators List." The emergency coordinator has the authority to commit the resources necessary to implement a response per the IECP. The emergency coordinator is either on the facility or on call at all times.

Duties of Emergency Coordinator [40 CFR 264.55 and 264.56]

In the event of an emergency involving hazardous waste or hazardous waste constituents at the Burning Grounds or either hazardous waste storage unit, the emergency coordinator or his designated alternate shall direct the necessary activities to bring the emergency under control. A command and control center will be established. The emergency coordinator may delegate some of the responsibilities of the position to other individuals as necessary to ensure that all tasks are properly executed. The emergency coordinator will direct emergency response activities.

West Virginia hazardous waste regulations have very specific requirements defining the duties of an emergency coordinator. These are summarized as follows:

- Notify facility personnel and request necessary assistance
- Identify the quantity and types of waste involved
- Assess hazards due to the wastes
- Report the incident to the involved regulatory agencies if areas outside the facility are affected and assist in evacuation if necessary
- Attempt to keep the emergency situation from spreading
- Monitor treatment systems if the situation has interrupted operations
- Arrange for disposal of waste and debris after the emergency is over
- Make sure that operations do not result in danger due to incompatible wastes reacting
- Make sure that operations do not resume until all emergency equipment is replenished
- Submit a written report to the required regulatory agencies within 15 days after the emergency

G-3 Implementation [40 CFR 264.52(a) and 264.56(d)]

The Burning Grounds, Building 366 hazardous waste storage unit, and Building 810 hazardous waste storage unit were evaluated with respect to their location, facility design, operating procedures, and types of wastes managed. The evaluation determined the emergency events that should be addressed in the IECP. Minor events not requiring implementation of the plan are also discussed. The emergency events and the results of their evaluation are presented in this section.

Spills

Burning Grounds

A spill at the Burning Grounds would not constitute an emergency event requiring implementation of the IECP. Most of the waste items treated at the Burning Grounds are solid P/E wastes. P/E wastes containing liquid explosives (such as nitroglycerin) are absorbed in sawdust, which serves to desensitize the waste and absorb free liquids. Spills would be picked up and placed in the burn pan. If the spill occurs on the concrete, asphalt, or other surface that surrounds each burn pan, the material will be collected using a non-sparking shovel and placed into a burn pan. If the spill occurs on the soil, a thin layer of soil underlying the spill will be excavated using a non-sparking shovel and placed into a burn pan along with the spilled material.

Building 366 Container Storage

A spill at the Building 366 hazardous waste storage unit may constitute an emergency event requiring implementation of the IECP and/or the ABL Spill Prevention, Control, and Countermeasure (SPCC) Plan depending on the size of the spill. A small leak from a drum would not require implementation of the IECP. The spill would be cleaned up using the

onsite spill response kit, and the cleaned up material would be drummed for offsite treatment or disposal.

A catastrophic failure of a drum within Building 366, or any release escaping the confines of Building 366 would require implementation of the IECP and/or the SPCC Plan. After determining the source and dispersion of a spill or release and assessing the hazards to human health and the environment, the emergency coordinator shall take the following actions:

1. If appropriate, initiate evacuation of threatened individuals according to the evacuation plan.
2. Contain spilled material by physical barriers (dikes, booms, adsorbents, or other means).
3. Control source of spill.
4. Collect all spilled material for disposal.

If a hazardous waste spill or leak from a container or if the condition of a container has deteriorated extensively, the material will be transferred to a container in good condition and labeled appropriately. Any spilled or leaked material and any contaminated soil or other material will also be cleaned up and placed in a suitable container and labeled. All containers will be properly stored until disposed.

Building 810 Container Storage

A spill at the Building 810 container storage unit may constitute an emergency event requiring implementation of the IECP and/or the SPCC Plan, depending on the size of the spill. A small leak from a drum or other container would not require implementation of the IECP. The spill would be cleaned up using the onsite spill response kit, and the cleaned up material would be drummed for offsite treatment or disposal.

A catastrophic failure of a drum within Building 810, or any release escaping the confines of Building 810 would require implementation of the IECP and/or the SPCC Plan. After determining the source and dispersion of a spill or release and assessing the hazards to human health and the environment, the emergency coordinator shall take the following actions:

1. If appropriate, initiate evacuation of threatened individuals according to the evacuation plan.
2. Contain spilled material by physical barriers (dikes, booms, adsorbents, or other means).
3. Control source of spill.
4. Collect all spilled material for disposal.

If a hazardous waste spills or leaks from a container or if the condition of a container has deteriorated extensively, the material will be transferred to a sound container and labeled appropriately. Any spilled or leaked material and any contaminated soil or other material will also be cleaned up, placed in a suitable container, and labeled. All containers will be properly stored until disposed.

Power Interruption

Power failure should have no adverse effects on the Burning Grounds, the Building 366 hazardous waste storage unit, or the Building 810 hazardous waste storage unit. Operations are conducted only during the day shift, and no equipment requiring connection to the electrical power grid is required.

Fires

Burning Grounds

An unplanned fire could occur within the Burning Grounds and is a possible emergency event. An unplanned fire at the Burning Grounds may be handled by the Burning Grounds operator using a water hose or a rubber fire beater, if the fire can be safely extinguished by such means. Small grass fires that can be extinguished by the Burning Grounds operator are not considered emergency events that require implementation of the Contingency Plan. If the Burning Grounds supervisor determines that the fire cannot be safely extinguished by the Burning Grounds operator, the ABL Fire Brigade will be summoned by calling the guard at ABL Plant Protection at extension 5400. Larger fires that threaten structures outside the Burning Grounds are considered emergency events requiring the implementation of the Contingency Plan. The guard will inform the Fire Brigade of the name of the caller, the size and location of the fire, and the presence of other untreated explosives at the site. The fire may be fought using water carried by the Fire Brigade in the tanker fire truck, or water from the fire hydrant adjacent to the unit may be used. The Fire Brigade will not attempt to extinguish fires involving explosives at the Burning Grounds.

Building 366 Container Storage

A fire at the Building 366 hazardous waste storage unit is an emergency event requiring implementation of the IECP. In case of fire at the unit, the plant protection staff can be notified by two-way radio or by the fire alarm box located on a utility pole to the east of Building 366. If the alarm box is pulled, the location will appear on the fire alarm panel at guard headquarters. When plant protection is notified by the guard of a fire, they will sound the plant fire alarm to direct the Fire Brigade to the fire station. The fire may be fought using water carried by the fire brigade in the tanker fire truck, or water from the fire hydrant located approximately 100 feet from the building.

Building 810 Container Storage

A fire at the Building 810 hazardous waste storage unit is an emergency event requiring implementation of the IECP. In case of fire at the unit, the plant protection staff can be notified by phone or by the fire alarm box located on a utility pole approximately 65 feet to the north of Building 810. If the alarm box is pulled, the location will appear on the fire alarm panel at plant protection. When the guard at plant protection is notified of a fire, they will sound the plant fire alarm to direct the fire brigade to the fire station. The fire may be fought using water carried by the fire brigade in the tanker fire truck, or water from the fire hydrant located approximately 80 feet to the north of the unit.

Explosions

Burning Grounds

Waste explosives are treated by open burning at the Burning Grounds. Therefore, an explosion is a possible emergency event. Any explosion at the Burning Grounds resulting in ejection of materials outside the Burning Grounds is an emergency event requiring implementation of the IECP. The response to an explosion would be limited to addressing fires or other damage caused by the explosion.

Building 366 Container Storage

Reactive or otherwise explosive hazardous wastes are not stored at the Building 366 hazardous waste storage unit. Therefore, explosions are not expected in Building 366.

Building 810 Container Storage

Reactive or otherwise explosive hazardous wastes will not be stored at the Building 810 hazardous waste storage unit. Therefore, explosions are not expected in Building 810.

Offsite Impacts of Explosions and Unplanned Fires

Burning Grounds

Each burn pan at the Burning Grounds has been assigned an explosive waste limit based on the proximity of the pan to the property line, inhabited buildings, and other sensitive features. These limits are designed to prevent adverse impacts from fires or explosions to offsite property, onsite buildings, or other sensitive entities near the Burning Grounds. The distance from the burn pans to the ABL property line complies with the requirements of WV CSR 45-25-3.2d. Pans are separated to prevent the propagation of explosions from one pan to another if a pan of explosives happens to explode. In the event of an explosion or unplanned fire (premature burn) of reactive wastes, offsite impacts would not be greater than those due to planned burns of waste material would. In addition, releases to air would not be greater than those due to planned burns. Therefore, significant offsite impacts from explosions or unplanned fires would not be expected.

Building 366 Container Storage

Reactive or otherwise explosive hazardous wastes are not stored at the Building 366 hazardous waste storage unit. Therefore, explosions are not expected at the unit. Significant offsite impacts from a fire, including air emissions, would not be expected because of the distance to the facility boundary and the nearest residences.

Building 810 Container Storage

Reactive or otherwise explosive hazardous wastes will not be stored at the Building 810 hazardous waste storage unit. Therefore, explosions are not expected at the unit. Significant offsite impacts from a fire, including air emissions, would not be expected because of the distance to the facility boundary and the nearest residences.

Personnel Injury

Burning Grounds

Personnel injury is possible at the Burning Grounds because of fire or explosion. Injuries would be treated by first responders and injured personnel would be transported to a local hospital if necessary.

Building 366 Container Storage

Personnel injury is possible at the Building 366 hazardous waste storage unit because of fire or spill. Injuries would be treated by first responders and injured personnel would be transported to a local hospital if necessary.

Building 810 Container Storage

Personnel injury is possible at the Building 810 hazardous waste storage unit because of fire or spill. Injuries would be treated by first responders and injured personnel would be transported to a local hospital if necessary.

G-4 Emergency Actions [40 CFR 264.56]

G-4a Notification [40 CFR 264.56(a)]

The discoverer of any emergency will contact the Plant Protection Department at the Emergency Extension 5400 (24-hour basis) or at (304) 726-5310 from off-plant or by mobile device. The Plant Protection personnel on duty will pass notification to the emergency coordinator. The emergency coordinator shall determine and make appropriate notification for the situation.

Plant personnel will be notified of any incident involving hazardous waste operations as appropriate by sounding a siren on the plant emergency alerting system. The All Clear signal is sounding of the Westminster Chimes on the alarm system.

G-4b Identification of Hazardous Materials [40 CFR 264.56(b)]

Whenever there is a release, unplanned fire, or explosion, the cognizant personnel on the scene or the emergency coordinator shall immediately identify the character, source, amount, and extent of any released hazardous waste materials. Identification may be by observation, review of records, or chemical analysis.

G-4c Assessment [40 CFR 264.56(c) and (d)]

Hazard Assessment [40 CFR 264.56(c)]

Based on the identification and quantity of hazardous materials and the nature of the emergency, the emergency coordinator shall assess possible hazards, both direct and indirect, to human health and the environment. As the emergency coordinator deems appropriate, the emergency coordinator may consult with other cognizant facility personnel in making this assessment. After assessing the situation, the emergency coordinator or cognizant facility personnel will initiate evacuation, if necessary, according to the evacuation plan under Section G-7, and initiate the containment and cleanup of the affected area.

Notification of Offsite Impacts [40 CFR 264.56(d)]

If the emergency coordinator determines that the facility has had a release, fire, or explosion that could threaten human health or the environment outside the facility, the emergency coordinator shall notify WVDEP. The Notification Number for WVDEP is 1-(800)-642-3074. Notification shall include the following:

- Name and telephone number of reporting party
- Name and address of facility
- Time and type of incident
- Name and quantity of materials involved to the extent known
- The number and extent of injuries, if any
- The possible hazards to human health or the environment outside the plant boundary

G-4d Control Procedures [40 CFR 264.52(a)]

Fires

In the case of an unplanned fire at the Burning Grounds or at either hazardous waste storage unit, the emergency coordinator shall make a determination of wind direction and dispersal of combustion products. If appropriate, evacuation will be initiated according to the evacuation plan under Section G-7. The Fire Brigade shall not attempt to extinguish fires involving explosives at the Burning Grounds.

Burning Grounds

Treatment at the Burning Grounds is by open burning. Placement of wastes to be burned is designed to prevent reaction more severe than deflagration. In the event burning gets out of control, the result would be a grass fire involving the open burning area adjacent to the burning pans. Grass fires will be controlled and extinguished by application of water by the Burning Grounds operator, if it is deemed safe to do so. For fires that cannot be safely extinguished by the operator, assistance shall be requested from the plant Fire Brigade.

Building 366 Container Storage

Responses to a fire at the Building 366 hazardous waste storage unit will be dependent on the specifics of the situation (e.g., the specific waste involved, number of drum(s) involved, and location of other drums). The first consideration will be the safety of fire-fighting personnel. In general, responses will be taken to control and limit the spread of fire and to contain products of combustion, released material, and firewater. Such responses may include application of water to uninvolved adjacent drums to prevent ignition or removal of uninvolved adjacent drums to prevent spread of fire. To the extent possible, spread of contamination from application of firewater will be avoided by limiting the amount of water applied and by containment of runoff.

Building 810 Container Storage

Responses to a fire at the Building 810 hazardous waste storage unit (once permitted) will be dependent on the specifics of the situation (e.g., the specific waste involved, number of drum(s) involved, and location of other drums). The first consideration will be the safety of fire-fighting personnel. In general, responses will be taken to control and limit the spread of fire and to contain products of combustion, released material, and firewater. Such responses

may include application of water to uninvolved adjacent drums to prevent ignition or removal of uninvolved adjacent drums to prevent spread of fire. To the extent possible, spread of contamination from application of firewater will be avoided by limiting the amount of water applied and by containment of runoff.

Explosions

Burning Grounds

Control procedures for an explosion at the Burning Grounds will be limited to addressing fires or other damage caused by the explosion. Procedures for addressing fires are contained in Section G-4d(1). Procedures for addressing personnel injuries are contained in Section G-4d(4).

Building 366 Storage

Reactive or otherwise explosive hazardous wastes are not stored at the Building 366 hazardous waste storage unit. Therefore, explosions are not expected at the unit.

Building 810 Storage

Reactive or otherwise explosive hazardous wastes will not be stored at the Building 810 hazardous waste storage unit. Therefore, explosions are not expected at the unit.

Spills

Burning Grounds

Most of the waste items treated at the Burning Grounds are solid P/E wastes. P/E wastes containing liquid explosives (such as nitroglycerin) are absorbed in sawdust, which serves to desensitize the waste and absorb free liquids. Spills involving solid explosives will be collected using non-sparking tools and placed in the burn pan. If the spill occurs on the pad surrounding the pan, the material will be collected and placed into a burn pan. If the spill occurs on soil, a thin layer of soil underlying the spill will be removed and placed into a burn pad along with the spilled materials.

Building 366 Container Storage

The release of hazardous waste from a container at the Building 366 hazardous waste storage unit would be contained by diking with appropriate materials, if necessary. The contained material would be collected and transferred to a sound container, labeled appropriately, and shipped offsite for treatment or disposal. All containers will be properly stored until shipped off site. Any contaminated spill control equipment would be decontaminated in accordance with Section G-4h, or it would be shipped off site for treatment or disposal.

If a hazardous waste is released from a container or if the condition of a container has deteriorated extensively, the material will be transferred to a sound container. The container shall be properly labeled. Any spilled or leaked material and any contaminated soil or other material will also be cleaned up, placed in a suitable container, and labeled.

Building 810 Container Storage

The release of hazardous waste from a container at the Building 810 hazardous waste storage unit would be contained by diking with appropriate materials, if necessary. The

contained material would be collected and transferred to a sound container, labeled appropriately, and shipped offsite for treatment or disposal. All containers will be properly stored until shipped offsite. Any contaminated spill control equipment would be decontaminated in accordance with Section G-4h, or it would be shipped offsite for treatment or disposal.

If a hazardous waste is released from a container or if the condition of a container has deteriorated extensively, the material will be transferred to a sound container. The container shall be properly labeled. Any spilled or leaked material and any contaminated soil or other material will also be cleaned up, placed in a suitable container, and labeled.

Personnel Injury

At the Burning Grounds or at either hazardous waste storage unit, injuries to personnel will be treated immediately by trained first responders. The Plant Protection force and the Fire Brigade both have trained first responders on staff. An injured person will be transported to the Medical department if transport is possible, taking into account the nature and extent of the injuries. The staff nurse may attend the injured person at the site if the incident site is safe to enter. If transport to a hospital is required, Plant Protection will call Civil Defense, who will dispatch an ambulance to the scene. The ambulance will transport the injured personnel to Western Maryland Hospital.

G-4e Prevention of Recurrence or Spread of Fires, Explosions, or Releases [40 CFR 264.56(e)]

Plant safety rules prohibit matches, lighters, flash bulbs, open flame, or heat-producing devices on plant property except by specific authorization. Smoking is prohibited in all operating areas and is permitted only outside the plant perimeter fence. "No Smoking" signs are posted at appropriate locations. Written hot work permits are issued for the use of heat producing devices and portable power tools. Any fire, explosion, or release at the facility is investigated to determine cause(s) and implement corrective measures to prevent recurrence. In case of a fire, fire watches are maintained after the fire is extinguished to ensure the fire is completely out.

Burning Grounds

Waste containers for P/E are lined with conductive or anti-static bags. P/E is kept out of direct sunlight to prevent solar heating or material degradation.

Building 366 Container Storage

Flammable wastes are stored in sealed containers in a covered, non-enclosed area to prevent direct exposure to sunlight, but allow natural ventilation. Spread of fire is prevented by control and segregation of waste inventory.

Building 810 Container Storage

Flammable wastes will be accumulated in closed containers in suitable containment. Building 810 is completely enclosed to prevent exposure of the waste to direct sunlight. Spread of fire will be prevented by control and segregation of waste inventory.

G-4f Storage and Treatment of Released Materials [40 CFR 264.56 (g)]

Immediately after an emergency, the emergency coordinator will arrange for treatment, storage, or disposal of recovered waste, contaminated soil, surface water, or any other contaminated material.

G-4g Incompatible Waste [40 CFR 264.56(h)(1)]

The emergency coordinator will ensure that wastes that may be incompatible with released materials are managed separately until cleanup activities are complete.

G-4h Post-Emergency Equipment Maintenance [40 CFR 264.56(h)(2)]

After an emergency event, all emergency equipment that has been used will be cleaned and made fit for use, or it will be replaced. Hazardous waste operations resume only when emergency and other facility equipment are replaced, repaired, or decontaminated if necessary.

G-4i Container Spills and Leakage [40 CFR 264.52 and 264.171]

A release from a container at either hazardous waste storage unit would be contained by diking with appropriate materials, if necessary. The contained material would be collected and transferred to a sound container, labeled appropriately, and shipped offsite for treatment or disposal. All containers will be properly stored until shipped off site.

If a hazardous waste is released from a container or if the condition of a container has deteriorated extensively, the material will be transferred to a sound container. The container will be properly labeled. Any spilled or leaked material and any contaminated soil or other material will also be cleaned up, placed in a suitable container, and labeled.

G-4j Tank Spills and Leakage [40 CFR 264.196]

ABL does not store or treat hazardous wastes in tanks. Therefore, this section is not applicable.

G-4k Surface Impoundment Spills and Leakage [40 CFR 264.227]

ABL does not store or treat hazardous wastes in surface impoundments. Therefore, this section is not applicable.

G-4l Containment Building Leaks [40 CFR 264.1101(c)(3)]

ABL does not store hazardous wastes in containment buildings. Therefore, this section is not applicable.

G-5 Emergency Equipment [40 CFR 264.52(e)]

Fire Extinguishing Equipment and Water for Fire Control

The facility has two fire trucks that are located in Building 157. Each truck has water-carrying capacity and a ladder. The two trucks are operated by the plant fire brigade. The emergency response vehicle and the Burning Grounds operator's truck are both equipped with fire extinguishers.

Burning Grounds

The Burning Grounds has four yard hydrants and hoses and on fire hydrant available for fire control. The four yard hydrants are distributed across the Burning Grounds such that all burn pans can be reached by at least one water hose. The Burning Grounds operator carries a fire blanket in the Burning Grounds truck. A fire beater is available in the Burning Grounds control room.

Building 366 Container Storage

The Building 366 hazardous waste storage unit has a fire hydrant located approximately 100 feet from the unit. The hydrant is supplied by a 1.4-million-gallon water reservoir.

Building 810 Container Storage

The Building 810 hazardous waste storage unit has a fire hydrant located approximately 80 feet from the unit. The hydrant is supplied by a 1.4-million-gallon water reservoir.

First Aid Equipment

The facility nurse has a fully stocked first aid kit in Building 446, which is available for responding to first aid cases. Plant Protection guards who serve as first responders have first aid kits to enable them to treat minor personnel injuries and attempt to stabilize more serious injuries while awaiting an ambulance to transport the injured party to a local hospital.

Burning Grounds

No additional first aid equipment is available at the Burning Grounds.

Building 366 Container Storage

A portable eye wash station with a 1-pint capacity is available at the Building 366 hazardous waste storage unit.

Building 810 Container Storage

A portable eye wash station with a 1-pint capacity will be available at the Building 810 hazardous waste storage unit.

Communications Equipment

Burning Grounds

The Burning Grounds operator carries a cellular telephone at all times while working at the Burning Grounds.

Building 366 Container Storage

All personnel working at the Building 366 hazardous waste storage unit have cell phones in their possession.

Building 810 Container Storage

All personnel working at the Building 810 hazardous waste storage unit have cell phones in their possession.

Spill Control Equipment

Burning Grounds

A non-sparking shovel is available to control a minor spill at the Burning Grounds. Based on the nature of the waste treated at the Burning Grounds, no major spills are expected at the unit.

Building 366 Container Storage

A spill response kit containing a drain blocker, absorbent pads and booms for non-aggressive materials, oil pads and booms, and pads and booms for acidic and caustic materials is available in the emergency response van maintained by the Safety Department. Vermiculite and absorbent pads are available in the Building 366 hazardous waste storage unit. A shovel, broom, and dustpan are also available in the Building 366 hazardous waste storage unit.

Building 810 Container Storage

A spill response kit containing a drain blocker, absorbent pads and booms for non-aggressive materials, oil pads and booms, and pads and booms for acidic and caustic materials is available in the emergency response van maintained by the Safety Department. Vermiculite and absorbent pads will be available in the Building 810 hazardous waste storage unit. A shovel, broom, and dustpan are also available in the Building 810 hazardous waste storage unit.

Emergency Decontamination Equipment

Burning Grounds

No decontamination equipment is available at the Burning Grounds.

Building 366 Container Storage

A decontamination kit containing a bucket, detergent, a shovel, a water hose, a broom, a dustpan, and decontamination pools are available at the emergency response van maintained by the Safety Department.

Building 810 Container Storage

A decontamination kit containing a bucket, detergent, a shovel, a water hose, a broom, a dustpan, and decontamination pools are available at the emergency response van maintained by the Safety Department.

Emergency Communications and Alarm Equipment

A plant-wide alarm can be sounded by the Plant Protection department using the plant emergency alerting system. The sounding of the alarm instructs all persons on the facility to remain where they are at the time of the alarm unless they are at the location of the emergency. Emergency response personnel are not subject to this restriction.

G-6 Coordination Arrangements [40 CFR 264.52(c) and 264.37]

Outside emergency response agencies and teams do not participate in emergency activities within ABL plant boundaries. The only exception is ambulances that would enter the ABL Facility under escort to provide medical assistance. ABL is self-sufficient for all other

emergency activities. Therefore, there are no coordination agreements with outside emergency agencies and response teams.

G-7 Evacuation Plan [40 CFR 264.52(f)]

Evacuation of off-plant inhabited areas or general evacuation of plant personnel is an extremely unlikely necessity in responding to any hazardous waste emergency situation at ABL due to the limited quantities of waste, low level of toxicity, and lack of transport mechanisms for spilled wastes.

For the hazardous waste storage units, the separation of the units from adjacent buildings and the distance from the units to the plant boundaries serve to limit the likelihood of an offsite evacuation. The Building 366 hazardous waste storage unit has a roof but is open on all sides. If necessary, evacuation can take place by exiting any side of the storage building. The Building 810 hazardous waste storage unit has one exit door for emergency evacuation, which is sufficient due to the small size of the building.

A fence surrounds the Burning Grounds. The primary entrance is through Gate 7-C. If the exit through this gate is blocked, alternative Gate 35 or Gate 36 can be used.

Drawing G-1 shows evacuation routes for operating personnel from the Burning Grounds and the two hazardous waste storage units.

G-8 Required Reports [40 CFR 264.56(l) and (j)]

Operational Readiness Notification to Regulatory Agencies [40 CFR 264.56(i)]

If it is necessary to implement the IECP for either the Burning Grounds or the hazardous waste storage unit, the emergency coordinator will notify the Chief of the Office of Waste Management, WVDEP, before operations are resumed. The notification will include the following:

- A description of the control measures used in response to the emergency
- A statement that the emergency equipment has been cleaned or replaced and is ready for use
- A statement that cleanup procedures have been completed for any released materials that may be incompatible with wastes to be treated or stored at the unit

Incident Report in Operating Record [40 CFR 264.56(j)]

The emergency coordinator will record in the operating record for the unit the date, time, and details of any incident that requires implementation of the IECP for either the Burning Grounds or the hazardous waste storage unit. Within 15 days after the incident, the emergency coordinator will submit a written report on the incident to Chief of the Office of Waste Management, WVDEP. The report will include the following:

- Name address, and telephone number of the owner or operator
- Name, address, and telephone number of the facility
- Date, time, and type of incident (e.g., fire, explosion)
- Name and quantity of materials involved

- Extent of injuries, if any
- Assessment of the actual or potential hazards to human health or the environment
- Estimated quantity and disposition of recovered materials

G-9 Amendment of Contingency Plan [40 CFR 264.54]

The IECP will be reviewed and immediately amended, if necessary, whenever any of the following occurs:

- The facility permit is revised
- The plan fails in an emergency
- The facility changes its design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency.
- The list of emergency coordinators changes
- The list of emergency equipment changes

Only those revisions to the IECP pertaining to RCRA-related provisions will constitute a minor modification to the facility permit. All revisions will be forwarded to those parties holding a copy of the plan, including federal and state agencies.

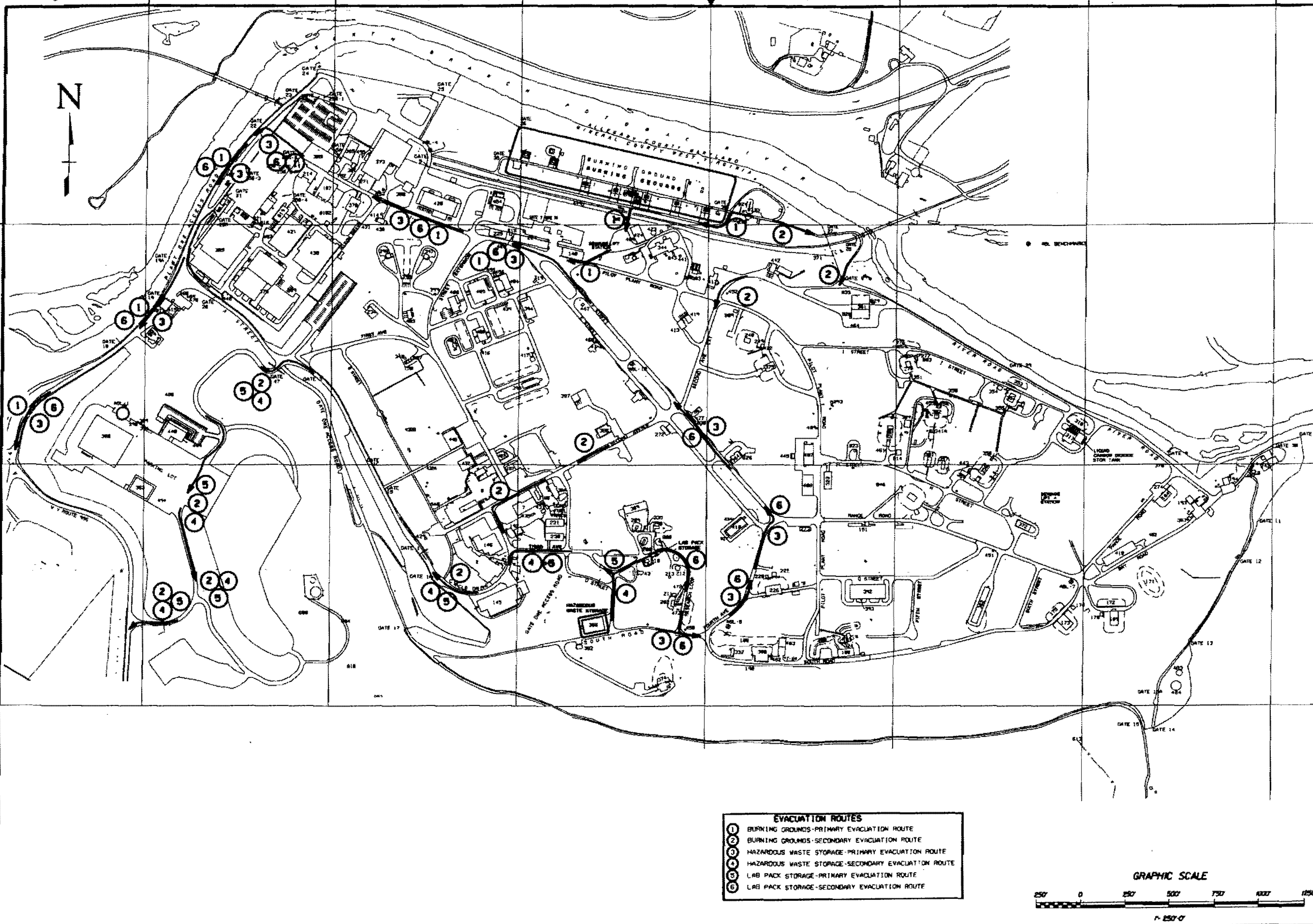
Tables

TABLE G-1

List of Emergency Coordinators
Allegany Ballistics Laboratory
Rocket Center, West Virginia

Name	Telephone Number
Primary Emergency Coordinator	
John Dodrill	304-726-5407 (ABL)
Route 2 Box 235	301 697-0993 (cell)
Fort Ashby	
WV 26719	

Figures



APPROVALS		DATE
DRAFTER	J.R. ROBISON	11-13-01
CHECKER	L.H. MULL	11-13-01
ENGR	L.H. MULL	11-13-01
DES SUPV		
AREA SUPV		
SAFETY		
ENG MGR		

ATK TACTICAL SYSTEMS COMPANY LLC
ALLEGANY BALLISTICS LABORATORY
210 STATE ROUTE 956
ROCKET CENTER, WV 26726-3548

ABL ROCKET CENTER

PLANT 1
RCRA PERMITTED UNITS
EVACUATION ROUTES

CAGE CODE 70272 | SIZE: D

SCALE: 1" = 250.0'

BASE | PLT1

1-112-50 | –

PLANT 1

DRAWING HISTORY | DATE

THIS DRAWING HAS BEEN ARCHIVED PER SSG STATUS

INTERPRET THIS DRAWING IN ACCORDANCE WITH DOD-STD-100

Section I
Closure Plans, Post-Closure Plans, and Financial Requirements

Comparison to Background

Background soil concentrations will be developed at closure. For parameters that occur naturally, such as metals, the existence of contamination will be determined by a comparison with background concentrations. Naturally occurring parameters will be considered contaminated if the concentration exceeds the background mean plus two times that standard deviation (95-percent confidence interval using a one-tailed t-test). For parameters that do not occur naturally, such as explosives, any detected concentration will indicate potential contamination.

If background values are not exceeded for any parameter, soil at the Burning Grounds will be considered clean, and no further analysis will be conducted. If background values are exceeded, comparisons to soil screening levels will be made.

Comparison to Risk-based Concentrations

Analytical results will be compared to USEPA Region III RBCs in effect at the time of closure. Table I-1 contains the available RBCs for the industrial and residential scenario parameters to be analyzed (as of May 2001), which are listed in the Region III RBCs database (accessible at EPA Region III's Internet web site under Risk Assessment Guidance). RBCs for explosives, metals, and perchlorates that are not listed in Table I-1 will be developed using USEPA Region III methodology. The clean closure standard used at closure (industrial or residential) will be based on the intended future use of the Burning Grounds. If cumulative carcinogenic impacts based on screening levels do not exceed 1E-05 and cumulative hazards based on screening levels do not exceed 1.0, soil at the unit will be considered clean, and no further evaluations will be completed. If soil screening values are exceeded, a site-specific risk analysis may be conducted or decontamination activities initiated. Risk assessment procedures are discussed in the following section.

In the event that the cumulative HI does not exceed 1.0, no further analysis of potential systemic toxicants will be conducted, and the soil at the Burning Grounds will be considered clean from the standpoint of noncarcinogenic contamination. If the HI exceeds 1.0, toxicity endpoints will be considered.

Chemicals have various toxicity endpoints. For example, one chemical may affect the liver but no other organs, whereas another chemical may affect only the central nervous system. The cumulative HI is initially calculated without any regard to the toxicity endpoint. If the cumulative HI does exceed 1.0, additional evaluations will be completed to determine the HI based on the toxicity endpoints of the potential chemicals of concern. Under these circumstances, it is likely that several cumulative HIs for chemicals with similar endpoints will be determined. In this case, separate toxicity endpoints would be determined for the liver, the heart, and the central nervous system. If each of the cumulative HIs based on toxicity endpoints does not exceed 1.0, soil at the Burning Grounds will be considered clean from the standpoint of noncarcinogenic contamination.

Quantitative Risk Assessment

Quantitative risk estimates will be developed for carcinogenic and noncarcinogenic compounds that exceed background levels in accordance with methodology contained in the USEPA Risk Assessment Guidance (EPA/540/1-89-002).

If the cumulative incremental cancer risk from all routes of exposure for all carcinogens detected above background does not exceed 1E-05, the soil will be considered clean from the standpoint of carcinogenic contamination.

Soil Removal

If potential risk from exposure to soil is determined to exceed an acceptable level, soil removal may be necessary to meet the soil cleanup goals. If soil removal is conducted, verification sampling will be conducted along the bottom and perimeter of excavation to determine that the soil cleanup goals have been attained.

Buildings 366 and 810 Container Storage

The closure of the hazardous waste storage units will be conducted to minimize the need for further maintenance and to provide maximum protection of human health and the environment. Clean closure will be the method used to close the container storage units. At closure, all hazardous waste and hazardous waste residue will be removed from the storage units and transported to permitted treatment or disposal facilities. Any containment areas containing or contaminated with hazardous wastes will be decontaminated or removed.

I-1b Partial and Final Closure Procedures [40 CFR 264.112(b)(1) through (7)]

Burning Grounds

The entire Burning Grounds is expected to remain in service throughout the active life of the facility. However, one or more burn pans may be temporarily taken out of service for repair or replacement. The remaining burn pans within the unit would remain active. Replacement of burn pans during the active live would not be considered a closure activity.

The following is a summary of the procedures that will be used to close the Burning Grounds. Details are provided in Section I-1e(11).

- The final volume of reactive hazardous waste will be treated by open burning. Any ejected material will be collected and reburned, if necessary.
- After treatment of the final volume of wastes, the burn pans will contain open burning treatment residuals and the soil/sand liner. These materials will be tested to determine whether they would be classified as a RCRA hazardous waste or a nonhazardous waste and handled accordingly.
- The burn pans, rocket motor tie-down unit, and precipitation covers will be removed.
- The burn pads will be wipe tested to determine whether they would be classified as a hazardous or nonhazardous waste. If the pads meet the closure criteria for clean closure they will be left in place. If not they will be removed and disposed of as hazardous wastes.
- Soil samples will be collected from a grid pattern and analyzed to determine whether the soil meets the closure performance standards discussed in Section I-1a(1). If necessary, soil will be removed to attain the soil cleanup goals. The Burning Grounds will be regraded and covered with native soil and vegetation to control erosion.

Buildings 366 and 810 Container Storage

All hazardous waste storage units are expected to remain in service throughout the active life of the facility and will be closed at the time the facility is closed.

The following is a summary of the procedures that will be used to close the hazardous waste storage units. Details are provided in Section I-1e(4).

All wastes stored at the units will be removed and transported to permitted treatment or disposal facilities at the time of closure. Containment cell surfaces will be inspected and cleaned as necessary. Surface wipe samples will be collected to confirm the absence of contamination. This will eliminate the need for further maintenance and will eliminate the possibility of post-closure escape of hazardous waste, hazardous waste constituents, or contaminated runoff. Contamination of soil or groundwater is not anticipated because the design features of the unit reduce or eliminate the possibility of contaminants reaching the soil and, therefore, the groundwater. Soil samples will be collected to verify the absence of contamination only if cracks extending through the concrete are found in the containment area. In the unlikely event that contamination has occurred, clean closure of the soil will be accomplished.

I-1c Maximum Waste Inventory [40 CFR 264.112(b)(3)]

Burning Grounds

Reactive wastes are neither stored nor accumulated at the Burning Grounds. The maximum inventory of reactive waste ever present at the Burning Grounds is the explosive load limit or 1,355 pounds of P/E material. This quantity would be the maximum waste inventory ever present at one time. Any reactive waste present at the Burning Grounds would be treated in the burn pans before closure begins. When closure activities begin, no inventory of reactive wastes will remain.

Building 366 Container Storage

ABL stores a maximum of 320 drums of waste at Building 366. The largest drum stored is typically 55 gallons. Therefore, the maximum waste inventory is 17,600 gallons. Both hazardous and non-hazardous wastes are stored at this unit.

Building 810 Container Storage

ABL may store a maximum of 44 drums of waste in the labpack storage building. The largest drum stored may be 55 gallons. Therefore, the maximum waste inventory will be 2,420 gallons. Both hazardous and non-hazardous wastes will be stored at this unit.

I-1d Schedule for Closure [40 CFR 264.112(b)(6)]

RCRA regulations require that a closure date be specified to assess the adequacy of financial assurance provisions. Federal facilities are exempted in 40 CFR 264.140(c) from these requirements. Because closure of the hazardous waste treatment and waste storage units will depend on unknown future DOD operational requirements, a closure date is not specified for the facilities to be permitted pursuant to this application. Closure of these facilities is not anticipated before the year 2050.

I-1d(1) Time Allowed for Closure [40 CFR 264.112(b)(2), 264.113(a) and (b)

Burning Grounds

The Burning Grounds will be closed in accordance with the following schedule, relative to the start of closure, once the decision for closure has been made and funding has been provided.

Description	Cumulative Time (Days)
Receipt of final volume of waste	-90
Notify WVDEP in writing of final closure	-45
Start of closure	0
Site investigation (sampling and analysis, data interpretation)	60
Site remediation	120
Complete closure activities	180*
Certification of closure	240*

* Longer if large quantities of contaminated soil are encountered.

Buildings 366 and 810 Container Storage

The hazardous waste storage units will be closed in accordance with the following schedule, relative to the start of closure, once the decision for closure has been made and funding has been provided.

Description	Cumulative Time (Days)
Receipt of final volume of waste	-90
Notify WVDEP in writing of final closure	-45
Start of closure	0
Site investigation (sampling and analysis, data interpretation)	60
Complete closure activities	90
Certification of closure	150

I-1d(1)(a) Extension for Closure Time [40 CFR 264.113(a) and (b)]

If the planned closure is expected to exceed the 90 days for treatment, removal, or disposal of wastes and/or the 180 days for completion of closure activities, a petition for a schedule for closure and a permit notification that justifies that a longer period of closure time is required will be submitted. The petition will demonstrate one of the following, depending on the circumstances that necessitate a longer period of closure time:

- Closure activities require longer than 90 or 180 days
- Unit or facility has capacity to receive additional wastes

- There is a reasonable likelihood that another person other than the owner or operator will recommence operation of the site within one year
- Closure would be incompatible with continued operation

The petition will also demonstrate that all steps have and will be taken to prevent threats to human health and the environment from the unclosed but inactive facility.

I-1e Closure Procedures [40 CFR 264.112 and 264.114]

I-1e(1) Inventory Removal [40 CFR 264.112(b)(3)]

Burning Grounds

Methods for removing, transporting, treating, storing, or disposing of all hazardous wastes at the Burning Grounds are discussed in Section I-1e(11).

Buildings 366 and 810 Container Storage

Methods for removing, transporting, treating, storing, or disposing of all hazardous wastes at the hazardous waste storage units are discussed in Section I-1e(4).

I-1e(2) Disposal or Decontamination of Equipment, Structures, and Soils [40 CFR 264.112(b)(4) and 264.114]

Waste Treatment

A description of the steps needed to decontaminate and disposal of all facility equipment and structures at the Burning Grounds is provided in Section I-1e(11).

Waste Storage

A description of the steps needed to decontaminate and disposal of all facility equipment and structures at the hazardous waste storage units is provided in Section I-1e(4).

I-1e(3) Closure of Disposal Units/Contingent Closure [40 CFR 270.14(b)(13), 270.17(f), 270.18(h), 270.21(e), 264.228(a)(2), 264.228(c)(1)(i), 264.258(c), 264.258(c)(1)(i), 264.301(a), and 264.601]

This section is not applicable because no hazardous waste disposal units are present at ABL. However, if the soil at the Burning Grounds cannot be fully decontaminated to attain the closure performance standards, ABL will amend the closure plan in accordance with Section I-1f to address the details of closure, and the Burning Grounds will be closed as a land disposal facility. The burn pads will be removed, any contaminated soil will be covered with clean soil or other material having permeability less than or equal to that of the natural subsoil present beneath the unit to minimize the migration of liquids through the closed unit. The cover will be vegetated and contoured to promote drainage and to prevent erosion. The cover material will be of sufficient thickness and elasticity to accommodate settling and subsidence. Any portion closed as a land disposal unit will also have run-on and run-off controls to prevent damage to the final cover.

If contaminated groundwater (from ABL Site 1) is present beneath the Burning Grounds at the time of closure, the existing groundwater remediation system, or a portion thereof, will continue to be operated and maintained, as deemed necessary under the CERCLA program.

If post-closure activities are required, ABL will develop a detailed post-closure plan that addresses the requirements in Section I-2.

I-1e(4) Closure of Containers [40 CFR 264.178, 264.112(b)(3), and 270.14(b)(13)]

Methods for determining the presence of contamination, performing decontamination, and evaluating the effectiveness of decontamination procedures during closure of the hazardous waste storage units are described in this section.

Inventory Removal

All waste stored at the unit will be removed at closure and transported to a permitted treatment, storage, or disposal facility.

Equipment Decontamination

Drum handling equipment, steel pallets, shovels, rakes, and other hand tools used in the cleanup of spilled or leaked materials will be rinsed with water three times to decontaminate them. The rinse water will be contained and tested for pH (corrosivity) and the presence of the predominant chemicals stored at the unit. If the rinse water is determined to be a hazardous waste, it will be shipped to an offsite permitted disposal facility. Wipe samples of the equipment surfaces will be collected and tested for the presence of the predominant chemicals stored at the unit. If surface contamination exists, the surface(s) will be cleaned with appropriate cleaning agents to acceptable RCRA levels. The cleansing agents will be disposed or treated to standards established by Federal and/or State regulations that are in force at the time of closure. Contaminated rags, absorbents, plastic barriers, PPE, and other expendable materials will be containerized and shipped for appropriate treatment or disposal.

Structure Decontamination

The storage areas were designed to minimize structural exposure to leaked or spilled hazardous wastes. The concrete floors and dikes are the only structural portions of the storage area that will potentially be exposed to releases. Released materials are not allowed to accumulate in the cells; therefore, there is little or no potential contamination of subsurface concrete. Wipe samples of the concrete surfaces will be collected and tested for the presence of the predominant chemicals stored at the unit. If surface contamination exists, the surface(s) will be cleaned with appropriate cleaning agents to acceptable RCRA levels. The cleansing agents will be disposed or treated to standards established by Federal and/or State regulations that are in force at the time of closure.

Adjacent Soils

Soil samples will be collected from the areas immediately adjacent to the edge of the hazardous waste storage units. Four samples (one from each side of the unit) will be analyzed for the predominant chemicals that have been stored in the unit during its active life. Initial samples will be collected from the top 6 inches of soil adjacent to the unit. Additional soil sampling will be performed to determine the extent of soil contamination if the initial samples indicate the presence of contamination above applicable regulatory levels. The disposal or treatment method(s) used will be consistent with 40 CFR 264.114 or other applicable regulations at the time of closure.

SECTION I

Closure Plans, Post-Closure Plans, and Financial Requirements [40 CFR 270.14(b)(13) and (15) through (18), 264.110 through 264.151, 264.178, 264.197, 264.228, 264.258, 264.280, 264.310, and 264.351]

This section contains the closure plan describing the steps necessary to close the container storage units and open burning unit at ABL. The maximum extent of operations left unclosed during the active life of the hazardous waste facilities is described. A contingent closure and post-closure plan are also provided if contamination has occurred and it is not possible to achieve clean closure standards. The ABL Environmental Department maintains a copy of this closure plan and any amendments.

I-1 Closure Plans [40 CFR 270.14(b)(13), 264.112(a)(1) and (2)]

ABL is primarily a solid propellant rocket motor development and production facility operated by Alliant Techsystems Operations LLC. ABL is located at Rocket Center in Mineral County, West Virginia. The site is approximately 9 miles south of Cumberland, Maryland on the southern bank of the North Branch Potomac River. ABL consists of Plant 1, which is owned by NAVSEA, and Plant 2, which is owned by Alliant Techsystems Operations LLC. Both plants are operated by Alliant Techsystems Operations LLC. Plant 1 is approximately 1,572 acres, of which approximately 400 acres is developed bottomland and the remainder largely undeveloped forested mountain land. Plant 2 is 57 acres of developed bottomland located adjacent to Plant 1.

ABL conducts hazardous waste operations at three principal locations on the Plant 1 facility. These locations include one container storage area (Building 366) where up to 320 containers of waste is stored, and the Burning Grounds, an open burning area where reactive hazardous wastes are treated. Also, Building 810 (Lab Pack Storage) can store up to 44 drums of waste.

ABL stores both regulated and unregulated wastes at the container storage areas. Wastes stored in Building 366 include sludge from spent aluminum surface-treatment solutions; still bottoms from degreasing and cleaning operations; spent solvents, motor oil, and antifreeze; waste paint and thinners; solvents with lead contamination; lead solids; chromium solids; burning ground treatment residues; laboratory solvents; cured and uncured resins; lab packs; and asbestos. Wastes stored at Building 810 primarily consist of lab packs but may occasionally include drums.

Reactive wastes consisting of explosives, propellants, and materials containing propellants and explosives are treated by open burning at the Burning Grounds.

I-1a Closure Performance Standard [40 CFR 264.111]

Burning Grounds

The Burning Grounds is co-located with a CERCLA remediation site known as ABL Installation Restoration Program (IRP) Site 1. This site contained three former solvent disposal pits that are considered to be the primarily source for the contamination of groundwater under the Burning Grounds. Historical treatment activities are also potentially responsible for a portion of the groundwater contamination. An active CERCLA groundwater extraction and treatment system is located at Site 1. All groundwater under the site (including the Burning Grounds) is captured by the extraction system and treated for VOC and Perchlorate contamination. The treated water is either discharged to the North Branch Potomac River or directed to the ABL Plant 1 steam generation plant for use as boiler feed water. All closure performance standards established for groundwater beneath the Burning Grounds will be incorporated into the CERCLA program. If the groundwater remediation objectives under CERCLA are met while the Burning Grounds are still in operation, further groundwater monitoring will be conducted under RCRA.

Clean closure is intended for the aboveground and soil portion of the Burning Grounds.

At closure, all untreated reactive hazardous waste, burn pan treatment residues, burn pans, the rocket motor tie-down unit, and contaminated soil will be removed from the Burning Grounds. The need for further maintenance, except possibly for the groundwater remediation system, will not exist other than recontouring the surface and covering the area with native soil and vegetation to prevent erosion. If decontamination of soil cannot be achieved, additional closure activities, including closing the area as a land disposal unit, will be conducted to protect human health and the environment. In addition, the contingent Post-Closure Plan in Section I-2 will be implemented.

Closure standards for hazardous constituents in soil within the Burning Grounds include background levels, soil screening levels, and site-specific risk-based concentrations for explosives, perchlorate, and metals (aluminum, bismuth, lead, tin, and zirconium). The explosives that will be considered will be those target analytes in USEPA Method 8330 for analysis of explosives. Target explosive analytes include the following:

- Dinitrobenzene isomers
- Dinitrotoluene isomers
- HMX (cyclotetramethylenetetranitramine)
- Nitrobenzene
- Nitrocellulose
- Nitroglycerin
- Nitrotoluene isomers
- RDX (cyclotrimethylenetriamine)
- Tetryl (trinitro-2,4,6-phenylamine)
- 1,3,5-Trinitrobenzene
- 2,4,6-Trinitrotoluene

Soil cleanup goals will be established through a series of screening phases and detailed evaluations. The evaluation procedure that will be used to establish soil cleanup goals is outlined below.

I-1e(5) Closure of Tanks [40 CFR 270.14(b)(13), 264.197, and 264.112(b)(3)]

ABL does not store hazardous waste in tanks. Therefore, this section is not applicable.

I-1e(6) Closure of Waste Piles [40 CFR 270.18(h) and 264.258]

ABL does not have any hazardous waste piles. Therefore, this section is not applicable.

I-1e(7) Closure of Surface Impoundments [40 CFR 270.17(f), 264.228(a)(1) and (2), and 264.228(b)]

ABL does not have any hazardous waste surface impoundments. Therefore, this section is not applicable.

I-1e(8) Closure of Incinerators [40 CFR 264.351 and 270.14(b)(13)]

ABL does not have any hazardous waste incinerators. Therefore, this section is not applicable.

I-1e(9) Closure of Landfills [40 CFR 270.21(e) and 264.310(a)]

ABL does not have any hazardous waste landfills. Therefore, this section is not applicable.

I-1e(10) Closure of Land Treatment Facilities [40 CFR 264.280(a) and 270.20(f)]

ABL does not have any hazardous waste land treatment facilities. Therefore, this section is not applicable.

I-1e(11) Closure of Miscellaneous Units [40 CFR 270.23(a)(2)]

Methods for determining the presence of contamination, performing decontamination, and evaluating the effectiveness of decontamination procedures during closure of the Burning Grounds are described in this section.

Inventory Removal and Disposal

As stated in Section I-1c(1), no inventory of reactive hazardous wastes will remain when closure activities begin.

Removal and Disposal of Treatment Residue and Soil/Sand Liner

After treatment of the final volume of wastes, the burn pans will contain treatment residues and soil/sand liners. The treatment residue in each burn pan will be inspected for potential reactivity. If the treatment residues are determined to be reactive, they will be reburned. The treatment residues will be removed from the pans, placed into containers, and analyzed for the toxicity characteristic (TC). If the treatment residue results exceed the regulatory TC levels, they will be disposed of as a hazardous waste. If the treatment residue results are below the regulatory TC levels, they will be disposed of as a solid waste.

The soil/sand liner will be inspected for evidence of entrainment of reactive material. Once determined to be free of reactive materials, the liners will then be sampled and analyzed for the TC for lead and 2,4-dinitrotoluene. If the liner results exceed regulatory TC levels, the materials will be placed into containers and disposed of as a hazardous waste. If the liner results are below the regulatory TC levels, the material will be considered clean and disposed of as a solid waste.

Burn Pan and Precipitation Cover Removal and Disposal

The burn pans and rocket motor tie-down unit will be decontaminated in place. After all the treatment residues and liners have been removed, the burn pans, tie-down unit, and covers will be inspected, certified as explosive-free, and sold for recycle as metallic scrap. The pads will be inspected for any residual contamination. When determined to be free of reactive material, the pads will either be abandoned in place or demolished and disposed of as demolition debris.

Assessment of Soil Contamination

During closure, soil samples will be collected from the Burning Grounds up to the fence line. A soil sampling grid will be established over the Burning Grounds, and a sample will be collected from the center of each grid or where the grid lines intersect. All soil samples will be collected to a depth of 1 ft using a stainless steel auger or similar sampling device. The soil removed by the auger will be thoroughly mixed and placed into the appropriate sample bottles. All soil samples will be analyzed for the metals and explosives listed in Section I-1a(1).

If hazardous constituents are detected at concentrations above background or risk-based levels, additional samples will be collected to characterize the nature and extent of contamination. Samples will be collected deeper than 1 ft, if necessary, to define the vertical extent of contamination. Additional samples will be collected, if necessary, to define the horizontal extent of contamination.

If the analysis of the soil samples shows that concentrations of all constituents are below background or site-specific risk-based levels, no further sampling or soil removal will be necessary.

Removal and Disposal of Contaminated Soil

Any contaminated soil at the Burning Grounds exceeding background screening level or site-specific risk-based concentrations will be excavated. Soil will be removed in layers up to 2 ft thick using backhoes, bulldozers, or other excavation equipment. After a layer of contaminated soil is removed, sampling and analysis will be conducted to determine whether the cleanup goals have been attained. If the cleanup goals are not attained, additional layers of soil will be removed until closure goals are attained or the unit will be closed as a landfill. At present, removal by excavation is expected. Treatment technologies for contaminated soil cannot be determined at this time. The decision on whether treatment is appropriate will be determined in the future. This decision will depend on the contaminants present, the nature and extent of contamination, and the status of available technology at that time. If treatment is considered to be appropriate, the closure plan will be revised and submitted to WVDEP in accordance with Section I-1f.

Chemicals have various toxicity endpoints. For example, one chemical may affect the liver but no other organs, whereas another chemical may affect only the central nervous system. The cumulative HI is initially calculated without any regard to the toxicity endpoint. If the cumulative HI does exceed 1.0, additional evaluations will be completed to determine the HI based on the toxicity endpoints of the potential chemicals of concern. Under these circumstances, it is likely that several cumulative HIs for chemicals with similar endpoints

will be determined. For example, some of the chemicals of concern may affect only the liver, only the hearth, or only the central nervous system. In such cases, separate toxicity endpoints would be determined for the liver, the heart, and the central nervous system. If each of the cumulative HIs based on toxicity endpoints does not exceed 1.0, soil at the Burning Grounds will be considered clean from the standpoint of noncarcinogenic contamination.

It is anticipated that contaminated soil would be classified as a nonhazardous waste. However, representative composite samples will be collected and tested for TC and any other parameters required by the disposal facility. If any excavated soil fails the TC test, it will be disposed of at an offsite hazardous waste landfill.

Equipment Decontamination

A temporary decontamination pad will be constructed if soil removal is necessary. The decontamination pad will be constructed on a graded and compacted earthen foundation surrounded by berms. The pad and the berms will be overlain by a 30-mil (minimum) thick liner so that decontamination fluids are retained. The liner will be protected by a material such as sand or plywood to prevent tearing. Ramps will be positioned at the entrance and exit of the pad to allow vehicle access over the berms. The pad will be sloped so that decontamination fluids will flow to a low point for collection. After decontamination activities have been completed, the liner will be disposed of as a solid waste.

Any contamination on PPE is expected to consist of solids. All disposable PPE, such as clothing, gloves, and expendable protective gear, will be cleaned on the decontamination pad to remove any solid material adhering to the PPE. The PPE will then be placed into a container and disposed of as a nonhazardous solid waste.

Small excavation equipment, such as shovels and rakes, and hand tools will be decontaminated by removal of solids by brushing, scraping, raking, etc followed by steam cleaning with a high-pressure washer.

Vehicles and heavy equipment, such as trucks, backhoes, bulldozers, containers, and roll-off boxes, will be decontaminated, using a high pressure steam cleaner, before leaving the remediation area and entering a clean area.

Non-disposable sampling equipment will be decontaminated as follows:

- Potable water rinse
- Alconox or Liquinox detergent wash
- Potable water rinse
- Deionized water rinse
- Ispropanol rinse
- Analyte-free water rinse
- Air dry
- Wrap in aluminum foil

Liquid and solid decontamination wastes will be collected and placed into containers meeting DOT requirements. These wastes will be tested for the TC. Any decontamination wastes failing the TC will be handled as hazardous waste; otherwise they will be handled as nonhazardous wastes.

I-1e(12) Closure of Boilers and Industrial Furnaces (BIFs) [40 CFR 266.102(a)(2)(vii)]

ABL does not have any hazardous waste BIFs. Therefore, this section is not applicable.

I-1e(13) Closure of Containment Buildings [40 CFR 264.1102]

ABL does not have any hazardous waste containment buildings. Therefore, this section is not applicable.

I-1f Amendment to Closure Plan [40 CFR 264.112(c)]

ABL will maintain this closure plan to ensure that it is current and accounts for anticipated closure activities. This closure plan will be amended when the following events or contingencies occur:

- The expected reasons that warrant closure of the treatment or storage unit change.
- Changes in operating plans or facility design affect this closure plan. This will include, but not be limited to, the need to modify the treatment or storage units or to expand the capacity.
- New information is obtained that significantly changes the underlying assumptions or procedures outlined in this closure plan.
- Unexpected events occur during closure that require significant modifications of this closure plan.

Certain events and contingencies are anticipated in this closure plan that do not warrant formal amendments to this plan. Examples of these events and contingencies include the need to remove minor additional quantities of soil than is currently anticipated. Such events and contingencies will be brought to the attention of the WVDEP; however, a formal amendment of the closure plan will not be requested.

Whenever events or contingencies require formal amendment of this closure plan occur, a written request for permit modification will be submitted to the WVDEP. Such request will be submitted to the Director, Division of Water and Waste Management and sent by certified mail. Any request for amendment will describe in detail the necessary closure plan changes. This request will be submitted at least 60 days prior to the proposed change in facility design or operation or no later than 60 days after an unexpected event has occurred that has affected the closure plan. If the unexpected event occurs during the partial or final closure period, ABL will request a permit modification no later than 30 days after the unexpected event.

I-2 Post-Closure Plan/Contingent Post-Closure [40 CFR 270.14(b)(13), 270.17(f), 270.18(h), 270.20(f), 270.21(e), 270.23(a)(3), 264.118, 264.197(b), 264.197(c)(2), 264.228(c)(1)(ii), 264.280(c), and 264.603]

Post-closure is not expected to be required for the hazardous waste storage unit because clean closure is planned.

Clean closure is also planned for the hazardous waste treatment unit. However, if soils at the Burning Grounds cannot be fully decontaminated to attain the closure performance standards, the waste treatment unit will be closed as a land disposal facility. Any contaminated soil will be covered with soil or other material having permeability less than or equal to that of the natural subsoils present beneath the unit to minimize migration of liquids through the closed unit. The cover will be vegetated and contoured to promote drainage and to prevent erosion. The cover material will be of sufficient thickness and elasticity to accommodate settling and subsidence. Any portion closed as a land disposal unit will also have run-on and run-off controls to prevent damage to the final cover.

If contaminated groundwater (from another source) is present beneath the Burning Grounds at the time of closure, the existing groundwater remediation system, or some variation thereof, will continue to be operated and maintained, as deemed necessary under the CERCLA program.

If post-closure activities are required, ABL will develop a detailed post-closure plan. The contents of the post-closure plan are discussed in the following sections. The ABL Environmental Department will maintain a copy of the post-closure plan and will be responsible for updating the plan, as necessary.

I-2a Inspection Plan [40 CFR 264.118(a), 264.197(b), 264.197(c)(2), 264.226(d)(2), 264.228(b), 264.228(c)(1)(ii), 264.258(b), 264.258(c)(1)(ii), 264.303(c), and 264.310(b)]

Inspections of the Burning Grounds will be conducted during the post-closure care period whenever groundwater is sampled or, at a minimum, semiannually. Records of inspections will be maintained by ABL. The items to be inspected are as follows:

- Security—Gates, fencing, and warning signs will be inspected for damage.
- Erosion—The cover (cap) will be inspected for erosion damage such as washouts or large rodents damage (Groundhog borrows).
- Settlement—The cover (cap) will be inspected for indications of settlement, subsidence, or displacement.
- Vegetative Cover—The conditions of the vegetative cover will be inspected for adequate coverage.
- Run-on and Run-off Controls—Drainage channels designed to divert and collect storm water will be inspected to ensure good drainage.
- Monitoring Equipment - The conditions of well casing, caps, and locks will be inspected when the well is sampled.

I-2b Monitoring Plan [40 CFR 264.118(b)(1), 264.197(b), 264.197(c)(2), 264.226(d)(2), 264.228(b), 264.228(c)(1)(ii), 264.258(b), 264.258(c)(1)(ii), 264.303(c), and 264.310(b)]

The *Long-Term Monitoring Plan Site 1 – Burning Grounds* (CH2M HILL, 1998) defines the requirements established for groundwater and treatment plant effluent monitoring required

under the CERCLA program. Substantive requirements for post-closure monitoring will be incorporated into the ongoing monitoring under the CERCLA program. This coordination of RCRA and CERCLA program requirements is in accordance with the ABL Federal Facility Agreement (January 1998) and USEPA guidance (USEPA, September 24, 1996). However, if the groundwater remediation objectives under CERCLA have already been met when the Burning Grounds are closed, any post-closure groundwater monitoring necessary will be conducted under RCRA.

I-2c Maintenance Plan [40 CFR 264.118(b)(2), 264.197(b), 264.197(c)(2), 264.228(b), 264.228(c)(1)(ii), 264.258(b), 264,258(c)(1)(ii), and 264.310(b)]

Deficiencies noted during the inspections of the Burning Grounds described in Section I-2a will be corrected to maintain the integrity of the closed unit. Records of maintenance activities will be maintained by ABL. A discussion of the preventative and corrective procedures and the equipment required for the post-closure maintenance program follows:

- Security—Signs will be replaced before they become illegible. Ground at the base of the fence will be regraded, as needed, to maintain adequate site security. The fence will be replaced, as needed, to maintain adequate site security.
- Erosion—Washouts of the cover (cap) will be repaired as they are detected. If the cap integrity is in question, repair activities will be made as soon as practical. Restoration of the vegetative cover will be performed as needed. Groundhog and other rodent borrows will be filled and compacted. The vegetative cover will be restored at these locations. An effort to trap and relocate the rodents should be attempted in order to minimize future maintenance problems. If required, a permit for trapping the rodents will be obtained from the West Virginia Department of Natural Resources.
- Settlement—Settlement of the cover (cap) will be repaired by placing additional cover material on top of the existing cover and replacing vegetation.
- Vegetative Cover—Maintenance of the vegetative cover will include revegetation as needed.
- Run-on and Run-off Controls—Drainage channels will be cleaned and maintained to allow free drainage so retention of stormwater does not occur.
- Monitoring Equipment—Damage to monitoring equipment will be recorded, and repairs will be made as needed.

I-2d Land Treatment [40 CFR 264.228(c)]

ABL does not have any land treatment units. Therefore, this section is not applicable.

I-2e Post-Closure Care for Miscellaneous Units [40 CFR 270.23(a)(3) and 264.603]

Post-closure care for miscellaneous units (i.e., the Burning Grounds) is discussed in Sections I-2a, I-2b, and I-2c.

I-2f Post-Closure Security [264.117(b) and (c)]

Hazardous waste will not remain exposed after completion of final closure of the Burning Grounds. The fence will remain at the Burning Grounds; therefore, access by the public or domestic livestock will not pose a hazard to human health. ABL will retain control of the Burning Ground following closure. Post-closure use will not allow the disturbance or modification to the integrity of the final cover or any other components of the containment system or the function of any monitoring system in place at the time. The post-closure notices (see Section I-3) will contain restrictions on post-closure activities.

I-2g Post-Closure Contact [40 CFR 264.118(b)(3)]

The name, address, and telephone number of the person or office to contact during the post-closure care period will be specified in the post-closure plan.

I-2h Amendment to Post-Closure Plan [40 CFR 264.118(d)]

ABL will maintain the post-closure plan to ensure that it is current and accounts for anticipated post-closure activities. The post-closure plan will be amended whenever either of the following occurs:

- Changes in operating plans or facility design affect the approved post-closure plan.
- Events that occur during the active life of the facility, including partial and final closures, affect the approved post-closure plan.

A written request for permit modification will be made to the Director of the Division of Water and Waste Management, WVDEP, if amendment to the post-closure plan is required. This request will be made at least 60 days before the proposed change in facility design or operation or not later than 60 days after an unexpected event has occurred that has affected the post-closure plan.

I-3 Notices Required for Disposal Facilities

I-3a Certification of Closure [40 CFR 264.115 and 264.280]

Within 60 days of completion of closure of the Burning Grounds or the hazardous waste storage unit and within 60 days of the completion of final closure, ABL will submit a closure certification to the Director of the Division of Water and Waste Management, WVDEP, by registered mail. The certification will certify that that the hazardous waste management unit or facility, as applicable, has been closed in accordance with the specifications of the approved closure plan. The certification will be signed by an authorized representative of ABL and by an independent professional engineer registered in the State of West Virginia. Documentation supporting the professional engineer's certification will be furnished to WVDEP.

I-3b Survey Plat [40 CFR 264.116]

A survey plat will not be required unless the Burning Grounds is closed as a land disposal unit or contaminated groundwater (from ABL CERCLA Site 1) remains at the time of closure. If a survey plat is required, ABL will submit the survey plat on the West Virginia

State plain coordinates, to the authority with jurisdiction over local land use and the Director of the Division of Water and Waste Management, WVDEP. The survey plat will be submitted no later than the submission of the certification of closure. The plat will indicate the location of the land disposal unit with respect to permanently surveyed benchmarks and will be prepared and certified by a professional land surveyor registered in the State of West Virginia. The survey plat filed with the local land-use authority will contain a prominently displayed note that states ABL's obligation to restrict disturbance of the land disposal unit.

I-3c Post-Closure Certification [40 CFR 264.120]

Within 60 days of completion of the post-closure care period for the Burning Grounds, certification will be submitted to the Director, Division of Water and Waste Management, WVDEP. The certification will certify that the post-closure care period was performed in accordance with the specification of the approved post-closure plan. The certification will be signed by a representative of ABL and by an independent professional engineer registered in the State of West Virginia.

I-3d Post-Closure Notices [40 CFR 270.14(b)(14) and 264.119]

The following post-closure notices will be appropriately filed and submitted.

A record of the type, location, and quantity of hazardous waste remaining within each land disposal unit will be submitted to the authority with jurisdiction over local land use and to the Director of the Division of Water and Waste Management, WVDEP, no later than 60 days after certification of closure for each disposal unit.

A notation in the deed to the facility property will be made that will, in perpetuity, notify any potential purchasers of the property that (1) the land has been used to manage hazardous waste; (2) use of the land is restricted to activities that will not disturb the integrity of the final cover system or monitoring system during the post-closure care period; and (3) the survey plat and record of waste disposal have been submitted to the authority with jurisdiction over local land use and to the Chief of the Office of Waste Management, WVDEP. This notation will be placed within 60 days of certification of closure of the first waste disposal unit and within 60 days of certification of closure of the last waste disposal unit.

A certification, signed by an ABL representative, that the notice in the deed has been made, will be submitted to the Director of the Division of Water and Waste Management, WVDEP.

I-4 Closure Cost Estimate [40 CFR 270.14(B)(15) and (16), 264.140(C), and 264.142]

Federal facilities are exempted in 40 CFR 264.140(c) from financial requirements, including a closure cost estimate. ABL is a federal government facility.

I-5 Financial Assurance Mechanism for Closure [40 CFR 270.14(B)(15) and (16), 264.140(C), 264.143, and 264.151]

Federal facilities are exempted in 40 CFR 264.140(c) from financial requirements, including a financial assurance mechanism for closure.

I-6 Post-Closure Cost Estimate [40 CFR 270.14)(16), 264.140(C), and 264.144]

Federal facilities are exempted in 40 CFR 264.140(c) from financial requirements, including a post-closure cost estimate.

I-7 Financial Assurance Mechanisms for Post-Closure Care [40 CFR 270.14(B)(16), 264.140(C), 264.165, and 264.151]

Federal facilities are exempted in 40 CFR 264.140(c) from financial requirements, including a financial assurance mechanism for post-closure care. See Figure I-1.

I-8 Liability Requirements [40 CFR 270.14(B)(17), 264.140(C), and 264.147]

Federal facilities are exempt from financial requirements, including liability requirements.

I-9 Use of State-Required Mechanisms [40 CFR 270.14(B)(18)]

West Virginia has adopted the exemption of state and federal facilities from financial requirements. Therefore, this section is not applicable.

Tables

Figure I-1

DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
1333 ISAAC HULL AVE SE
WASHINGTON NAVY YARD DC 20376-0001

IN REPLY TO

5090
Ser 04XI3/085
7 August 2001

NVDEP Office of Waste Management
Hazardous Waste Permitting Unit
Attn: Mr. James Duranti
1356 Hansford St.
Charleston, WV 25301

Dear Mr. Duranti:

Subj: FINANCIAL ASSURANCE REQUIREMENTS EXEMPTION, 40 CFR 264.140(c), FOR ALLEGANY BALLISTICS LABORATORY, WEST VIRGINIA

The Department of the Navy, Naval Sea Systems Command (NAVSEA), owner of the Allegany Ballistics Laboratory (ABL) is in the process of revising the RCRA operating permit application for facility, which is operated by the Alliant Missile Products Company LLC (AMPC). During this permit revision process, the parties have discussed the requirement for AMPC to provide financial assurance for unit closure and post-closure activities.

NAVSEA and AMPC seek to apply the Federal Facilities Exemption from the financial assurance requirements found in 40 CFR 264.140(c). Environmental Protection Agency decision #9477.1983(01) dated 3 January 1983 indicates that where one party (the owner or operator) is an exempted party because it is a State or Federal governmental unit, the other private sector party need not comply with the financial assurance requirements. NAVSEA, as owner of ABL, believes that the use of this exemption from financial assurance requirements for AMPC, the private sector operator of ABL is appropriate.

Subj: FINANCIAL ASSURANCE REQUIREMENTS EXEMPTION, 40 CFR 264.140(c), FOR ALLEGANY BALLISTICS LABORATORY, WEST VIRGINIA

Any questions you may have on this issue should be directed to Mr. Lou Williams, NAVSEA TECHREP, at (909) 620-0479.

Sincerely,

D.W. ANDERSON
By direction

Copy to:
NAVSEA TECHREP (L Williams)
NAVFACLANTDIV (M Montegross)
AMPCC (J Waugaman, G Fletcher)

Section D
Process Information

Container Management

SECTION D

Process Information [40 CFR 270.15, 270.23, 264.170 through 264.178, and 264.601]

Section D provides information on the design and operation of the ABL hazardous waste storage buildings and the Burning Grounds, including the burn pans and the rocket motor tie-down unit. Descriptions are provided for all these units. This section also includes a description of recordkeeping requirements.

D-1 Containers [40 CFR 270.15 and 264.170 through 264.178]

Alliant Techsystems Operations LLC stores hazardous waste in containers. Currently, waste is stored in Building 366 and Building 810.

Building 366. Building 366 is approximately 100 ft long and 75 ft wide and covered with a roof. The sides of the building are open. The container storage area consists of two sets of concrete cells that are raised above the ground. Each set contains 20 cells, each with dimensions of 9 ft 3 in. long by 6 ft wide by 6.25 in. deep.

Building 810. The lab pack storage building is metal-sided structure with a concrete foundation. The inside dimensions of the building are 19 ft 4 in. by 15 ft 4 in., with a 10-ft ceiling. Nine portable polyethylene containment modules placed within the building provide secondary containment. Each containment module is topped with a rigid grate designed to ensure waste containers do not contact any liquids collected by the containment modules.

D-1a Containers with Free Liquids

D-1a(1) Description of Containers [40 CFR 264.171, 264.172, and 270.14(b)(1)]

The container storage units are used for storage of both hazardous and nonhazardous waste. The Building 366 hazardous waste storage area is designed to store a maximum of 320 drums within 40 diked cells (i.e., eight drums per cell). The containers are typically either 45-gallon drums, 55-gallon drums, cubic yard (Gaylord) boxes, or 66 gal. Labpak boxes. Building 810 is designed primarily to store containerized wastes in preparation for lab packing, to prepare lab packs for shipment, and to store the lab packs. These wastes are typically expired or off-specification commercial chemical products, stored in the original containers until lab packed. Maximum capacity is forty-four 55-gallon drums and four 21-gallon drums. All waste drums meet DOT specifications for the waste stored in the drums and are in good condition. "Good condition" means without significant rust, apparent structural defects, or leaks.

D-1a(2) Container Management Practices [40 CFR 264.173]

Procedures for transporting, handling, storing, and closing containers include provisions to ensure that containers are not opened, handled, or stored in a manner that may rupture the

containers. Persons engaged in hazardous waste operations are trained in the applicable procedures. Containers are moved with hand trucks, drum handlers, forklifts, or trucks with hydraulic tailgates, depending on the job task.

Container management practices include the following:

- Containers and drums are transported to and handled at the storage areas only by designated, trained personnel.
- Only trained drivers operate forklifts. Forklifts enter Building 366 from the ramp at the north end of the building.
- Containers will typically be placed into Building 810 by forklift then unloaded. There is a small internal ramp to accommodate a hand truck.
- Designated tools and equipment will be used for moving containers (e.g., forklift) or for opening and closing drum bungs and lids.
- Containers are not opened except to add or remove wastes and to obtain samples.
- Weekly inspections are performed to verify that containers are closed and in good condition.
- Drums to be transported off site are inspected for the following: they are DOT approved for hazardous waste; they are visually in good condition; they contain sufficient freeboard; they are securely closed and properly labeled; drum labels agree with the waste log; and they are labeled with the accumulation date.

In Building 366, containers are stored on skids, and a maximum of eight (8) drums, four (4) cubic yard boxes, or eight (8) Labpak boxes are stored in each of the 40 diked cells. Cells are separated by concrete lips and the two rows of cells are separated by a center aisle approximately 20 ft wide.

In Building 810, containers are stored directly on portable containment units or on portable shelving units, depending on the size of the container. Materials such as out-of-date lab chemicals will be stored in their original containers prior to being packaged for offsite shipment.

D-1a(3) Secondary Containment System Design and Operation [40 CFR 270.15(a)(1), 264.175(a), and 264.175(d)]

Building 366. The storage area design provides secondary containment well in excess of the volume of the largest container stored and/or in excess of 10 percent of the entire volume stored. The area consists of two sets of concrete cells that are raised approximately 4 in. above the ground. Each set contains 20 cells, each with dimensions of 9 ft 3 in. long by 6 ft wide 6.25 in. deep. The separate, diked cells allow incompatible wastes to be segregated.

Building 810. The area typically consists of nine sets of portable containment modules that are placed on the concrete floor of Building 810. These modules consist of:

- Four large containment modules that can each hold eight drums. Each module is 100 in. long, 53 in. wide, and 6 in. deep.

- Three mid-sized containment modules that can each hold six-drums. Each module is 76 in. long, 53 in. wide, and 6 in. deep.
- Two small containment modules that can each hold two-drums. Each module is 53 in. long, 29 in. wide, and 6 in. deep. The sump capacity of the two-drum containment module (according to the manufacturer) is 21 gallons. The separate containment modules allow incompatible wastes to be segregated. No containers larger than 21 gallons will be stored on the two-drum containment modules.

The storage area design provides secondary containment either in excess of the volume of the largest container stored or greater than 10 percent of the total volume stored.

D-1a(3)(a) Requirement for the Base or Liner to Contain Liquids [40 CFR 264.175(b)(1)]
Building 366. The concrete forming the floor in the cells will be free from cracks or gaps. Any cracks or gaps that develop will be sealed. The concrete is resistant to precipitation (e.g., runoff) and the wastes stored at the unit. The concrete is compatible with the waste and would not be adversely affected by contact with the waste. A roof to keep precipitation out of the cells covers the entire storage area. A 6-mil polyethylene vapor barrier was installed under the concrete at the storage area.

Building 810. The portable containment modules in Building 810 are formed from a single piece of polyethylene and are free from cracks and gaps. They are compatible with and resistant to all materials stored within the unit. The building is completely enclosed and prevents precipitation from entering the containment modules. No waste containers will be positioned to straddle two containment modules, thereby ensuring that any leaks or spills are contained within a single containment module.

D-1a(3)(b) Containment System Drainage [40 CFR 270.15(a)(2) and 264.175(b)(2)]
Building 366. Each cell in the storage area contains skids that are used to keep containers from direct contact with the base. The roof over the unit prevents run-on into the containment system and prevents the accumulation of precipitation in the cells. Checking for the presence or absence of standing liquid or other foreign residue in the cells is a weekly inspection item.

Building 810. Each containment unit in the storage area contains rigid grates that are used to keep containers from direct contact with the container base. The roof and walls prevent run-on into the containment units. Checking for the presence or absence of standing liquid or other foreign residue in the containment areas will be a weekly inspection item.

D-1a(3)(c) Containment System Capacity [40 CFR 270.15(a)(3) and 264.175(b)(3)]

Building 366. Each cell accommodates eight (8) drums, four (4) cubic yard boxes (solid only), or eight (8) Labpak boxes and has a gross containment volume of 28.9 cubic ft (ft^3) (9.25 ft long by 6 ft wide by 6.25 in. deep). The largest container that is stored is a cubic yard (Gaylord) box. The volume of the skids is no more than 0.3 ft^3 per cell. The displacement of each drum (to a height of 6.25 in.) is 1.5 ft^3. The net containment volume (calculated as gross containment volume minus skid volume minus displacement volume of seven drums) is 18.1 ft^3 (135 gallons) per cell. The containment system capacity of 135 gallons is sufficient to contain the volume of the largest (liquid) container (55 gallons) or 10 percent of the volume of all containers (44 gallons). The calculation of containment volume is as follows:

Capacity = gross containment volume (28.9 ft^3) - skid volume (0.3 ft^3) - volume of 7 drums (7 by 1.5 ft^3) = 18.1 ft^3 by 7.48 gal/ft^3 = 135 gallons

Building 810. Containment capacity for each module is as follows:

- Each of the largest of the three containment modules in the Building 810 lab pack storage unit has a containment volume of 73 gallons. The largest module has a storage capacity of eight 55-gallon drums. The containment volume of 73 gallons is larger than the volume of the largest container (55 gallons) or 10 percent of the volume of all containers (44 gallons).
- The mid-sized modules have a containment volume of 61 gallons. The containment volume of 61 gallons is larger than the volume of the largest container (55 gallons) or 10 percent of the volume of all containers (33 gallons).
- The smallest modules have a containment volume of 21 gallons. The containment volume of 73 gallons is larger than the volume of the largest container (limited to 21 gallons or less by procedure) or 10 percent of the volume of all containers (11 gallons).

D-1a(3)(d) Control of Run-On [40 CFR 270.15(a)(4) and 264.175(b)(4)]

Building 366. The cells are raised above ground level which prevents run-on. In addition, the storage pad is slightly elevated from the surrounding area and covered with a roof.

Building 810. The building is totally enclosed, preventing run-on. In addition, the containers are raised above ground level which prevents run-on.

D-1a(3)(e) Removal of Liquids from Containment System [40 CFR 270.15(a)(5) and 264.175(b)(5)]

Spilled or leaked waste and any accumulated rain or snow is removed from the containment system to prevent overflow. Small amounts of precipitation that blow into 366 is allowed to evaporate. Personnel trained in hazardous waste cleanup procedures clean up spilled or leaked waste. Any cleanup materials are collected and added to containers storing similar wastes. If necessary, accumulated liquid can be removed from the cells or containment units by pumping or using an absorbent pad. Liquids removed would be transferred into a drum. Accumulated liquids would be analyzed for the waste constituents stored in the cells containing standing liquids if knowledge of the wastes stored were not adequate to characterize the liquid.

D-1b Containers Without Free Liquids

D-1b(1) Test for Free Liquids [40 CFR 270.15(b)(1)]

Drummed hazardous waste is managed as if it contained free liquid. Therefore, wastes are not tested to determine whether they contain free liquid.

Wastes in boxes have no free liquids. They are from wipe-cleaning operations using solvent dispensed from squeeze bottles. This technique eliminates free liquid accumulation in containers.

D-1b(2) Description of Containers [40 CFR 264.171 and 264.172]

With the exception of boxes, the containers used for waste without free liquids are the same as those for waste with free liquids, as discussed in Section D-1a(1).

D-1b(3) Container Management Practices [40 CFR 264.173]

Container management practices used for waste without free liquids are the same as those for waste with free liquids, as discussed in Section D-1a(2).

D-1b(4) Container Storage Area Drainage [40 CFR 270.15(b)(2) and 264.175(c)]

Containers without free liquids are stored within the secondary containment structure described in Section D-1a(3).

D-2 Tank Systems [40 CFR 270.16 and 264.191 through 264.200]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) corrective action program, as appropriate.

D-3 Waste Piles [40 CFR 270.18 and 264.250 through 264.259]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under CERCLA corrective action program, as appropriate.

D-4 Surface Impoundments [40 CFR 270.17 and 264.220 through 264.231]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the CERCLA corrective action program, as appropriate.

D-5 Incinerators [40 CFR 270.19 and 264.340 through 264.351]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the CERCLA corrective action program, as appropriate.

D-6 Landfills

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the CERCLA corrective action program, as appropriate.

D-7 Land Treatment [40 CFR 270.20 and 264.270 through 264.283]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the CERCLA corrective action program, as appropriate.

D-8 Miscellaneous Units [40 CFR 270.23 and 264.600 through 264.603]

The Burn Pans, including the Rocket Motor Tie Down Unit, are a miscellaneous treatment unit.

D-8a Description of Miscellaneous Units

Location

Thermal treatment is conducted at the Burning Grounds that encompasses an area of 8 acres. A total of six (6) burn pans identified as Pans A-F and a rocket motor tie-down unit are used for thermal treatment. Figure D-1 shows the current Burning Grounds configuration.

Design and Construction

Burn pan dimensions are 9 ft long, 8 ft wide, and 12 in. deep. The pans are made from ¼-in. thick seam-welded carbon steel or stainless steel to prevent warping during burning operations. Burn pans are lined with 12 in. of crushed limestone. Three steel I-beams are welded to the bottom of each pan to elevate the pan and provide additional structural rigidity. 80 ft. by 80 ft. concrete pads are installed under each pan. Figure D-2 shows the design of the burn pans and pads.

ABL uses a mobile cover to protect each pan. The pan covers are made of an aluminum super-structure with a corrugated aluminum cover. Covers are used to prevent rainfall from collecting in the burn pans and prevent wind dispersion of treatment residue. The cover is

Section E
Groundwater Monitoring

SECTION E

Groundwater Monitoring

The Burning Grounds is a RCRA Subpart X unit beneath which groundwater contamination has been identified.

Groundwater beneath the Active Burning Ground is currently included as part of a CERCLA Remedial Action (*Final Record of Decision (ROD) for Site 1 Operable Unit 3: Groundwater Surface Water, and Sediment at Allegany Ballistics Laboratory, West Virginia,* April 1977). The Remedial Actions at Site 1 Operable Unit 3, are being conducted pursuant to a January 1998 Federal Facilities Agreement (FFA), Docket Number 111-FCA-CERC-1998, established between the United States Environmental Protection Agency and the United States Department of the Navy under Section 120 of CERCLA.

Section E of this RCRA permit application is intended to provide a description of groundwater monitoring program elements that are required to address Subpart X. The RCRA groundwater monitoring program is part of the ongoing CERCLA Long-term Remedial Action (LTRA).

E-1 Exemption from Groundwater Protection Requirements [270.14(c)]

The requirements of this section pertain to surface impoundments, landfills, or landfill treatment facilities. Therefore, this section is not applicable.

E-2 Interim Status Groundwater Monitoring Data [270.14(c)(1), 265.90—265.94]

This section provides a summary of groundwater monitoring data and supporting documentation obtained during the interim status period.

E-2a Description of Interim Status Period Wells and Analytical Parameters

A baseline groundwater monitoring program was completed at the Burning Grounds to evaluate existing groundwater conditions and establish baseline data for groundwater constituents and their concentrations. The baseline monitoring program complied with RCRA groundwater monitoring requirements (40 CFR 264.93 and 264.94). Part 264 Appendix IX was used as the chemical-constituent-of-interest list. The baseline monitoring comprised four rounds of quarterly groundwater-sample collection from selected extraction wells in the Burning Grounds and selected upgradient monitoring wells. Existing wells installed as part of the CERCLA LTRA were selected for baseline groundwater monitoring.

The initial round of baseline groundwater sampling was conducted in April 1999. The remaining three rounds of quarterly sampling were conducted in April, July, and October 2000. During each event, groundwater was sampled from nine extraction wells, four

monitoring wells, and the treatment plant influent and effluent. Figure E-1 provides a topographic map of the Burning Grounds that shows the location of the wells sampled during the baseline period and shows the boundaries of the Burning Grounds as well as the property boundary.

The wells sampled comprised two upgradient alluvial monitoring wells (1GW11 and 1GW32), two upgradient bedrock monitoring wells (1GW10 and 1GW15), five downgradient alluvial extraction wells (1EW10, 1EW14, 1EW16, 1EW18, and 1EW21), and four downgradient bedrock extraction wells (1EW29, 1EW30, 1EW31, and 1EW33). Attachment E-1 provides details of the design and construction of each background monitoring well. Attachment E-2 provides the design and construction details for each extraction well used for baseline groundwater monitoring. All samples collected from these wells were analyzed for full Appendix IX parameters (i.e., VOCs, SVOCs, pesticides, PCBs, herbicides, dioxins, furans, and metals), and for explosives (perchlorate, nitroglycerine, and nitrocellulose). A complete list of analytical parameters is presented in Table E-1.

Evaluation of the analytical results for the four rounds of baseline groundwater monitoring indicates that VOCs are the most prevalent COPCs in groundwater beneath the Burning Grounds. Although solvents were historically present in a portion of the propellants treated at the Burning Grounds, it is unlikely that VOCs related to these solvents significantly contributed to groundwater contamination there. This is due to the volatile nature of the solvents and the heat involved in the burning process. Additionally, relative to the quantity of solvents discharged into the disposal pits, the solvents in the waste burned represented a minimal quantity. Any solvents or residue not destroyed during burning are more likely to have volatilized or been collected and handled rather than to have moved through the soil and become dissolved in the groundwater below the unit.

Perchlorate was the most prevalent explosive constituent detected with respect to concentrations and distribution. The highest concentrations of perchlorate were from wells downgradient of inactive Solvent Disposal Pits 2 and 3. As discussed above, the presence of perchlorate in groundwater potentially is attributed to both burning at the unit and its presence in the spent solvents discharged in the solvent disposal pits. Additionally, the explosive compounds HMX and RDX were found in groundwater collected from beneath the Burning Grounds, again primarily downgradient of the former solvent disposal pits, but the concentrations were generally low with respect to regulatory screening levels.

None of the other organic constituents (i.e., SVOCs, pesticides, PCBs, herbicides, dioxins, furans) were detected at a statistically significant level in groundwater beneath the Burning Grounds. Additionally, the metals concentrations detected there were similar to those found elsewhere at Plant 1.

E-2b Description of Sampling/Analysis Procedures [40 CFR 265.92]

This section describes the sampling and analytical procedures used during the baseline groundwater monitoring.

E-2c Monitoring Data [40 CFR 265.92]

The constituents detected in groundwater collected from the background (upgradient) monitoring wells and the downgradient extraction wells during the four baseline

groundwater monitoring events are presented in Tables E-2 and E-3, respectively. Table E-4 provides groundwater surface elevation measurements corresponding to each sampling event.

E-2d Statistical Procedures [40 CFR 265.93]

A statistical evaluation of all analytical data generated during the four rounds of baseline groundwater monitoring was completed to determine if there was a statistically significant increase in analyte concentrations between the up-gradient and down-gradient wells in each aquifer (i.e., alluvial and bedrock). Table E-5 contains the mean and variance data for the background wells. For all detected parameters, an interwell statistical comparison between up-gradient and down-gradient wells for the alluvial and bedrock aquifers was performed using a non-parametric Mann-Whitney test with a significance level of 0.05. This evaluation was completed in accordance with the *Guidance for Data Quality Assessment, Practical Methods for Data Analysis, EPA QA/G-9* (EPA/600/R-96/08) and 40 CFR Part 264, Section 97.

The Practical Quantification Limits (PQL) were evaluated for all non-detected sample results. This evaluation determined if any PQLs were sufficiently elevated to potentially "mask" detected analyte concentrations. For those results with a sufficiently high PQL, the Method Detection Limit (MDL) was used as the sample result. This conservative approach was used to ensure that statistically significantly increases in detected analytes were not biased by high PQLs.

In addition to the statistical evaluation, the analytical results for individual wells were compared to groundwater protection standards. USEPA Maximum Contaminant Levels (MCLs) were used as the groundwater protection standards, where available. For constituents without established MCLs, other criteria (e.g., Drinking Water Exposure Limits (DWELs) or USEPA Region III Risk-based Concentrations [RBCs] for tap water) were used.

Results of Statistical Evaluation — Baseline Evaluation

Table E-6 summarizes the results of the statistical evaluation for the alluvial and bedrock aquifer data. For those constituents that were found to be statistically higher in the down-gradient wells, a comparison was made to the screening criteria and any exceedances were noted in the table.

E-2e Groundwater Assessment Plan [40 CFR 265.93(d)(2)]

As noted in Section E-2a, the presence of constituents detected at statistically significant concentrations in groundwater beneath the Burning Grounds is, at least in part, associated with the historical disposal activities in the former solvent disposal pits. The presence of volatile constituents is being addressed under a CERCLA LTRA and long-term monitoring program. A key component of the CERCLA monitoring program is monthly piezometric surface elevation monitoring that ensures all groundwater in the alluvial and bedrock aquifers at Site 1, including the area underlying the Burning Grounds, is hydraulically contained, extracted, and treated at the onsite groundwater treatment plant. Tri-quarterly (i.e., every 9 months) groundwater sampling conducted under CERCLA at Site 1 provides a means of monitoring the long-term reduction in volatile contaminant concentrations. Continued groundwater assessment monitoring will be conducted under the CERCLA program; substantive requirements for monitoring in conjunction with the Part B permit

will be incorporated into the CERCLA monitoring program. This coordination of RCRA and CERCLA program requirements is in accordance with the ABL Federal Facility Agreement (January 1998) and USEPA guidance (USEPA, September 24, 1996). Any exceedances of established treatment plant effluent discharge limits will be addressed in accordance with the Discharge Requirements Letter issued for the CERCLA Program by the WVDEP Office of Water Resources (OWR).

If the groundwater remediation objectives under CERCLA are met while the Burning Grounds are still in operation, further groundwater monitoring will be conducted under RCRA.

E-3 General Hydrogeologic Information [40 CFR 270.14(c)(2)]

The following discussion of hydrologic and geologic characteristics of the Burning Grounds was obtained from a compilation of several documents including the *Long-Term Monitoring Plan Site 1 – Burning Grounds* (CH2M HILL, 1998), *Phase I Aquifer Testing at Allegany Ballistics Laboratory* (CH2M HILL, 1998), *Phase II Aquifer Testing at Site 1 at Allegany Ballistics Laboratory* (CH2M HILL, 1999), and the *Draft Annual Long-Term Monitoring Report for Sites 1 and 10* (CH2M HILL, 2001).

Regional Geology

ABL is located in the Valley and Ridge Physiographic Province, near its western boundary with the Allegheny Plateau Province. The transition between these provinces is referred to as the Allegheny Structural Front. The Valley and Ridge Physiographic Province is underlain by sedimentary rocks folded and faulted during the Paleozoic Era. The linear belts of ridges and valleys that characterize the province result from differential erosion of the various rock types. In general, more-resistant sandstone underlies ridges, whereas less-resistant shale and soluble limestone underlie lowlands.

The most significant physiographic feature in the vicinity of ABL is Knobly Mountain, which flanks Plant 1 to the south and east. Plant 1, along the northern border of which lies the Burning Grounds, is located on the floodplain of the North Branch Potomac River at a point where the river has cut into the base of Knobly Mountain. Knobly Mountain is the surface expression of a portion of the Wills Mountain anticlinorium, the anticlinal axis of which plunges to the southwest and trends approximately N30°E as it approaches Plant 1 from the southwest, but displays a more north-south trend immediately north of Plant 1.

Site Geology

The geology at the Burning Grounds has been characterized through a number of activities, including drilling, soil sampling, rock coring, geophysical logging and downhole video of boreholes, seismic refraction, seismic reflection, and fracture trace analysis. These activities identified three primary lithologic units which are described below.

Four interpretative geologic cross-sections of the material underlying the Burning Grounds have been prepared to assist in formulating a conceptual model of site geology. Cross-section alignments are provided in Section D as figures D-6, D-7, D-8, D-9, and D-10.

The natural surficial material at the Burning Grounds is silty clay, considered to be floodplain deposits of the North Branch Potomac River. However, at some locations, particularly along the northern perimeter of the site, up to several feet of fill material are located at the surface. The silty clay is typically light to dark brown. Toward the lower parts of the layer there are traces of fine-grained sand. The thickness of the silty clay layer at the Burning Grounds ranges from approximately 10 to 15 ft; its base approximates the river surface elevation adjacent to the site (i.e., 648 ft).

Beneath the silty clay layer is an alluvial layer consisting of generally poorly sorted sand, gravel, pebbles, and cobbles, with variable but typically significant amounts of clay and silt. This layer is presumably alluvial channel deposits laid down by the North Branch Potomac River as it meandered across the valley. Drilling activities conducted at the Burning Grounds have determined that the gravel size and quantity generally increase with depth, producing a relatively transmissive zone at the base of the alluvium.

The saturated thickness of the alluvium varies across the Burning Ground. In general, the saturated thickness of the alluvial aquifer decreases from south to north across the site.

Directly beneath the alluvial deposits lies bedrock, consisting of primarily calcareous shale, limestone, and sandstone of Silurian age. As noted previously, the axis of Wills Mountain anticlinorium is assumed to pass through the Burning Grounds in a generally northeast-southwest orientation. The anticlinal axis is asymmetrical, however. On the southeast side of the axis, the strata are primarily calcareous shale that dip relatively gently to the southeast at approximately 30°. On the northwest side, the strata contain appreciable limestone and are generally vertical to slightly overturned.

Bedrock drilling has identified fracture sets at similar elevations across the Burning Grounds. Aquifer testing and geophysical logging of boreholes showed the eastern fracture sets tend to have higher production capacities than those in the west. This was supported by a seismic reflection survey that determined, in general, a higher density of fracture traces lie beneath the eastern portion of the site than beneath the western portion.

The bedrock surface across the Burning Grounds is fairly uniform with most of the high and low areas occurring in the southwestern corner of the Burning Grounds. The most significant feature is an apparent depression (i.e., 26 ft amsl) in the bedrock surface just along the western edge of the Burning Grounds. There are also several areas of relatively shallow bedrock (i.e., 14 ft amsl) in the southwestern corner of the Burning Grounds.

Site Hydrogeology

A conceptual hydrogeologic model of the alluvial and bedrock aquifers at the Burning Grounds was developed and refined to assist in the design and construction of a groundwater extraction and treatment system for VOC contamination in Site 1 groundwater under the CERCLA program. The groundwater extraction and treatment system at Site 1 has been in operation since September 1998 to hydraulically contain groundwater in the alluvial and bedrock aquifers beneath Site 1, which includes the Burning Grounds. A series of 27 alluvial and 7 bedrock extraction wells withdraw groundwater to maintain a cone of depression beneath the site and prevent contaminated groundwater from leaving the facility and discharging to the North Branch Potomac River. The discussion below provides an

evaluation of natural (non-pumping) hydrogeologic conditions at the Burning Grounds in addition to current conditions.

An alluvial aquifer, consisting of 12 to 18 ft of silt, clay, sand, and gravel, is present across all of the Burning Grounds. The alluvial aquifer lies immediately above the bedrock, and is believed to be hydraulically well-connected to the bedrock aquifer, rather than separated by a low-permeability layer such as clay or weathered bedrock.

Natural groundwater flow in the alluvial aquifer at the Burning Grounds is north-northeast toward the North Branch Potomac River, with a generally uniform gradient of approximately 0.008. However, near the western end of the Burning Grounds, the direction of alluvial groundwater flow changes to the north-northwest toward the river, with a steeper gradient of approximately 0.016. This phenomenon is likely due to a reduction in bedrock aquifer transmissivity at the western end of the site causing bedrock groundwater to mound as it approaches from an area of higher transmissivity.

During Phase II Aquifer Testing, alluvial extraction wells were installed and tested to evaluate how the aquifer hydraulic conductivity varied across the site. The tests revealed that hydraulic conductivity was highest across the eastern half of the Burning Grounds and lowest across the western half, with a sharp decrease in the hydraulic conductivity observed near the western third of the Burning Grounds. Across the eastern half of the Burning Grounds the observed hydraulic conductivity ranged from approximately 13 ft/day to 182 ft/day, with a mean of approximately 70 ft/day. This contrasts with the observed hydraulic conductivity across the western half, which range from about 0.4 ft/day to 17 ft/day, with a mean of approximately 6 ft/day. Although there were two wells with calculated hydraulic conductivity greater than 60 ft/day in the western half (i.e., wells 1EW23 and 1EW26), all but 3 of the 14 hydraulic conductivity measurements were less than 10 ft/day.

Based upon the hydraulic gradient and hydraulic conductivity values presented above, the average linear velocity of natural (non-pumping) horizontal groundwater flow in the alluvial aquifer beneath the eastern half of the Burning Grounds is estimated to be approximately 1,000 ft/yr, depending on the amount of clay present. This calculation assumes an effective porosity of 20 percent for the alluvium. Because of the lower observed hydraulic conductivity , the average linear velocity of horizontal groundwater flow in the alluvial aquifer beneath the western half of the site is estimated to be about 175 ft/yr.

Unlike the alluvial aquifer, lateral groundwater flow in the bedrock aquifer is believed to be confined to partings along bedding planes, fractures, and solution channels. However, the direction of natural (non-pumping) bedrock groundwater flow across much of the Burning Grounds is similar to that of the alluvial aquifer (i.e., north-northeast toward the North Branch Potomac River). As determined during Phase II Aquifer Testing, except near the western end of the Burning Grounds, the horizontal hydraulic gradient in the bedrock aquifer has a nearly uniform gradient of approximately 0.01. Near the west end of the Burning Grounds, the groundwater flow becomes north-northwest toward the river with an increased horizontal hydraulic gradient of approximately 0.03. As stated previously, this phenomenon is likely due to a reduction in bedrock aquifer transmissivity at the western end of the site causing bedrock groundwater to mound as it approaches from an area of higher transmissivity.

Similar to the hydraulic conductivity values observed for the alluvial aquifer across the Burning Grounds, the observed transmissivity of the bedrock aquifer beneath the eastern portion of the site (i.e., 285 ft^2/day) is approximately four times that observed for the bedrock beneath the western portion (i.e., 70 ft^2/day). As noted previously, this is believed due to the lower number of fractures apparently present below the western part of the site.

At nine locations across the Burning Grounds, a well screened in the alluvium is located adjacent to a well screened in the bedrock. At one of the locations, there is also a well screened in the shallow bedrock (i.e., less than 90 ft below ground surface, or bgs) next to one screened in the deep bedrock (i.e., greater than 90 ft bgs). During Phase II Aquifer Testing, water-level measurements from these paired wells were compared to determine the direction and magnitude of the vertical component of the hydraulic gradient between the alluvium and bedrock and between the shallow and deep bedrock. The results indicate under naturally occurring conditions (non-pumping), there is a downward vertical component of flow from alluvium to shallow bedrock at all locations except at the 1GW39/1GW12 alluvial/bedrock well pair. At the 1GW34/1GW9/1GW13 alluvial/shallow bedrock/deep bedrock well cluster, the vertical component of flow is downward from alluvium to shallow bedrock, but upward from deep bedrock to shallow bedrock and alluvium.

Phase II Aquifer Testing data also show the calculated vertical component of hydraulic gradients for the well pairs in the western portion of the Burning Grounds are generally lower than those for the well pairs in the eastern portion of the site. This suggests the alluvial and bedrock aquifers are better-connected hydraulically at the west end of the Burning Grounds than at the east end. Since groundwater extraction began, the vertical component of groundwater flow is more strongly downward from the alluvium to bedrock due to the much higher rate of groundwater extraction from the bedrock aquifer.

Water-level data gathered from all Site 1 bedrock monitoring wells during May 2001 were used to generate a piezometric surface representation of current bedrock aquifer conditions. Based on this information, bedrock and alluvial groundwater flow along the northern boundary of the Burning Grounds is no longer toward the North Branch Potomac River, but is away from the river toward the extraction well alignments. A significant cone of depression has been created by pumping of the alluvial and bedrock extraction wells that has resulted in containment of the alluvial and bedrock groundwater beneath the Burning Grounds and prevention of its discharge to the North Branch Potomac River.

E-4 Topographic Map Requirements [40 CFR 270.14(c)(2), (3), (4)(i)]

Figure E-1 provides a topographic map of Burning Grounds. This map shows the location of the wells sampled during the interim status period, the boundaries of the hazardous waste management unit, the property boundary in the vicinity of the Burning Grounds, and the groundwater flow direction (not accounting for conditions during pumping).

Figure E-2 presents the horizontal extent of the total VOC plume in the alluvial aquifer, as determined during the July 2000 CERCLA groundwater sampling event. Figure E-3 presents the horizontal extent of the total VOC plume in the bedrock aquifer, as determined during

the July 2000 CERCLA groundwater sampling event. Figure E-4 presents the vertical extent of the total VOC plume in the alluvial and bedrock aquifers, as determined during the same event. Figure E-5 presents the detected concentrations of explosive compounds in the alluvial and bedrock aquifers, as determined in July 2000.

E-5 Contaminant Plume Description [40 CFR 270.14(c), (2), (4) and (7)(ii); Part 261, Appendix VIII]

Evaluation of the analytical results of the four rounds of baseline groundwater monitoring indicates that VOCs are the most prevalent COPCs in groundwater beneath the Burning Grounds. The analytical results are presented in Tables E-2 and E-3. The horizontal and vertical extent of total VOCs in groundwater, as determined during the July 2000 groundwater sampling event, are presented in Figures E-2, E-3, and E-4.

Table E-7 displays the nine VOCs most commonly detected, the corresponding range of detections, and frequency of detections, in order of decreasing detection frequency.

Remediation of VOCs in groundwater beneath the Burning Grounds is part of a CERCLA LTRA, documented in the *Final Record of Decision (ROD) for Site 1 Operable Unit 3: Groundwater, Surface water, and Sediment at Allegany Ballistics Laboratory, West Virginia,* April 1997. TCE was considered the primary constituent of concern for the CERCLA groundwater remedial action at Site 1. The presence of TCE in groundwater is primarily attributed to its historic use as a solvent at the facility and subsequent disposal in three solvent disposal pits located in the western portion of the Burning Grounds (identified as solvent disposal pits 1, 2, and 3 in Figure E-1).

Although solvents were historically present in a portion of the propellants burned at the Burning Grounds, it is unlikely that VOCs related to these solvents significantly contributed to groundwater contamination there. This is because of the nature of the solvents and their ability to be fully treated/consumed in the treatment unit, and relative to the quantity of solvents discharged into the disposal pits, the solvents in the waste burned represent a minimal quantity. Any solvents or solvent residue not destroyed during treatment/burning are more likely to have volatilized than to have moved through the soil and become dissolved in groundwater.

Figure E-5 presents the detected concentrations of selected explosive compounds in the alluvial and bedrock aquifer, as determined during the July 2000 groundwater sampling event. Perchlorate was the most prevalent explosive constituent detected with respect to concentration and distribution. Detected concentrations of perchlorate ranged from less than 5 µg/l to 34,900 µg/l. The highest concentrations of perchlorate were from wells down-gradient of solvent disposal pits 2 and 3. HMX and RDX also were found in the groundwater, but at low levels with respect to regulatory screening criteria.

Historically, TCE was used to clean rocket motor components that contained composite propellant residue. Therefore, the presence of perchlorate and explosive compounds in groundwater potentially is attributable to its presence in the spent solvents discharged in the solvent disposal pits, and to a lesser degree the burning activities because of the ability of these chemicals to be consumed in the burning process.

None of the other Appendix IX organic constituents (i.e., SVOCs, pesticides, PCBs, herbicides, dioxins, furans) was detected at a statistically significant level in groundwater beneath the Burning Grounds. Additionally, the metals concentrations detected there were similar to those found elsewhere at Plant 1.

E-6 General Monitoring Program Requirements [40 CFR 270.14(c)(5), 264.97, 264.90(b)(4)]

Groundwater beneath the Active Burning Ground is currently included as part of a CERCLA Remedial Action (*Final Record of Decision (ROD) for Site 1 Operable Unit 3: Groundwater Surface Water, and Sediment at Allegany Ballistics Laboratory, West Virginia,* April 1977). The Remedial Actions at Site 1 Operable Unit 3, are being conducted pursuant to a January 1998 Federal Facilities Agreement (FFA), Docket Number 111-FCA-CERC-1998, established between the United States Environmental Protection Agency and the United States Department of the Navy under Section 120 of CERCLA.

Groundwater monitoring requirements for the Burning Grounds under RCRA are deferred until such time the permitted Burn Pads are closed or the CERCLA Remedial Action at Plant 1/Site 1 is completed, whichever comes first. If the RCRA permitted Burn Pads remain operational after the CERCLA remedial activity is completed then RCRA monitoring requirements for the active burn pads should be reemployed.

E-7 Detection Monitoring Program [40 CFR 270.14(c)(6), 264.91(a)(4), 264.98]

As noted above, substantive requirements for monitoring in conjunction with the Part B permit will be incorporated into the CERCLA monitoring program that is being conducted for the Site 1 groundwater extraction and treatment system.

E-8 Compliance Monitoring Program [40 CFR 270.14(c)(7), 264.99]

As noted above, substantive requirements for monitoring in conjunction with the Part B permit will be incorporated into the CERCLA monitoring program that is being conducted for the Site 1 groundwater extraction and treatment system.

E-9 Corrective Action Program [40 CFR 270.14(c)(8), 264.100, 264.99(l)]

As noted above, substantive requirements for monitoring in conjunction with the Part B permit will be incorporated into the CERCLA monitoring program that is being conducted for the Site 1 groundwater extraction and treatment system.

Tables

Table E-1
Analytical Parameter List for RCRA Baseline Groundwater Monitoring

Volatile Organic Compounds		
Anlytical Method 8260		
1,1,1,2-Tetrachloroethane	Acrolein.	Methacrylonitrile
1,1,1-Trichloroethane	Acrylonitrile	Methyl methacrylate
1,1,2,2-Tetrachloroethane	Allyl chloride	Methylene chloride
1,1,2-Trichloroethane	Benzene	Propionitrile
1,1-Dichloroethane	Bromodichloromethane	Styrene
1,1-Dichloroethene	Bromoform	Tetrachloroethene
1,2,3-Trichloropropane	Bromomethane	Toluene
1,2-Dibromo-3-chloropropane	Carbon disulfide	Trichloroethene
1,2-Dibromoethane	Carbon tetrachloride	Trichlorofluoromethane
1,2-Dichloroethane	Chlorobenzene	Vinyl acetate
1,2-Dichloroethene (total)	Chloroethane	Vinyl chloride
1,2-Dichloropropane	Chloroform	Xylene, total
1,4-Dioxane	Chloromethane	cis-1,2-Dichloroethene
2-Butanone	Dibromochloromethane	cis-1,3-Dichloropropene
2-Chloro-1,3-butadiene	Dibromomethane	trans-1,2-Dichloroethene
2-Chloroethyl vinyl ether	Dichlorodifluoromethane	trans-1,3-Dichloropropene
2-Hexanone	Ethyl methacrylate	trans-1,4-Dichloro-2-butene
4-Methyl-2-pentanone	Ethylbenzene	
Acetone	Iodomethane	
Acetonitrile	Isobutanol	
Semi-volatile Organic Compounds		
Anlytical Method SW8270		
1,2,4,5-Tetrachlorobenzene	4-Methylphenol	Indeno(1,2,3-cd)pyrene
1,2,4-Trichlorobenzene	4-Nitroaniline	Isodrin
1,2-Dichlorobenzene	4-Nitrophenol	Isophorone
1,3,5-Trinitrobenzene	4-Nitroquinoline-1-oxide	Isosafrole
1,3-Dichlorobenzene	7,12-Dimethylbenz(a)anthracene	Kepone
1,3-Dinitrobenzene	Acenaphthene	Methapyrilene
1,4-Dichlorobenzene	Acenaphthylene	Methyl methanesulfonate
1,4-Naphthoquinone	Acetophenone	N-Nitrosomorpholine
1-Naphthylamine	Aniline	N-Nitrosopiperidine
2,2'-Oxybis(1-chloropropane)	Anthracene	Naphthalene
2,3,4,6-Tetrachlorophenol	Aramite	Nitrobenzene
2,4,5-Trichlorophenol	Benzo(a)anthracene	Nitroglycerin
2,4,6-Trichlorophenol	Benzo(a)pyrene	O,O,O-Triethyl phosphorothioate
2,4-Dichlorophenol	Benzo(b)fluoranthene	PETN
2,4-Dimethylphenol	Benzo(g,h,i)perylene	Pentachlorobenzene
2,4-Dinitrophenol	Benzo(k)fluoranthene	Pentachloroethane
2,6-Dichlorophenol	Benzyl alcohol	Pentachloronitrobenzene
2-Acetylaminofluorene	Butylbenzylphthalate	Pentachlorophenol
2-Chloronaphthalene	Chlorobenzilate	Phenacetin
2-Chlorophenol	Chrysene	Phenanthrene
2-Methyl-5-nitroaniline	Di-n-butylphthalate	Phenol
2-Methylaniline	Di-n-octylphthalate	Phorate
2-Methylnaphthalene	Diallate	Pronamide
2-Methylphenol	Dibenz(a,h)anthracene	Pyrene
2-Naphthylamine	Dibenzofuran	Pyridine
2-Nitroaniline	Diethylphthalate	Safrole
2-Nitrophenol	Dimethoate	Sulfotepp
2-Picoline	Dimethyl phthalate	Thionazin
3,3'-Dichlorobenzidine	Dinoseb	a,a-Dimethylphenethylamine
3,3'-Dimethylbenzidine	Diphenylamine	bis(2-Chloroethoxy)methane
3,4-Dimethylphenol	Disulfoton	bis(2-Chloroethyl)ether
3- and 4-Methylphenol	Ethyl methanesulfonate	bis(2-Ethylhexyl)phthalate
3-Methylcholanthrene	Famphur	n-Nitroso-di-n-butylamine
3-Methylphenol	Fluoranthene	n-Nitroso-di-n-propylamine
3-Nitroaniline	Fluorene	n-Nitroso-n-methylethylamine
4,6-Dinitro-2-methylphenol	Hexachlorobenzene	n-Nitrosodiethylamine
4-Aminobiphenyl	Hexachlorobutadiene	n-Nitrosodimethylamine

Table E-1
Analytical Parameter List for RCRA Baseline Groundwater Monitoring

Anlytical Method SW8270 (Continued)		
4-Bromophenyl-phenylether	Hexachlorocyclopentadiene	n-Nitrosodiphenylamine
4-Chloro-3-methylphenol	Hexachloroethane	n-Nitrosopyrrolidine
4-Chloroaniline	Hexachlorophene	p-Dimethylaminoazobenzene
4-Chlorophenyl-phenylether	Hexachloropropene	p-Phenylenediamine
Pesticide/Polychlorinated Biphenyls	**Herbicides**	**Total Metals**
Anlytical Methods SW8081, SW8081,	**Anlytical Method SW 8151**	**Anlytical Methods 6010,**
SW8141	2,4,5-T	**SW7060, SW7421, SW7740**
2,4,5-TP (Silvex)	2,4,5-TP (Silvex)	**SW7841, SW7470**
2,4-D	2,4-D	Antimony
4,4'-DDD	Dinoseb	Arsenic
4,4'-DDE	Pentachlorophenol	Barium
4,4'-DDT		Beryllium
Aldrin	**Dioxin/Furans**	Cadmium
Aroclor-1016	**Anlytical Method SW8290**	Chromium
Aroclor-1221	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	Cobalt
Aroclor-1232	1,2,3,4,6,7,8-Heptachlorodibenzofuran	Copper
Aroclor-1242	1,2,3,4,7,8,9-Heptachlorodibenzofuran	Cyanide
Aroclor-1248	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	Dimethoate
Aroclor-1254	1,2,3,4,7,8-Hexachlorodibenzofuran	Disulfoton
Aroclor-1260	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	Lead
Chlordane	1,2,3,6,7,8-Hexachlorodibenzofuran	Mercury
Chlorobenzilate	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	Nickel
Diallate	1,2,3,7,8,9-Hexachlorodibenzofuran	Selenium
Dieldrin	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	Silver
Dimethoate	1,2,3,7,8-Pentachlorodibenzofuran	Thallium
Dinoseb	2,3,4,6,7,8-Hexachlorodibenzofuran	Tin
Disulfoton	2,3,4,7,8-Pentachlorodibenzofuran	Vanadium
Endosulfan I	2,3,7,8-TCDD (dioxin)	Zinc
Endosulfan II	2,3,7,8-Tetrachlorodibenzofuran	
Endosulfan sulfate	Total hexachlorodibenzo-p-dioxin	**Explosives**
Endrin	Total hexachlorodibenzofuran	**Anlytical Methods SW-846**
Endrin aldehyde	Total octachlorodibenzo-p-dioxin	**8330, 8332, EPA 300m, IAAP**
Endrin ketone	Total octachlorodibenzofuran	1,3,5-Trinitrobenzene
Famphur	Total pentachlorodibenzo-p-dioxin	1,3-Dinitrobenzene
Heptachlor	Total pentachlorodibenzofuran	2,4,6-Trinitrotoluene
Heptachlor epoxide	Total tetrachlorodibenzo-p-dioxin	2,4-Dinitrotoluene
Isodrin	Total tetrachlorodibenzofuran	2,6-Dinitrotoluene
Kepone		2-Amino-4,6-dinitrotoluene
Methoxychlor	**Wet Chemistry**	2-Nitrotoluene
Methyl parathion	**Anlytical Method EPA 376.1**	3-Nitrotoluene
O,O,O-Triethyl phosphorothioate	Sulfide	4-Amino-2,6-dinitrotoluene
Parathion		4-Nitrotoluene
Pentachlorophenol		Ammonium perchlorate
Phorate		HMX
Sulfotepp		Nitrobenzene
Thionazin		Nitrocellulose
Toxaphene		Nitroglycerin
alpha-BHC		Perchlorate
alpha-Chlordane		RDX
beta-BHC		Tetryl
delta-BHC		
gamma-BHC (Lindane)		
gamma-Chlordane		

Table E-2
Detected Compounds from Groundwater Compliance Monitoring at the Burning Grounds - Upgradient Monitoring Wells
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID					
Sample Date	AS01-1GW10-CM01 4/27/99	AS01-1GW10-CM02 4/19/00	AS01-1GW10-CM03 7/27/00	AS01-1GW10-CM04 10/26/00	
Chemical Name					
Volatile Organic Compounds (UG/L)					
1,1,1-Trichloroethane	5 U	5 U	1 U	5 U	
1,1,2-Trichloroethane	5 U	5 U	1 U	5 U	
1,1-Dichloroethane	5 U	5 U	1 U	5 U	
1,1-Dichloroethene	5 U	5 U	1 U	5 U	
1,2-Dibromo-3-chloropropane	5 U	5 U	2 U	5 U	
1,2-Dichloroethane	5 U	5 U	1 U	5 U	
Benzene	5 U	5 U	1 U	5 U	
Chlorobenzene	5 U	5 U	1 U	5 U	
Chloromethane	10 U	5 U	2 U	5 U	
Methylene chloride	5 U	5 U	1 U	5 U	
Tetrachloroethene	5 U	5 U	1 U	5 U	
Toluene	5 U	5 U	1 U	5 U	
Trichloroethene	5 U	5 U	1 U	5 U	
Vinyl chloride	10 U	5 U	2 U	5 U	
cis-1,2-Dichloroethene	NS	NS	NS	NS	
trans-1,2-Dichloroethene	5 U	5 U	0.5 U	5 U	
Semi-volatile Organic Compounds (UG/L)					
Di-n-butylphthalate	10 U	10 U	10 U	10 U	
Diethylphthalate	10 U	10 U	10 U	10 U	
Pesticide/Polychlorinated Biphenyls (UG/L)					
4,4'-DDD	0.1 U	0.03 U	0.05 U	0.038 U	
4,4'-DDE	0.1 U	0.03 U	0.05 U	0.038 U	
4,4'-DDT	0.1 U	0.03 U	0.05 U	0.038 U	
Dialiate	NS	NS	1 U	NS	
Endrin	0.1 U	0.03 U	0.05 U	0.038 U	
Isodrin	NS	NS	0.1 U	NS	
Methoxychlor	0.5 U	0.15 U	0.1 U	0.19 U	
Pentachlorophenol	0.1	NS	NS	NS	
Herbicides (UG/L)					
2,4-D	NS	0.055 U	4 U	0.055 U	

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low
R - Unreliable result
U - Analyte not detected (UJ, UL UR)

Table E-2
Detected Compounds from Groundwater Compliance Monitoring at the Burning Grounds - Upgradient Monitoring Wells
Allegany Ballistics Laboratory
Rocket Center, WV

Sample Date	AS01-1GW10-CM01 4/27/99	AS01-1GW10-CM02 4/19/00	AS01-1GW10-CM03 7/27/00	AS01-1GW10-CM04 10/26/00	
Chemical Name					
Dioxin/Furans (UG/L)					
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0.003125 U	0.00005 U	NS	0.000025 U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.003125 U	0.00005 U	NS	0.000025 U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.003125 U	0.00005 U	NS	0.000025 U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.003125 U	0.00005 U	NS	0.000025 U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.003125 U	0.00005 U	NS	0.000025 U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.00125 U	0.00002 U	NS	0.00001 U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.00125 U	0.00002 U	NS	0.00001 U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.003125 U	0.00005 U	NS	0.000025 U	
Total octachlorodibenzo-p-dioxin (OCDD)		0.0001 U	NS		
Total octachlorodibenzofuran (OCDF)	0.00625 U	0.0001 U	NS	0.00005 U	
Explosives (UG/L)					
1,3,5-Trinitrobenzene	1.2 U	1 U	0.2 U	NS	
2,4-Dinitrotoluene	1.2 U	1 U	0.2 U	0.26 U	
2,6-Dinitrotoluene	1.2 U	1 U	0.2 U	0.26 U	
Ammonium perchlorate	5 U	5 U	4 U	NS	
HMX	2.6 U	3 U	0.5 U	0.52 U	
Nitrocellulose	133 U	134 U	179 UL	134 U	
Perchlorate	NS	NS	NS	5 U	
RDX	2.6 U	3 U	0.5 U	0.52 U	
Total Metals (UG/L)					
Antimony	60 U	5 U	2.2 U		
Arsenic		5 U			
Barium	6 U				
Cadmium	6 U	1 U	0.28 U	1 UL	
Chromium	13 U	5 U			
Cobalt	60 U	5 U	1.3 U	5 U	
Copper	33 U		4.2 U	5 U	
Lead	130 U	5 U	2.5 U	5 U	
Mercury	0.5 U	0.2 U	0.13 U	0.2 U	
Nickel	60 U	5 U	2.2 U		
Thallium	13 U	5 U	5 U	5 UL	
Vanadium	60 U	5 U	0.82 U	5 U	
Zinc	26 U		12 U	20 U	
Wet Chemistry (MG/L)					
Sulfide	5 U	1 U	1 U	1 U	

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low
R - Unreliable result
U - Analyte tected (UJ, UL UR)

Table E-2
Detected Compounds from Groundwater Compliance Monitoring at the Burning Grounds - Upgradient Monitoring Wells
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1GW32					
	AS01-1GW32-CM01	AS01-1GW32-CM02	AS01-1GW32P-CM02	AS01-1GW32-CM03	AS01-1GW32-CM04	AS01-1GW10P-CM04
Sample Date	4/27/99	4/19/00	4/19/00	7/27/00	10/26/00	10/26/00
Chemical Name						
Volatile Organic Compounds (UG/L)						
1,1,1-Trichloroethane	5 U	5 U	5 U	1 U	5 U	5 U
1,1,2-Trichloroethane	5 U	5 U	5 U	1 U	5 U	5 U
1,1-Dichloroethane	5 U	5 U	5 U	1 U	5 U	5 U
1,1-Dichloroethene	5 U	5 U	5 U	1 U	5 U	5 U
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	2 U	5 U	5 U
1,2-Dichloroethane	5 U	5 U	5 U	1 U	5 U	5 U
Benzene	5 U	5 U	5 U	1 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	1 U	5 U	5 U
Chloromethane	10 U	5 U	5 U	2 U	5 U	5 U
Methylene chloride	5 U	5 U	5 U	1 U	5 U	5 U
Tetrachloroethene	5 U	5 U	5 U		5 U	5 U
Toluene	5 U	5 U	5 U		5 U	5 U
Trichloroethene	5 U	5 U	5 U		5 U	5 U
Vinyl chloride	10 U	5 U	5 U	2 U	5 U	5 U
cis-1,2-Dichloroethene	NS	NS	NS		NS	NS
trans-1,2-Dichloroethene	5 U	5 U	5 U	0.5 U	5 U	5 U
Semi-volatile Organic Compounds (UG/L)						
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U
Pesticide/Polychlorinated Biphenyls (UG/L)						
4,4'-DDD	0.1 U	0.03 U	0.03 UL	0.05 U	0.038 UJ	0.038 UJ
4,4'-DDE	0.1 U	0.03 U	0.03 UL	0.05 U	0.038 U	0.038 U
4,4'-DDT	0.1 U	0.03 U	0.03 UL	0.05 U	0.038 UJ	0.038 UJ
Diallate	NS	NS	NS	1 U	NS	NS
Endrin	0.1 U	0.03 U	0.03 UL	0.05 U	0.038 U	0.038 U
Isodrin	NS	NS	NS	0.1 U	NS	NS
Methoxychlor	0.5 U	0.15 U	0.15 UL	0.1 U	0.19 UJ	0.19 UJ
Pentachlorophenol	0.06 U	NS	NS	NS	NS	NS
Herbicides (UG/L)						
2,4-D	NS	0.055 U	0.055 U	4 U	0.055 U	0.055 U

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low
R - Unreliable result
U - Analyte not detected (UJ, UL UR)

Table E-2
Detected Compounds from Groundwater Compliance Monitoring at the Burning Grounds - Upgradient Monitoring Wells
Allegany Ballistics Laboratory
Rocket Center, WV

Sample Date	AS01-1GW32-CM01 4/27/99	AS01-1GW32-CM02 4/19/00	AS01-1GW32P-CM02 4/19/00	AS01-1GW32-CM03 7/27/00	AS01-1GW32-CM04 10/26/00	AS01-1GW10P-CM04 10/26/00
Chemical Name						
Dioxin/Furans (UG/L)						
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0.003125 U	0.00005 U	0.00005 U	NS	0.000025 U	0.000025 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.003125 U	0.00005 U	0.00005 U	NS	0.000025 U	0.000025 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.003125 U	0.00005 U	0.00005 U	NS	0.000025 U	0.000025 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.003125 U	0.00005 U	0.00005 U	NS	0.000025 U	0.000025 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.003125 U	0.00005 U	0.00005 U	NS	0.000025 U	0.000025 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.00125 U	0.00002 U	0.00002 U	NS	0.00001 U	0.00001 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.00125 U	0.00002 U	0.00002 U	NS	0.00001 U	0.00001 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.003125 U	0.00005 U	0.00005 U	NS	0.000025 U	0.000025 U
Total octachlorodibenzo-p-dioxin (OCDD)				NS		
Total octachlorodibenzofuran (OCDF)	0.00625 U			NS	0.00005 U	0.00005 U
Explosives (UG/L)						
1,3,5-Trinitrobenzene	1.2 U	1 U	1 U	0.2 U	0.26 U	0.26 U
2,4-Dinitrotoluene	1.2 U	1 U	1 U	0.2 U	0.26 U	0.26 U
2,6-Dinitrotoluene	1.2 U	1 U	1 U	0.2 U	0.26 U	0.26 U
Ammonium perchlorate					NS	NS
HMX	2.6 U	3 U	3 U			0.52 U
Nitrocellulose	141 U	135 U	135 U	179 UL	136 U	133 U
Perchlorate	NS	NS	NS	NS		
RDX	2.6 U	3 U	3 U	0.5 U	0.52 U	0.52 U
Total Metals (UG/L)						
Antimony	60 U	5 U	5 U	2.2 U	5 UL	5 UL
Arsenic	6 U	5 U	5 U	4.1 U	5 UL	
Barium						
Cadmium	6 U	1 U	1 U	0.28 U	1 UL	1 UL
Chromium	13 U		5 U			5 UL
Cobalt	60 U					5 U
Copper	33 U	5 U	5 U			
Lead	130 U	5 U	5 U	2.5 U	5 U	5 U
Mercury	0.5 U	0.2 U	0.2 U	0.13 U	0.2 U	0.2 U
Nickel	60 U					5 U
Thallium	13 U	5 U	5 U	5 U	5 UL	5 UL
Vanadium	60 U	5 U	5 U		5 U	5 U
Zinc	26 U					20 U
Wet Chemistry (MG/L)						
Sulfide	5 U	1 U	1 U	1 U	1 U	1 U

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low
R - Unreliable result
U - Analyte ·etected (UJ, UL UR)

Table E-2
Detected Compounds from Groundwater Compliance Monitoring at the Burning Grounds - Upgradient Monitoring Wells
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1GW11				1GW15			
Sample Date	AS01-1GW11-CM01 4/27/99	AS01-1GW11-CM02 4/19/00	AS01-1GW11-CM03 7/27/00	AS01-1GW11-CM04 10/26/00	AS01-1GW15-CM01 4/27/99	AS01-1GW15-CM02 4/19/00	AS01-1GW15-CM03 7/27/00	AS01-1GW15-CM04 10/27/00
Chemical Name								
Volatile Organic Compounds (UG/L)								
1,1,1-Trichloroethane	5 U	5 U		5 U	5 U	5 U	1 U	5 U
1,1,2-Trichloroethane	5 U	5 U	1 U	5 U	5 U	5 U	1 U	5 U
1,1-Dichloroethane	5 U	5 U	1 U	5 U	5 U	5 U	1 U	5 U
1,1-Dichloroethene	5 U	5 U	1 U	5 U	5 U	5 U	1 U	5 U
1,2-Dibromo-3-chloropropane	12 U	5 U	2 U	5 U	12 U	5 U	2 U	5 U
1,2-Dichloroethane	5 U	5 U		5 U	5 U	5 U	1 U	5 U
Benzene	5 U	5 U	1 U	5 U	5 U	5 U	1 U	5 U
Chlorobenzene	5 U	5 U	1 U	5 U	5 U	5 U	1 U	5 U
Chloromethane	10 U	5 U	2 U	5 U	10 U	5 U	2 U	5 U
Methylene chloride	5 U	5 U	1 U	5 U	5 U	5 U	1 U	5 U
Tetrachloroethene	5 U	5 U	1 U	5 U	5 U	5 U	1 U	5 U
Toluene	5 U	5 U	1 U	5 U	5 U	5 U	1 U	5 U
Trichloroethene	5 U	5 U	1 U	5 U	5 U	5 U		5 U
Vinyl chloride	10 U	5 U	2 U	5 U	10 U	5 U	2 U	5 U
cis-1,2-Dichloroethene	NS	NS	NS	NS	NS	NS	NS	NS
trans-1,2-Dichloroethene	5 U	5 U	0.5 U	5 U	5 U	5 U	0.5 U	5 U
Semi-volatile Organic Compounds (UG/L)								
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pesticide/Polychlorinated Biphenyls (UG/L)								
4,4'-DDD	0.11 U	0.03 U	0.05 U	0.038 U	0.1 U	0.03 U	0.05 U	0.038 U
4,4'-DDE	0.11 U	0.03 U	0.05 U	0.038 U	0.1 U	0.03 U	0.05 U	0.038 U
4,4'-DDT	0.11 U	0.03 U	0.05 U	0.038 U	0.1 U	0.03 U	0.05 U	0.038 U
Diallate	NS	NS	1 U	NS	NS	NS	1 U	NS
Endrin	0.11 U	0.03 U	0.05 U	0.038 U	0.1 U	0.03 U	0.05 U	0.038 U
Isodrin	NS	NS	0.1 U	NS	NS	NS	0.1 U	NS
Methoxychlor	0.54 U	0.15 U	0.1 U	0.19 U	0.5 U	0.15 U	0.1 U	0.19 U
Pentachlorophenol	0.06 U	NS	NS	NS	0.06 U	NS	NS	NS
Herbicides (UG/L)								
2,4-D	NS	0.055 U	4 U	0.055 U	NS	0.055 U	4 U	0.055 U

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low
R - Unreliable result
U - Analyte not detected (UJ, UL UR)

Table E-2
Detected Compounds from Groundwater Compliance Monitoring at the Burning Grounds - Upgradient Monitoring Wells
Allegany Ballistics Laboratory
Rocket Center, WV

Sample Date	AS01-1GW11-CM01 4/27/99	AS01-1GW11-CM02 4/19/00	AS01-1GW11-CM03 7/27/00	AS01-1GW11-CM04 10/26/00	AS01-1GW15-CM01 4/27/99	AS01-1GW15-CM02 4/19/00	AS01-1GW15-CM03 7/27/00	AS01-1GW15-CM04 10/27/00
Chemical Name								
Dioxin/Furans (UG/L)								
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0.003125 U	0.00005 U	NS	0.000025 U		0.00005 U	NS	0.000025 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.003125 U	0.00005 U	NS	0.000025 U	0.003125 U	0.00005 U	NS	0.000025 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.003125 U	0.00005 U	NS	0.000025 U	0.003125 U	0.00005 U	NS	0.000025 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.003125 U	0.00005 U	NS	0.000025 U	0.003125 U	0.00005 U	NS	0.000025 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.003125 U	0.00005 U	NS	0.000025 U	0.003125 U	0.00005 U	NS	0.000025 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.00125 U	0.00002 U	NS	0.00001 U	0.00125 U	0.00002 U	NS	0.00001 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.00125 U	0.00002 U	NS	0.00001 U	0.00125 U	0.00002 U	NS	0.00001 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.003125 U	0.00005 U	NS	0.000025 U	0.003125 U	0.00005 U	NS	0.000025 U
Total octachlorodibenzo-p-dioxin (OCDD)			NS			0.000284 B	NS	0.00005 U
Total octachlorodibenzofuran (OCDF)			NS	0.00005 U	0.00625 U	0.0001 U	NS	0.00005 U
Explosives (UG/L)								
1,3,5-Trinitrobenzene	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	0.2 U	NS
2,4-Dinitrotoluene	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U		0.26 U
2,6-Dinitrotoluene	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	0.2 U	0.26 U
Ammonium perchlorate	12.2			NS	5 U	5 U	4 U	NS
HMX	2.6 U	3 U	0.5 U	0.52 U	2.6 U	3 U	0.5 U	0.52 U
Nitrocellulose	133 U	141 U	179 UL		142 U	136 U	179 UL	133 U
Perchlorate	NS	NS	NS	5 U	NS	NS	NS	5 U
RDX	2.6 U	3 U	0.5 U	0.52 U	2.6 U	3 U	0.5 U	0.52 U
Total Metals (UG/L)								
Antimony	60 U	5 U	2.2 U	5 UL	60 U	5 U	2.2 U	5 UL
Arsenic	6 U	5 U	4.1 U	5 UL	6 U	5 U	4.1 U	5 UL
Barium								
Cadmium	6 U	1 U	0.28 U	1 UL	6 U		0.28 U	1 UL
Chromium	13 U				13 U			5 UL
Cobalt	60 U	5 U			60 U		1.3 U	5 U
Copper	33 U	5 U			33 U		4.2 U	5 U
Lead	130 U	5 U	2.5 U	5 U	130 U	5.7	2.5 U	5 U
Mercury	0.5 U	0.2 U	0.13 U	2 U	0.5 U	0.2 U	0.13 U	2 U
Nickel	60 U				60 U		2.2 U	5 U
Thallium	13 U	5 U	5 U	5 UL	13 U	5 U	5 U	5 UL
Vanadium	60 U	5 U			60 U	5 U	0.82 U	5 U
Zinc					26 U		12 U	20 U
Wet Chemistry (MG/L)								
Sulfide	5 U	1 U	1 U	1 U	5 U	1 U	1	1 U

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low
R - Unreliable result
U - Analyte not detected (UJ, UL UR)

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW10				1EW14				
Sample ID	AS01-1EW10-CM01	AS01-1EW10-CM02	AS01-1EW10-CM03	AS01-1EW10-CM04	AS01-1EW14-CM01	AS01-1EW14-CM02	AS01-1EW14P-CM02	AS01-1EW14-CM03	AS01-1EW14-CM04
Sample Date	04/26/99	04/17/00	07/25/00	10/24/00	04/26/99	04/20/00	04/20/00	07/25/00	10/25/00
Chemical Name									
Volatile Organic Compounds (UG/L)									
1,1,1-Trichloroethane	5 U	5 U	1 U	5 U				500 U	
1,1,2-Trichloroethane	5 U	5 U	1 U	5 U	5 U	5 U	5 U	500 U	5 U
1,1-Dichloroethane	5 U	5 U	1 U	5 U	5 U	5 U	5 U	500 U	5 U
1,1-Dichloroethene	5 U	5 U	1 U	5 U		5 U	5 U	500 U	5 U
1,2-Dibromo-3-chloropropane		5 U	2 U	5 U	5 U	5 U	5 U	1,000 U	5 U
1,2-Dichloroethane	5 U	5 U		5 U	5 U	5 U	5 U	500 U	5 U
Benzene	5 U	5 U	1 U	5 U	5 U	5 U	5 U	500 U	5 U
Chlorobenzene	5 U	5 U	1 U	5 U		5 U	5 U	500 U	5 U
Chloromethane	10 U	5 U	2 U	5 U	10 U	5 U	5 U	1,000 U	5 U
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5 U	5 U	1 U	5 U		5 U	5 U	500 U	5 U
Tetrachloroethene	5 U	5 U		5 U	5 U	5 U	5 U	500 U	5 U
Toluene	5 U	5 U	1 U	5 U		5 U	5 U	500 U	5 U
trans-1,2-Dichloroethene	5 U	5 R	0.5 U	5 U		5 U	5 U	250 U	
Trichloroethene									
Vinyl chloride	10 U	5 U	2 U	5 U	10 U	5 U	5 U	1,000 U	5 U
Semi-volatile Organic Compounds (UG/L)									
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UR	10 U
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UR	10 U
Pesticide/Polychlorinated Biphenyls (UG/L)									
4,4'-DDD	0.1 U	0.15 U	0.05 U	0.038 U	0.1 U	0.03 U	0.03 U	0.05 U	0.038 UJ
4,4'-DDE	0.1 U	0.15 U	0.05 U	0.038 U	0.1 U	0.03 U	0.03 U	0.05 U	0.038 U
4,4'-DDT	0.1 U	0.15 U	0.05 U	0.038 U	0.1 U	0.03 U	0.03 U	0.05 U	0.038 UJ
Dialiate	NA	NA	1 U	NA	NA	NA	NA		NA
Endrin	0.1 U	0.15 U	0.05 U	0.038 U	0.1 U	0.03 U	0.03 U	0.05 U	0.038 U
Isodrin	NA	NA	0.1 U	NA	NA	NA	NA		NA
Methoxychlor	0.5 U	0.75 U	0.1 U	0.19 U	0.5 U	0.15 U	0.15 U	0.1 U	0.19 UJ
Pentachlorophenol	0.06 U	NA	NA	NA	0.06 U	NA	NA	NA	NA
Herbicides (UG/L)									
2,4-D	NA	0.055 U	4 U	0.055 U	NA		0.055 U	4 U	0.055 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW10				1EW14				
Sample ID	AS01-1EW10-CM01	AS01-1EW10-CM02	AS01-1EW10-CM03	AS01-1EW10-CM04	AS01-1EW14-CM01	AS01-1EW14-CM02	AS01-1EW14P-CM02	AS01-1EW14-CM03	AS01-1EW14-CM04
Sample Date	04/26/99	04/17/00	07/25/00	10/24/00	04/26/99	04/20/00	04/20/00	07/25/00	10/25/00
Chemical Name									
Dioxin/Furans (UG/L)									
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.00313 U	6.48E-05 B	NA	3.20E-06 B	0.00313 U	5.00E-05 U	5.00E-05 U	NA	2.50E-05 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA		0.00313 U	5.00E-05 U	5.00E-05 U	NA	2.50E-05 U
1,2,3,6,7,8-Hexachlorodibenzofuran	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	5.00E-05 U	NA	2.50E-05 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	5.00E-05 U	NA	2.50E-05 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	5.00E-05 U	NA	2.50E-05 U
1,2,3,7,8-Pentachlorodibenzofuran	0.00125 U	2.00E-05 U	NA	2.00E-05 U	0.00125 U	2.00E-05 U	2.00E-05 U	NA	1.00E-05 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.00125 U	2.00E-05 U	NA	2.00E-05 U	0.00125 U	2.00E-05 U	2.00E-05 U	NA	1.00E-05 U
2,3,4,6,7,8-Hexachlorodibenzofuran	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	5.00E-05 U	NA	2.50E-05 U
Total octachlorodibenzofuran	0.00625 U		NA	1.00E-04 U	0.00625 U	1.00E-04 U		NA	5.00E-05 U
Total octachlorodibenzo-p-dioxin	0.00625 U		NA	7.26E-05 B	2.07E-04 B	1.00E-04 U	1.02E-04 B	NA	5.00E-05 U
Explosives (UG/L)									
1,3,5-Trinitrobenzene	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	1 U	0.2 U	0.26 U
2,4-Dinitrotoluene	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	1 U	0.2 U	0.26 U
2,6-Dinitrotoluene	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	1 U	0.2 U	0.26 U
HMX		3 U	0.96 B					0.31 B	0.52 U
Nitrocellulose	143 U	137 U	357 U	131 U	138 U	134 U	133 U	357 U	
Perchlorate									
RDX									0.52 U
Total Metals (UG/L)									
Antimony	60 U	5 U	2.2 U	5 UL	60 U	5 U	5 U	2.2 U	5 UL
Arsenic	6 U	5 U	4.1 U	5 UL	6 U	5 U	5 U	4.1 U	5 UL
Barium									
Cadmium	6 U	1 U	0.28 U	1 UL	6 U	1 U	1 U	0.28 B	1 UL
Chromium	13 U		1.4 U	5 UL	13 U	5 U	5 U		
Cobalt	60 U		6.9 B	8.6 B	60 U	5 U	5 U	2.9 B	5 U
Copper	33 U	5 U	4.2 U	11 B	33 U				
Lead	130 U	5 U	2.5 U	5 U	130 U	5 U			
Mercury	0.5 U	0.2 U	0.13 U	0.2 U	0.5 U	0.2 U	0.2 U	0.13 U	0.2 U
Nickel	60 U	24 B	10 B		60 U	5 U		9.5 B	
Thallium	13 U	5 U	5 U	5 UL	13 U	5 U	5 U	5 U	5 UL
Vanadium	60 U	5 U	0.82 U	5 U	60 U	5 U	5 U	1.1 B	5 U
Zinc		320 B	30 B			280 B	210 B		

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW10				1EW14				
Sample ID	AS01-1EW10-CM01	AS01-1EW10-CM02	AS01-1EW10-CM03	AS01-1EW10-CM04	AS01-1EW14-CM01	AS01-1EW14-CM02	AS01-1EW14P-CM02	AS01-1EW14-CM03	AS01-1EW14-CM04
Sample Date	04/26/99	04/17/00	07/25/00	10/24/00	04/26/99	04/20/00	04/20/00	07/25/00	10/25/00
Chemical Name									
Dissolved Metals (UG/L)									
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry (MG/L)									
Sulfide	5 U	1 U		1 U	5 U		1 U	1 U	1 U

Shaded result indicates that the constituent was detected.

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW16				1EW18			
Sample ID	AS01-1EW16-CM01	AS01-1EW16-CM02	AS01-1EW16-CM03	AS01-1EW16-CM04	AS01-1EW18-CM01	AS01-1EW18-CM02	AS01-1EW18-CM03	AS01-1EW18-CM04
Sample Date	04/28/99	04/19/00	07/26/00	10/24/00	04/26/99	04/17/00	07/25/00	10/24/00
Chemical Name								
Volatile Organic Compounds (UG/L)								
1,1,1-Trichloroethane						1,000 U		
1,1,2-Trichloroethane	5 U	5 U	170 U	5 U		1,000 U	1,200 U	
1,1-Dichloroethane	5 U	5 U	170 U			1,000 U	1,200 U	
1,1-Dichloroethene		5 U	170 U			1,000 U	1,200 U	
1,2-Dibromo-3-chloropropane	5 U	5 U	330 U	5 U	5 U	1,000 U	2,500 U	5 U
1,2-Dichloroethane	5 U	5 U	170 U	5 U	5 U	1,000 U	1,200 U	5 U
Benzene	5 U	5 U	170 U	5 U	5 U	1,000 U	1,200 U	5 U
Chlorobenzene	5 U	5 U	170 U	5 U		1,000 U	1,200 U	5 U
Chloromethane	10 U	5 U	330 U	5 U	10 U	1,000 U	2,500 U	5 U
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5 U	5 U	170 U			1,000 U	1,200 U	
Tetrachloroethene	5 U	5 U	170 U	5 U	5 U	1,000 U	1,200 U	5 U
Toluene	5 U	5 U	170 U	5 U		1,000 U	1,200 U	5 U
trans-1,2-Dichloroethene	5 U	5 U	83 U			1,000 U	620 U	
Trichloroethene								
Vinyl chloride	10 U	5 U	330 U	5 U		1,000 U	2,500 U	
Semi-volatile Organic Compounds (UG/L)								
Diethylphthalate	11 U	10 U	10 U	10 U	10 U	10 U	10 UR	10 U
Di-n-butylphthalate	11 U	10 U	10 U	10 U	10 U	10 U	10 UR	10 U
Pesticide/Polychlorinated Biphenyls (UG/L)								
4,4'-DDD	0.1 U	0.03 U	0.05 U	0.038 U	0.11 U	0.15 U	0.05 U	0.038 U
4,4'-DDE	0.1 U	0.03 U	0.05 U	0.038 U	0.11 U	0.15 U	0.05 U	0.038 U
4,4'-DDT	0.1 U	0.03 U	0.05 U	0.038 U	0.11 U	0.15 U	0.05 U	0.038 U
Dialiate	NA	NA	1 U	NA	NA	NA	1 U	NA
Endrin	0.1 U	0.03 U	0.05 U	0.038 U	0.11 U	0.15 U	0.05 U	0.038 U
Isodrin	NA	NA		NA	NA	NA	0.1 U	NA
Methoxychlor	0.5 U	0.15 U	0.1 U	0.19 U	0.55 U	0.75 U	0.1 U	0.19 U
Pentachlorophenol	0.06 U	NA	NA	NA	0.06 U	NA	NA	NA
Herbicides (UG/L)								
2,4-D	NA	0.055 U	4 U	0.055 U	NA	0.055 U	4 U	0.055 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW16				1EW18			
Sample ID	AS01-1EW16-CM01	AS01-1EW16-CM02	AS01-1EW16-CM03	AS01-1EW16-CM04	AS01-1EW18-CM01	AS01-1EW18-CM02	AS01-1EW18-CM03	AS01-1EW18-CM04
Sample Date	04/28/99	04/19/00	07/26/00	10/24/00	04/26/99	04/17/00	07/25/00	10/24/00
Chemical Name								
Dioxin/Furans (UG/L)								
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	6.48E-06 B	0.00313 U	5.00E-05 U	NA	5.00E-05 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	6.40E-06 B	0.00313 U	5.00E-05 U	NA	5.00E-05 U
1,2,3,6,7,8-Hexachlorodibenzofuran	0.00313 U		NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U
1,2,3,7,8-Pentachlorodibenzofuran	0.00125 U		NA	2.00E-05 U	0.00125 U	2.00E-05 U	NA	2.00E-05 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.00125 U	2.00E-05 U	NA	2.00E-05 U	0.00125 U	2.00E-05 U	NA	2.00E-05 U
2,3,4,6,7,8-Hexachlorodibenzofuran	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U
Total octachlorodibenzofuran	0.00625 U		NA	1.00E-04 U	0.00625 U	1.00E-04 U	NA	1.00E-04 U
Total octachlorodibenzo-p-dioxin	2.90E-04 B		NA	6.52E-05 B	1.98E-04 B	5.68E-05 B	NA	3.50E-05 B
Explosives (UG/L)								
1,3,5-Trinitrobenzene	1.2 U	1 U	0.6 U	0.26 U	1.2 U	1 U	0.2 U	0.26 U
2,4-Dinitrotoluene	1.2 U	1 U	0.6 U	0.26 U	1.2 U	1 U	0.2 U	
2,6-Dinitrotoluene	1.2 U	1 U	0.6 U	0.26 U	1.2 U	1 U	0.2 U	
HMX			0.47 B	0.52 U		3 U	0.47 B	0.52 U
Nitrocellulose	133 U	133 U	179 UL		133 U	136 U	357 U	137 U
Perchlorate								
RDX	2.6 U							
Total Metals (UG/L)								
Antimony	60 U	5 U	2.2 U	5 UL	60 U	5 U	2.2 U	5 UL
Arsenic	6 U	5 U	5.4 B	5 UL	6 U	5 U	4.1 U	5 UL
Barium								
Cadmium	6 U	1 U	0.52 B	1 UL	6 U	1 U	0.28 U	1 UL
Chromium					13 U	5 U	1.4 U	5 UL
Cobalt	60 U	5 U	5.4 B	5 U	60 U	5 U	3.4 B	5 U
Copper					33 U	5 U	7.8 B	
Lead	130 U				130 U	5 U		
Mercury	0.5 U	0.2 U	0.13 U	0.2 U	0.5 U	0.2 U	0.13 U	0.2 U
Nickel	60 U		26 B		60 U	5 U	3.3 B	5 U
Thallium	13 U	5 U	5 U	5 UL	13 U	5 U	5 U	5 UL
Vanadium	60 U	5 U		5 U	60 U	5 U	0.82 U	5 U
Zinc		230 B				210 B	22 B	

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW21				1EW29				
Sample ID	AS01-1EW21-CM01	AS01-1EW21-CM02	AS01-1EW21-CM03	AS01-1EW21-CM04	AS01-1EW29-CM01	AS01-1EW29-CM02	AS01-1EW29-CM03	AS01-1EW29P-CM03	AS01-1EW29-CM04
Sample Date	04/26/99	04/18/00	07/25/00	10/24/00	04/26/99	04/20/00	07/25/00	07/25/00	10/24/00
Chemical Name									
Volatile Organic Compounds (UG/L)									
1,1,1-Trichloroethane		1,000 U							
1,1,2-Trichloroethane	5 U	1,000 U	38 U	5 U	5 U	5 U	1,000 U	830 U	5 U
1,1-Dichloroethane		1,000 U	38 U	5 U			1,000 U	830 U	
1,1-Dichloroethene		1,000 U	38 U	5 U			1,000 U	830 U	
1,2-Dibromo-3-chloropropane	5 U	1,000 U	77 U	5 U	5 U	5 U	2,000 U	1,700 U	5 U
1,2-Dichloroethane	5 U	1,000 U	38 U	5 U	5 U	5 U	1,000 U	830 U	5 U
Benzene	5 U	1,000 U	38 U	5 U	5 U	5 U	1,000 U	830 U	5 U
Chlorobenzene	5 U	1,000 U	38 U	5 U	5 U	5 U	1,000 U	830 U	5 U
Chloromethane	10 U	1,000 U	77 U	5 U	10 U	5 U	2,000 U	1,700 U	5 U
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5 U	1,000 U	38 U	5 U			1,000 U	200 B	
Tetrachloroethene	5 U	1,000 U	38 U	5 U	5 U	5 U	1,000 U	830 U	5 U
Toluene	5 U	1,000 U	38 U	5 U			1,000 U	830 U	
trans-1,2-Dichloroethene	5 U	1,000 U	19 U	5 U			500 U	420 U	
Trichloroethene									
Vinyl chloride		1,000 U	77 U		10 U	5 U	2,000 U	1,700 U	5 U
Semi-volatile Organic Compounds (UG/L)									
Diethylphthalate	10 U	10 U		10 U	10 UL	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 UL	10 U	10 U	10 U	10 U
Pesticide/Polychlorinated Biphenyls (UG/L)									
4,4'-DDD	0.11 U	0.15 U	0.05 U	0.03 U	0.1 U	0.03 U	0.05 U	0.05 U	0.038 U
4,4'-DDE	0.11 U	0.15 U	0.05 U	0.03 U	0.1 U	0.03 U	0.05 U	0.05 U	0.038 U
4,4'-DDT	0.11 U	0.15 U	0.05 U	0.03 U	0.1 U	0.03 U	0.05 U	0.05 U	0.038 U
Diallate	NA	NA	1 U	NA	NA	NA	1 U	1 U	NA
Endrin	0.11 U	0.15 U	0.05 U	0.03 U	0.1 U	0.03 U	0.05 U	0.05 U	0.038 U
Isodrin	NA	NA	0.1 U	NA	NA	NA	0.1 U	0.1 U	NA
Methoxychlor	0.55 U	0.75 U	0.1 U	0.15 U	0.5 U	0.15 U	0.1 U	0.1 U	0.19 U
Pentachlorophenol	0.06 U	NA	NA	NA	0.06 U	NA	NA	NA	NA
Herbicides (UG/L)									
2,4-D	NA	0.055 U	4 U	0.055 U	NA	0.055 U	4 U	4 U	0.055 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW21				1EW29				
Sample ID	AS01-1EW21-CM01	AS01-1EW21-CM02	AS01-1EW21-CM03	AS01-1EW21-CM04	AS01-1EW29-CM01	AS01-1EW29-CM02	AS01-1EW29-CM03	AS01-1EW29P-CM03	AS01-1EW29-CM04
Sample Date	04/26/99	04/18/00	07/25/00	10/24/00	04/26/99	04/20/00	07/25/00	07/25/00	10/24/00
Chemical Name									
Dioxin/Furans (UG/L)									
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	NA	5.00E-05 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	NA	5.00E-05 U
1,2,3,6,7,8-Hexachlorodibenzofuran	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	NA	5.00E-05 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	NA	5.00E-05 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	NA	5.00E-05 U
1,2,3,7,8-Pentachlorodibenzofuran	0.00125 U	2.00E-05 U	NA	2.00E-05 U	0.00125 U	2.00E-05 U	NA	NA	2.00E-05 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.00125 U	2.00E-05 U	NA	2.00E-05 U	0.00125 U	2.00E-05 U	NA	NA	2.00E-05 U
2,3,4,6,7,8-Hexachlorodibenzofuran	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	NA	5.00E-05 U
Total octachlorodibenzofuran	0.00625 U	1.00E-04 U	NA	1.00E-04 U	0.00625 U	1.00E-04 U	NA	NA	1.00E-04 U
Total octachlorodibenzo-p-dioxin	2.28E-04 B	4.25E-05 B	NA	3.62E-05 B	1.99E-04 B		NA	NA	1.00E-04 U
Explosives (UG/L)									
1,3,5-Trinitrobenzene	1.2 U	1 U	0.2 U	0.26 U		1 U	0.2 U	0.2 U	0.26 U
2,4-Dinitrotoluene	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	0.2 U	0.2 U	0.26 U
2,6-Dinitrotoluene	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	0.2 U	0.2 U	0.26 U
HMX	2.6 U	3 U	0.5 U	0.52 U	2.6 U	3 U	0.5 U	0.5 U	0.52 U
Nitrocellulose	137 U	134 U	357 U	133 U	135 U	134 U	357 U	357 U	133 U
Perchlorate		5 U		5 U	5 U	5 U	4 U	4 U	5 U
RDX	2.6 U	3 U	0.5 U	0.52 U	2.6 U	3 U	0.5 U	0.5 U	0.52 U
Total Metals (UG/L)									
Antimony	60 U	5 U	2.2 U	5 UL	60 U	5 U	2.2 U	2.2 U	5 UL
Arsenic	6 U	5 U	4.1 U	5 UL	6 U	5 U	4.5 B	4.6 B	5 UL
Barium									
Cadmium	6 U	1 U	0.28 U	1 UL	6 U	1 U	0.28 U	0.2 U	1 UL
Chromium	13 U	5 U	1.4 U	5 UL	13 U	5 U	1.4 U	0.6 U	5 UL
Cobalt	60 U	5 U	1.3 U	5 U	60 U	5 U	1.3 U	0.6 U	5 U
Copper	33 U	5 U	4.2 U	5 U	33 U	5 U	4.2 U	0.7 U	5 U
Lead	130 U	5 U	2.5 U	5 U	130 U	5 U	2.5 U	1.1 U	5 U
Mercury	0.5 U	0.2 U	0.13 U	0.2 U	0.5 U	0.2 U	0.13 U	0.13 U	
Nickel	60 U	5 U	2.2 U		60 U	5 U	2.2 U	1.5 U	5 U
Thallium	13 U	5 U	5 U	5 UL	13 U	5 U	5 U	2.7 U	5 UL
Vanadium	60 U	5 U	0.82 U	5 U	60 U	5 U	0.82 U	0.6 U	5 U
Zinc	26 U	64 B	13 B	20 U		46 B	12 U	0.5 U	20 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW21				1EW29				
Sample ID	AS01-1EW21-CM01	AS01-1EW21-CM02	AS01-1EW21-CM03	AS01-1EW21-CM04	AS01-1EW29-CM01	AS01-1EW29-CM02	AS01-1EW29-CM03	AS01-1EW29P-CM03	AS01-1EW29-CM04
Sample Date	04/26/99	04/18/00	07/25/00	10/24/00	04/26/99	04/20/00	07/25/00	07/25/00	10/24/00
Chemical Name									
Dissolved Metals (UG/L)									
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry (MG/L)									
Sulfide	5 U		1 U	1 U	5 U			1 U	1 U

Shaded result indicates that the constituent was detected.

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW30					1EW31			
Sample ID	AS01-1EW30-CM01	AS01-1EW30P-CM01	AS01-1EW30-CM02	AS01-1EW30-CM03	AS01-1EW30-CM04	AS01-1EW31-CM01	AS01-1EW31-CM02	AS01-1EW31-CM03	AS01-1EW31-CM04
Sample Date	04/27/99	04/27/99	04/18/00	07/25/00	10/24/00	04/27/99	04/18/00	07/25/00	10/24/00
Chemical Name									
Volatile Organic Compounds (UG/L)									
1,1,1-Trichloroethane			1,000 U	710 U	5 U	5 U	5 U	1 U	5 U
1,1,2-Trichloroethane	5 U	5 U	1,000 U	710 U	5 U	5 U	5 U	1 U	5 U
1,1-Dichloroethane	5 U	5 U	1,000 U	710 U	5 U	5 U	5 U	1 U	5 U
1,1-Dichloroethene			1,000 U	710 U	5 U	5 U	5 U	1 U	5 U
1,2-Dibromo-3-chloropropane	5 U	5 U	1,000 U	1,400 U	5 U	5 U	5 U	2 U	5 U
1,2-Dichloroethane	5 U	5 U	1,000 U	710 U	5 U	5 U	5 U	1 U	5 U
Benzene	5 U	5 U	1,000 U	710 U	5 U	5 U	5 U	0.064 B	5 U
Chlorobenzene			1,000 U	710 U	5 U	5 U	5 U	1 U	5 U
Chloromethane	10 U	10 U	1,000 U	1,400 U	5 U	10 U	5 U	2 U	5 U
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA		NA
Methylene chloride			1,000 U	710 U		5 U	5 U	1 U	5 U
Tetrachloroethene	5 U	5 U	1,000 U	710 U	5 U	5 U	5 U	1 U	5 U
Toluene			1,000 U	710 U	5 U	5 U	5 U	1 U	5 U
trans-1,2-Dichloroethene			1,000 U	360 U	5 U	5 U	5 U	0.5 U	5 U
Trichloroethene						5 U	5 U		5 U
Vinyl chloride	10 U	10 U	1,000 U	1,400 U	5 U	10 U	5 U	2 U	5 U
Semi-volatile Organic Compounds (UG/L)									
Diethylphthalate	10 U	10 U	10 U		10 U	10 U	10 U	10 UR	10 U
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UR	10 U
Pesticide/Polychlorinated Biphenyls (UG/L)									
4,4'-DDD	0.1 U	0.1 U	0.15 U		0.038 U	0.1 U	0.15 U	0.05 U	0.038 U
4,4'-DDE	0.1 U	0.1 U	0.15 U		0.038 U	0.1 U	0.15 U	0.05 U	0.038 U
4,4'-DDT	0.1 U	0.1 U	0.15 U		0.038 U	0.1 U	0.15 U	0.05 U	0.038 U
Diallate	NA	NA	NA	1 U	NA	NA	NA	1 U	NA
Endrin	0.1 U	0.1 U	0.15 U		0.038 U	0.1 U	0.15 U	0.05 U	0.038 U
Isodrin	NA	NA	NA	0.1 U	NA	NA	NA	0.1 U	NA
Methoxychlor	0.5 U	0.5 U	0.75 U		0.19 U	0.5 U	0.75 U	0.1 U	0.19 U
Pentachlorophenol	0.08 U	0.08 U	NA	NA	NA		NA	NA	NA
Herbicides (UG/L)									
2,4-D	NA	NA	0.055 U	4 U	0.055 U	NA	0.055 U	4 U	0.055 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds - Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW30					1EW31			
Sample ID	AS01-1EW30-CM01	AS01-1EW30P-CM01	AS01-1EW30-CM02	AS01-1EW30-CM03	AS01-1EW30-CM04	AS01-1EW31-CM01	AS01-1EW31-CM02	AS01-1EW31-CM03	AS01-1EW31-CM04
Sample Date	04/27/99	04/27/99	04/18/00	07/25/00	10/24/00	04/27/99	04/18/00	07/25/00	10/24/00
Chemical Name									
Dioxin/Furans (UG/L)									
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.00313 U	0.00313 U	4.05E-05 B	NA	4.16E-06 B	0.00313 U	6.87E-05 B	NA	5.00E-05 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U
1,2,3,6,7,8-Hexachlorodibenzofuran	0.00313 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	0.00313 U	5.00E-05 U	NA		0.00313 U	5.00E-05 U	NA	5.00E-05 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.00313 U	0.00313 U	5.00E-05 U	NA		0.00313 U	5.00E-05 U	NA	5.00E-05 U
1,2,3,7,8-Pentachlorodibenzofuran	0.00125 U	0.00125 U	2.00E-05 U	NA	2.00E-05 U	0.00125 U	2.00E-05 U	NA	2.00E-05 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.00125 U	0.00125 U	2.00E-05 U	NA	2.00E-05 U	0.00125 U	2.00E-05 U	NA	2.00E-05 U
2,3,4,6,7,8-Hexachlorodibenzofuran	0.00313 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U	0.00313 U	5.00E-05 U	NA	5.00E-05 U
Total octachlorodibenzofuran	0.00625 U	0.00625 U		NA	1.00E-04 U	0.00625 U		NA	
Total octachlorodibenzo-p-dioxin	2.24E-04 B	1.80E-04 B	5.03E-04 B	NA	1.00E-04 U	1.76E-04 B		NA	1.53E-05 B
Explosives (UG/L)									
1,3,5-Trinitrobenzene	1.2 U	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	0.2 U	0.26 U
2,4-Dinitrotoluene	1.2 U	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	0.2 U	0.26 U
2,6-Dinitrotoluene	1.2 U	1.2 U	1 U	0.2 U	0.26 U	1.2 U	1 U	0.2 U	0.26 U
HMX	2.6 U	2.6 U	3 U	0.5 U	0.52 U	2.6 U	3 U	0.5 U	0.52 U
Nitrocellulose	133 U	136 U	134 U	357 U	137 U	136 U	134 U	357 U	135 U
Perchlorate						5 U	5 U		5 U
RDX	2.6 U	2.6 U	3 U	0.5 U	0.52 U	2.6 U	3 U	0.5 U	0.52 U
Total Metals (UG/L)									
Antimony	60 U	60 U	5 U	2.2 U	5 UL	60 U	5 U	2.2 U	5 UL
Arsenic	6 U	6 U	5 U	4.8 B	5 UL	6 U		9.2 B	7.8 B
Barium									
Cadmium	6 U	6 U	1 U	0.28 U	1 UL	6 U	1 U	0.28 U	1 UL
Chromium	13 U	13 U	5 U	1.4 U	5 UL	13 U	5 U	1.4 U	5 UL
Cobalt	60 U	60 U	5 U	1.3 U	5 U	60 U	5 U	1.3 U	5 U
Copper	33 U	33 U	5 U	4.2 U	5 U	33 U	5 U	4.2 U	5 U
Lead	130 U	130 U	5 U	2.5 U	5 U	130 U	5 U	2.5 U	5 U
Mercury	0.5 U	0.5 U	0.2 U	0.13 U	0.2 U	0.5 U	0.2 U	0.13 U	0.2 U
Nickel	60 U	60 U	5 U	2.2 U	5 U	60 U	5 U	3.4 B	5 U
Thallium	13 U	13 U	5 U	5 U	5 UL	13 U	5 U	5 U	5 UL
Vanadium	60 U	60 U	5 U	0.82 U	5 U	60 U	5 U	0.82 U	5 U
Zinc	26 U		150 B	12 U	20 U	26 U	91 B	13 B	

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds - Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW30					1EW31			
Sample ID	AS01-1EW30-CM01	AS01-1EW30P-CM01	AS01-1EW30-CM02	AS01-1EW30-CM03	AS01-1EW30-CM04	AS01-1EW31-CM01	AS01-1EW31-CM02	AS01-1EW31-CM03	AS01-1EW31-CM04
Sample Date	04/27/99	04/27/99	04/18/00	07/25/00	10/24/00	04/27/99	04/18/00	07/25/00	10/24/00
Chemical Name									
Dissolved Metals (UG/L)									
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry (MG/L)									
Sulfide	5 U	5 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U

Shaded result indicates that the constituent was detected.

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds -
Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW33				
Sample ID	AS01-1EW33-CM01	AS01-1EW33-CM02	AS01-1EW33-CM03	AS01-1EW33P-CM03	AS01-1EW33-CM04
Sample Date	04/27/99	04/18/00	07/25/00	07/25/00	10/24/00
Chemical Name					
Volatile Organic Compounds (UG/L)					
1,1,1-Trichloroethane	5 U	5 U	10 U	10 U	5 U
1,1,2-Trichloroethane	5 U	5 U	10 U	10 U	5 U
1,1-Dichloroethane	5 U	5 U	10 U	10 U	5 U
1,1-Dichloroethene	5 U	5 U	10 U	10 U	5 U
1,2-Dibromo-3-chloropropane	12 U	5 U	20 U	20 U	5 U
1,2-Dichloroethane	5 U	5 U	10 U	10 U	5 U
Benzene	5 U	5 U	10 U		5 U
Chlorobenzene	5 U	5 U	10 U	10 U	5 U
Chloromethane	10 U		20 U	20 U	5 U
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA
Methylene chloride	5 U	5 U	10 U	10 U	5 U
Tetrachloroethene	5 U	5 U			5 U
Toluene	5 U	5 U	10 U	10 U	5 U
trans-1,2-Dichloroethene		5 U	5 U		5 U
Trichloroethene					
Vinyl chloride					
Semi-volatile Organic Compounds (UG/L)					
Diethylphthalate	10 U	10 U	10 U		10 U
Di-n-butylphthalate	10 U	10 U	10 U		10 U
Pesticide/Polychlorinated Biphenyls (UG/L)					
4,4'-DDD	0.1 U	0.15 U	0.05 U	0.05 U	0.038 U
4,4'-DDE	0.1 U	0.15 U	0.05 U	0.05 U	0.038 U
4,4'-DDT	0.1 U	0.15 U	0.05 U	0.05 U	0.038 U
Dialiate	NA	NA	1 U	1 U	NA
Endrin	0.1 U	0.15 U	0.05 U	0.05 U	0.038 U
Isodrin	NA	NA	0.1 U	0.1 U	NA
Methoxychlor	0.5 U	0.75 U	0.1 U	0.1 U	0.19 U
Pentachlorophenol		NA	NA	NA	NA
Herbicides (UG/L)					
2,4-D	NA	0.055 U	4 U	4 U	0.055 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds - Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW33				
Sample ID	AS01-1EW33-CM01	AS01-1EW33-CM02	AS01-1EW33-CM03	AS01-1EW33P-CM03	AS01-1EW33-CM04
Sample Date	04/27/99	04/18/00	07/25/00	07/25/00	10/24/00
Chemical Name					
Dioxin/Furans (UG/L)					
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	NA	5.00E-05 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	NA	5.00E-05 U
1,2,3,6,7,8-Hexachlorodibenzofuran	0.00313 U	5.00E-05 U	NA	NA	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	NA	5.00E-05 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.00313 U	5.00E-05 U	NA	NA	
1,2,3,7,8-Pentachlorodibenzofuran	0.00125 U	2.00E-05 U	NA	NA	2.00E-05 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.00125 U	2.00E-05 U	NA	NA	
2,3,4,6,7,8-Hexachlorodibenzofuran	0.00313 U	5.00E-05 U	NA	NA	
Total octachlorodibenzofuran	0.00625 U	1.00E-04 U	NA	NA	1.00E-04 U
Total octachlorodibenzo-p-dioxin	2.12E-04 B	1.00E-04 U	NA	NA	3.18E-05 B
Explosives (UG/L)					
1,3,5-Trinitrobenzene	1.2 U	1 U	0.2 U	0.2 U	0.26 U
2,4-Dinitrotoluene	1.2 U	1 U	0.2 U	0.2 U	0.26 U
2,6-Dinitrotoluene	1.2 U	1 U	0.2 U	0.2 U	0.26 U
HMX	2.6 U	3 U	0.5 U	0.5 U	0.52 U
Nitrocellulose	133 U	134 U	357 U	357 U	
Perchlorate	5 U	5 U	4 U	4 U	5 U
RDX	2.6 U	3 U	0.5 U	0.5 U	0.52 U
Total Metals (UG/L)					
Antimony	60 U	5 U		2.2 U	5 UL
Arsenic	6 U	5 U	6.3 B	4.7 B	5 UL
Barium					
Cadmium	6 U	1 U	0.28 U	0.28 U	1 UL
Chromium	13 U	5 U	1.4 U	1.4 U	5 UL
Cobalt	60 U	5 U	1.3 U	1.3 U	5 U
Copper	33 U	5 U	4.2 U	4.2 U	5 U
Lead	130 U	5 U	2.5 U	2.5 U	5 U
Mercury	0.5 U	0.2 U	0.13 U	0.13 U	0.2 U
Nickel	60 U	5 U	2.6 B	2.5 B	5 U
Thallium	13 U	5 U		5 U	5 UL
Vanadium	60 U	5 U	0.82 U	0.82 U	5 U
Zinc	26 U	44 B	12 B	13 B	20 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-3
Detected Compounds from Groundwater Compliance Monitoring at the Open Burning Grounds - Extraction Well Data
Allegany Ballistics Laboratory
Rocket Center, WV

Station ID	1EW33				
Sample ID	AS01-1EW33-CM01	AS01-1EW33-CM02	AS01-1EW33-CM03	AS01-1EW33P-CM03	AS01-1EW33-CM04
Sample Date	04/27/99	04/18/00	07/25/00	07/25/00	10/24/00
Chemical Name					
Dissolved Metals (UG/L)					
Aluminum	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA
Wet Chemistry (MG/L)					
Sulfide	5 U	1 U		1 U	1 U

Shaded result indicates that the constituent was detected.

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result
U, UJ, UL - Analyte not detected

Table E-4
Groundwater Surface Elevation Measurements for Each Sampling Event

Station ID	Sample Date	Groundwater Gauging Date	Water-Level Elevation (ft above msl)
1EW10	4/26/99	4/22/99	647.93
	4/17/00	4/20/00	646.75
	7/25/00	7/11/00	645.34
	10/24/00	10/13/00	645.39
1EW14	4/26/99	4/22/99	646.81
	4/20/00	4/20/00	645.66
	7/25/00	7/11/00	644.16
	10/25/00	10/13/00	645.66
1EW16	4/28/99	4/22/99	650.75
	4/19/00	4/6/00	649.07
	7/26/00	7/11/00	646.37
	10/24/00	10/13/00	646.99
1EW18	4/26/99	4/22/99	646.56
	4/17/00	4/20/00	645.48
	7/25/00	7/11/00	645.56
	10/24/00	10/13/00	645.65
1EW21	4/26/99	4/22/99	642.87
	4/18/00	4/20/00	641.55
	7/25/00	7/11/00	641.52
	10/24/00	10/13/00	643.22
1EW29	4/26/99	4/22/99	647.92
	4/20/00	4/20/00	642.39
	7/25/00	7/11/00	640.71
	10/24/00	10/13/00	641.93
1EW30	4/27/99	4/22/99	634.79
	4/18/00	4/20/00	629.18
	7/25/00	7/11/00	622.45
	10/24/00	10/13/00	628.10
1EW31	4/27/99	4/22/99	644.19
	4/18/00	4/20/00	643.19
	7/25/00	7/11/00	640.33
	10/24/00	10/13/00	640.63
1EW33	4/27/99	4/22/99	646.52
	4/18/00	4/20/00	641.54
	7/25/00	7/11/00	639.65
	10/24/00	10/13/00	641.04
1GW10	4/27/99	4/22/99	651.23
	4/19/00	4/20/00	647.47
	7/27/00	7/11/00	645.99
	10/26/00	10/13/00	646.97
1GW11	4/27/99	4/22/99	657.83
	4/19/00	4/20/00	654.68
	7/27/00	7/11/00	652.20
	10/26/00	10/13/00	651.23
1GW15	4/27/99	4/22/99	654.44
	4/19/00	4/20/00	645.18
	7/27/00	7/11/00	643.40
	10/27/00	10/13/00	644.14
1GW32	4/27/99	4/22/99	653.70
	4/19/00	4/20/00	651.65
	7/27/00	7/11/00	650.26
	10/26/00	10/13/00	650.48

Table E-5
Mean and Variance Data for Background Wells

	Downgradient						Upgradient					
	Alluvial (GW11, GW32)			Bedrock (GW10, GW15)			Alluvial (EW10, EW14, EW16, EW18)			Bedrock (EW29, EW30, EW31, EW33)		
	Sample Mean	Standard Deviation	Number of Samples	Sample Mean	Standard Deviation	Number of Samples	Sample Mean	Standard Deviation	Number of Samples	Sample Mean	Standard Deviation	Number of Samples
Volatile Organic Compounds (UG/L)												
1,1,1-Trichloroethane	340	605	20	187	313	16	3.91	2.02	8	4	1,85	8
1,1,2-Trichloroethane	199	393	20	174	367	16	4	1.85	8	4	1.85	8
1,1-Dichloroethane	206	390	20	178	365	16	4	1.85	8	4	1.85	8
1,1-Dichloroethene	213	388	20	178	365	16	4	1.85	8	4	1.85	8
1,2-Dibromo-3-chloropropane	299	632	20	280	617	16	5.13	3.09	8	5.13	3.09	8
1,2-Dichloroethane	199	393	20	174	367	16	3.89	2.07	8	4	1.85	8
Benzene	199	393	20	173	367	16	4	1.85	8	4	1.85	8
Chlorobenzene	199	393	20	174	367	16	4	1.85	8	4	1.85	8
Chloromethane	300	631	20	281	616	16	5.5	3.07	8	5.5	3.07	8
Methylene chloride	275	425	20	203	362	16	4	1.85	8	4	1.85	8
Tetrachloroethene	199	393	20	173	367	16	3.93	1.99	8	4	1.85	8
Toluene	202	391	20	176	366	16	3.88	2.08	8	4	1.85	8
Trichloroethene	15500	24100	20	13000	16100	16	4.35	1.42	8	3.94	1.98	8
Vinyl chloride	302	630	20	287	614	16	5.5	3.07	8	5.5	3.07	8
cis-1,2-Dichloroethene	NA	NA	NA	0.11	NA	1	0.22	NA	1	3.88	2.08	8
trans-1,2-Dichloroethene	164	329	19	129	284	15	3.88	2.08	8	10	0	8
Semi-volatile Organic Compounds (UG/L)												
Di-n-butylphthalate	10.1	0.224	20	10	0	16	10	0	8	10	0	8
Diethylphthalate	9.7	1.59	20	9.45	2.2	16	10	0	8	0.0545	0.0291	8
Pesticide/Polychlorinated Biphenyls (UG/L)												
4,4'-DDD	0.0731	0.0434	20	0.0751	0.0461	16	0.0558	0.0314	8	0.0545	0.0291	8
4,4'-DDE	0.0731	0.0434	20	0.0745	0.0469	18	0.0558	0.0314	8	0.0545	0.0291	8
4,4'-DDT	0.0731	0.0434	20	0.0748	0.0465	16	0.0558	0.0314	8	12.8	8.46	8
Diallate	12.8	8.25	20	12.8	8.18	16	12.8	8.46	8	0.0545	0.0291	8
Endrin	0.0731	0.0434	20	0.0748	0.0464	16	0.0558	0.0314	8	12.5	8.82	8
Isodrin	12.6	8.46	20	12.5	8.52	16	12.5	8.82	8	0.235	0.167	8
Methoxychlor	0.328	0.246	20	0.344	0.257	16	0.24	0.176	8	12.5	23.1	8
Pentachlorophenol	12.5	22.2	20	12.6	22.3	16	12.5	23.1	8	1.04	1.83	8
Herbicides (UG/L)												
2,4-D	1.07	1.74	20	1.04	1.76	16	1.04	1.83	8	0.000561	0.00126	6
Dioxin/Furans (UG/L)												
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0.00107	0.00151	15	0.00107	0.00152	12	0.00107	0.00159	6	0.00107	0.00159	6
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.00107	0.00151	15	0.00108	0.00151	12	0.00107	0.00159	6	0.00107	0.00159	6

Table E-5
Mean and Variance Data for Background Wells

	Downgradient						Upgradient					
	Alluvial (GW11, GW32)			Bedrock (GW10, GW15)			Alluvial (EW10, EW14, EW16, EW18)			Bedrock (EW29, EW30, EW31, EW33)		
	Sample Mean	Standard Deviation	Number of Samples	Sample Mean	Standard Deviation	Number of Samples	Sample Mean	Standard Deviation	Number of Samples	Sample Mean	Standard Deviation	Number of Samples
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.00107	0.0015	15	0.00107	0.00152	12	0.00107	0.00159	6	0.00107	0.00159	6
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.00107	0.0015	15	0.00107	0.00152	12	0.00107	0.00159	6	0.00107	0.00159	6
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.00107	0.0015	15	0.00107	0.00152	12	0.00107	0.00159	6	0.000427	0.000638	6
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.000429	0.000601	15	0.000428	0.000607	12	0.000427	0.000638	6	0.000427	0.000638	6
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.000428	0.000601	15	0.00043	0.000606	12	0.000427	0.000638	6	0.00107	0.00159	6
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.00107	0.0015	15	0.00107	0.00152	12	0.00107	0.00159	6	0.000139	0.000104	6
Total octachlorodibenzo-p-dioxin (OCDD)	0.000614	0.00159	15	0.000313	0.000365	12	0.00016	0.000134	6	0.00213	0.00319	6
Total octachlorodibenzofuran (OCDF)	0.00214	0.00301	15	0.00213	0.00304	12	0.00109	0.00253	6	5.21	9.13	8
Explosives (UG/L)												
1,3,5-Trinitrobenzene	0.267	0.137	20	0.329	0.364	16	0.258	0.148	8	0.202	0.151	8
2,4-Dinitrotoluene	0.597	1.75	20	0.199	0.149	16	0.199	0.154	8	0.265	0.124	8
2,6-Dinitrotoluene	0.295	0.129	20	0.265	0.12	16	0.265	0.124	8	1.28	0.811	8
Ammonium perchlorate	5690	10700	15	176	370	12	15.7	9.21	6	0.448	0.276	8
HMX	1.54	2.37	20	0.448	0.267	16	0.497	0.232	8	0.145	0.0213	8
Nitrocellulose	0.186	0.0898	20	0.19	0.0995	16	0.149	0.0216	8	1.8	0	2
Perchlorate	2380	4770	5	62.6	122	4	8.8	9.9	2	0.375	0.249	8
RDX	11.4	30.2	20	0.375	0.24	16	0.375	0.249	8	18.5	25.7	8
Total Metals (UG/L)												
Antimony	18.1	24.9	20	18.1	25	16	18.1	25.9	8	6.48	2.19	8
Arsenic	5.09	0.658	20	5.93	1.38	16	5.03	0.719	8	51.4	22.4	8
Barium	77.7	24	20	165	102	16	112	39.9	8	2.1	2.43	8
Cadmium	2.08	2.34	20	2.07	2.36	16	2.07	2.45	8	8.66	7.6	8
Chromium	11.8	10	20	6.1	4.39	16	12.3	11.7	8	18.8	25.7	8
Cobalt	19	24.4	20	17.8	25.2	16	19.6	25	8	12.3	12.9	8
Copper	68.9	108	20	11.8	12.6	16	13.2	12.3	8	35.7	58.2	8
Lead	52	55.9	20	35.6	56.3	16	35.6	58.3	8	0.483	0.631	8
Mercury	0.258	0.147	20	0.265	0.148	16	0.483	0.631	8	18.9	25.5	8
Nickel	22.8	22.9	20	18.2	25	16	24.5	23.4	8	7	3.7	8
Thallium	7	3.55	20	7.01	3.57	16	7	3.7	8	17.7	26.2	8
Vanadium	18.4	24.8	20	17.7	25.3	16	19	25.4	8	27	16.5	8
Zinc	183	210	20	36.4	36.7	16	24.5	6.32	8	2	1.85	8
Wet Chemistry (MG/L)												
Sulfide	2.06	1.76	20	2.06	1.77	16	2	1.85	8	NA	NA	NA

TABLE E-6
Summary of Constituents at Statistically Higher Concentrations in Down-gradient Wells During Baseline Groundwater Monitoring
Allegany Ballistics Laboratory

		Aquifer with Statistically Higher Results in Down-gradient Wells			Exceedance of Criteria	
Chemical Group	**Chemical Name**	**Bedrock**	**Alluvial**	**MCL**	**Bedrock**	**Alluvial**
Explosive	Perchlorate		X	NA		
Explosive	RDX		X	100 µg/l**		X
Metal	Barium	X		2,000 µg/l		
Metal	Zinc		X	11,000 µg/l*		
Volatile Organic	1,1,1-Trichloroethane	X	X	200 µg/l	X	X
Volatile Organic	1,1,2-Trichloroethane		X	5 µg/l		X
Volatile Organic	1,1-Dichloroethane	X	X	800 µg/l*		
Volatile Organic	1,1-Dichloroethene	X	X	7 µg/l	X	X
Volatile Organic	1,2-Dichloroethane		X	5 µg/l		
Volatile Organic	Chlorobenzene	X	X	100 µg/l		
Volatile Organic	Methylene chloride	X	X	5 µg/l	X	X
Volatile Organic	Tetrachloroethene		X	5 µg/		
Volatile Organic	Toluene	X	X	1,000 µg/l		
Volatile Organic	Trichloroethene	X	X	5 µg/l	X	X
Volatile Organic	Vinyl chloride	X	X	2 µg/l	X	X
Volatile Organic	Trans-1,2-Dichloroethene	X	X	100 µg/l		

* USEPA Region III Risk-based Concentration for Tap Water
** DWEL – Drinking Water Exposure Limit
NA – Not Available

TABLE E-7
Range of Detection for the Most Commonly Detected VOCs during Baseline Groundwater Sampling
Allegany Ballistics Laboratory

Analyte	Range of Detections (µg/L)	Frequency of Detections
TCE	0.48 – 97,000	43 of 66 samples
1,1,1-TCA	0.31 – 2,500	24 of 66 samples
Methylene chloride	5.7 – 1,000	13 of 66 samples
1,1-DCE	6 – 220	12 of 66 samples
Trans-1,2-DCE	1.9 – 35	11 of 66 samples
Vinyl chloride	8 – 45	9 of 66 samples
Toluene	0.07 – 63	8 of 66 samples
1,1-DCA	12 – 99	7 of 66 samples
Chlorobenzene	5 –17	4 of 66 samples

Figures

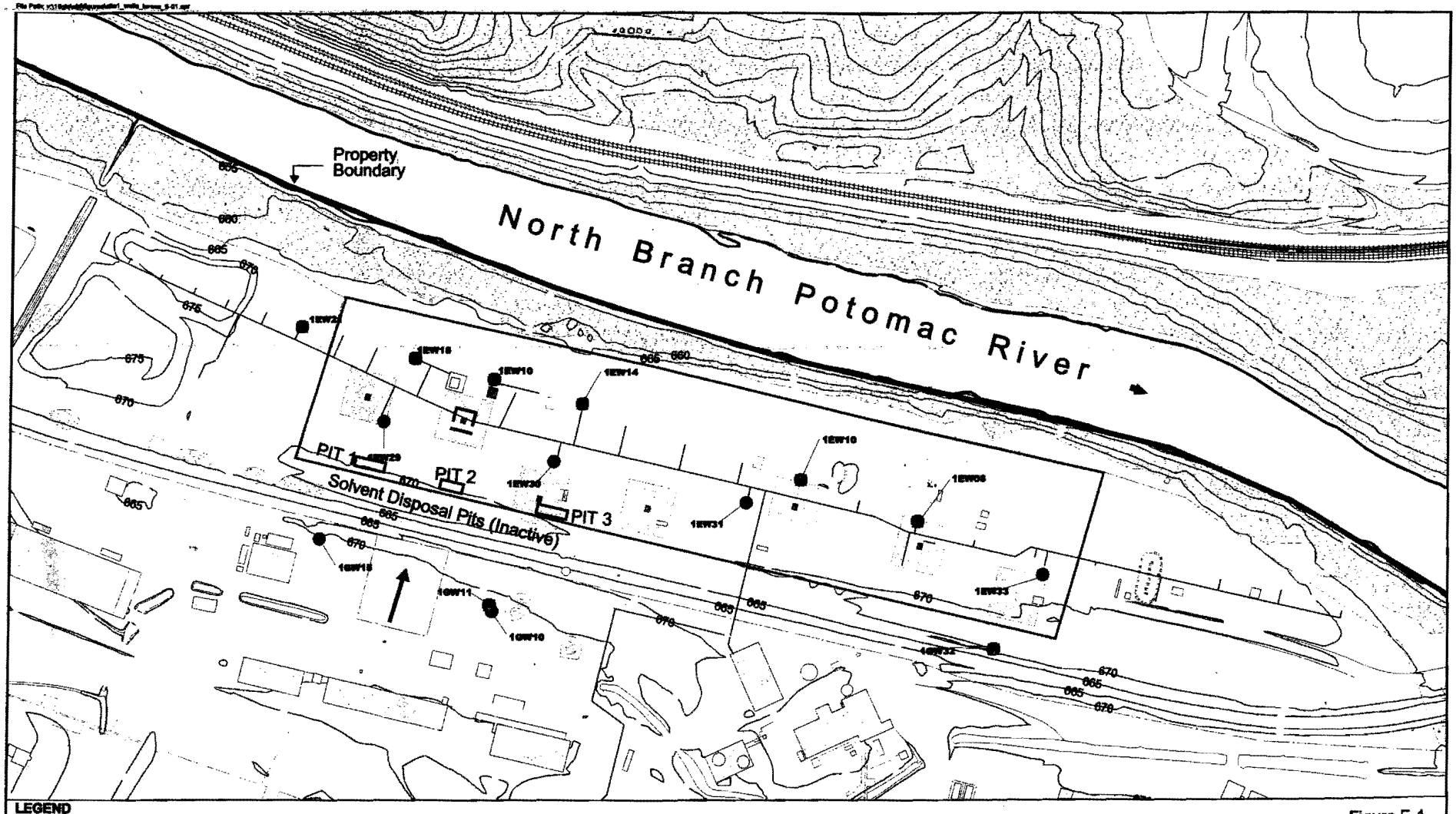


Figure E-1
Topographic Map - Burning Grounds
Showing Baseline and Corrective Action Monitoring Well Locations
Allegany Ballistics Laboratory

CH2MHILL